General Physiology

PY.1.1 Describe the structure of function of a mammalian cell

1 At the end of this session phase 1 student must be able to define cell accurately

2 At the end of this session phase 1 student must be able to Draw the well labelled diagram of cell accurately

3 At the end of this session phase 1 student must be able to Describe the sturecture of cell membrane accurately.

4 At the end of this session phase 1 student must be able to explain the functions of cell membrane correctly.

5 At the end of this session phase 1 student must be able to list cell organalies accurately.

6 At the end of this session phase 1 student must be able to Discuss functions of cell organales accurately.

PY1.2 Describe and discuss the principles of homeostasis.

1 At the end of this session phase 1 student must be able to Define homeostasis accurately

2 At the end of this session phase 1 student must be able to explain the feedback mechanisms of homeostatic regulation accurately

3 At the end of this session phase 1 student must be able to explain role of different systems in homeostais accurately.

PY1.3 Describe intercellular communictaion.

1 At the end of this session phase 1 student must be able to Classify intercellular junctions accurately

2 At the end of this session phase 1 student must be able to list the functions of intercellular junction accurately

3 At the end of this session phase 1 student must be able to Classify cell adhesion molecules correctly.

4 At the end of this session phase 1 student must be able to explain the functions of cell adhesion molecule correctly.

PY 1.4 Describe apotosis - programmed cell death.

1 At the end of this session phase 1 student must be able to Define apoptosis accurately

2 At the end of this session phase 1 student must be able to Explain molecular mechanisms of apoptosis accurately

PY 1.5 Describe and discuss transport mechanism across cell membranes.

1 At the end of this session phase 1 student must be able to definne transport process accurately .

2 At the end of this session phase 1 student must be able to list the different transport mechanism accurately .

3 At the end of this session phase 1 student must be able to define active transport accurately .

4 At the end of this session phase 1 student must be able to list the types of active transport accurately .

5 At the end of this session phase 1 student must be able to define passive transport accurately .

6 At the end of this session phase 1 student must be able to list the types passive transport accurately .

7 At the end of this session phase 1 student must be able to write the difference between active transport mechanism accurately .

8 At the end of this session phase 1 student must be able to Explain the primary active transport with example accurately

9 At the end of this session phase 1 student must be able to Explain Secondary active transport with example accurately

PY 1.6 Describe discuss the fluid compartments of the body, its ionic composition.

1 At the end of this session phase 1 student must be able to enumerate different body fluid compartments accurately.

2 At the end of this session phase 1 student must be able to discuss the composition of total fluid present in the compartment accurately.

3 At the end of this session phase 1 student must be able to desribe of each ions present in the compartment accurately.

4 At the end of this session phase 1 student must be able to Explain the method of measurement of body fluid volume of different compartments accurately

PY 1.7 Describe the concept of PH and buffer sestyms in the body.

1 At the end of this session phase 1 student must be able to Define PH accurately.

2 At the end of this session phase 1 student must be able to explain different buffer system of the body accurately.

PY 1.8 Describe and discuss the molecuar bassis of resting membrane potential and action Potential in excitable tissue.

1 At the end of this session phase 1 student must be able to Define RMP accurately
2 At the end of this session phase 1 student must be able to explain the mechanism of genesis of RMP accurately
3 At the end of this session phase 1 student must be able to explain maintainenance of RMP accurately
4 At the end of this session phase 1 student must be able to Define Action Potencial accurately
5 At the end of this session phase 1 student must be able to Draw a well labelled digram of AP showing ionic basis of APin excitable tissues accurately

PY 1.9 **Demonstrate the ability to describe and discuss the methods used to demostrate the funtion of the cells and its products, its communications and their applications in clinical care and research.**

1 At the end of this session phase 1 student must be able to enumerate type of gap junction in health accurately.
2 At the end of this session phase 1 student must be able to Explain each type of gap junction accurately.
3 At the end of this session phase 1 student must be able to Explain the importance of gap junction in health accurately.

Blood

PY 2.1 **Describe the composition and funtion of blood components.**

1 At the end of this session phase 1 student must be able to Define blood accurately.
2 At the end of this session phase 1 student must be able to explain composition of blood accurately.
3 At the end of this session phase 1 student must be able to explain function of blood accurately.

PY2.2 **Discuss the origin, forms, variations and functions of plasma proteins.**

1 At the end of this session phase 1 student must be able to Define plasma protein accurately.
2 At the end of this session phase 1 student must be able to list the plasma proteins accurately
3 At the end of this session phase 1 student must be able to give the normal values of plasma proteins accurately
4 At the end of this session phase 1 student must be able to list the functions of plasma proteins accurately
5 At the end of this session phase 1 student must be able to Explain the function of plasma proteins accurately

PY 2.3 **Describe and discuss the synthesis and functions of haemoglobin and explain its breakdown. Describe variatns of haemoglobin.**

1 At the end of this session phase 1 student must be able to define Hb accurately
2 At the end of this session phase 1 student must be able to list function of Hb accurately
3 At the end of this session phase 1 student must be able to Explain steps of hb synthesis accurately
4 At the end of this session phase 1 student must be able to Enamurate disadvantages of free Hb accurately
5 At the end of this session phase 1 student must be able to Explain structure of Hb accurately
6 At the end of this session phase 1 student must be able to Explain fate of Hb accurately
7 At the end of this session phase 1 student must be able to know the normal value of Hb accurately
8 At the end of this session phase 1 student must be able to define between adult Hb accurately
9 At the end of this session phase 1 student must be able to define FHb accurately
10 At the end of this session phase 1 student must be able to diffrenciate between adult Hb & FHb accurately
11 At the end of this session phase 1 student must be able to explain the factors affecting of Hb accurately
12 At the end of this session phase 1 student must be able to List the pathological alterations in Hb concentration accurately
13 At the end of this session phase 1 student must be able to Give the normal Values of Hb in males females accurately
14 At the end of this session phase 1 student must be able to Define erythropoieses & give the stages of erythropoieses accurately

PY2.4 **Describe RBC formation (erythropoiesis and its regulation) and its functions.**

1 At the end of this session phase 1 student must be able to enumerate the stages of erythropoieses accurately
2 At the end of this session phase 1 student must be able to explain the stages of erythropoieses accurately
3 At the end of this session phase 1 student must be able to explain regulation of erthropoieses accurately

PY 2.5 **Describe different types of anaemias and jaundice.**

1 At the end of this session phase 1 student must be able to Define anemia accurately
2 At the end of this session phase 1 student must be able to Define sickel cell anemia accurately
3 At the end of this session phase 1 student must be able to define the polycythemia accurately
4 At the end of this session phase 1 student must be able to Classify anemia & give common causes of anemia accurately
5 At the end of this session phase 1 student must be able to give common causes of anemia accurately
6 At the end of this session phase 1 student must be able to Give the salient blood picture of common type anemia accurately
7 At the end of this session phase 1 student must be able to Define jaundice accurately
8 At the end of this session phase 1 student must be able to list the type of jaundice accurately
9 At the end of this session phase 1 student must be able to Define hemolytic jaundice accurately
10 At the end of this session phase 1 student must be able to Define hepatic jaundice accurately
11 At the end of this session phase 1 student must be able to explain pathophysiology of jaundice accurately
12 At the end of this session phase 1 student must be able to Define obstructive jaundice accurately
13 At the end of this session phase 1 student must be able to Diffrentiate between Prehepatic,hepaic & posthepatic jaundice accurately

PY 2.6 Describe WBC formation (granulopoiesis) and its regulation.

1 At the end of this session phase 1 student must be able to define leukocytes accurately
2 At the end of this session phase 1 student must be able classify differentleukocytes accurately
3 At the end of this session phase 1 student must be able to list the step of leucopoiesis accurately
4 At the end of this session phase 1 student must be able to explain the regulation of leucopoiesis accurately
5 At the end of this session phase 1 student must be able to enumarate the functions of leukocytes accurately
6 At the end of this session phase 1 student must be able to explain the function neutrophil accurately
7 At the end of this session phase 1 student must be able to define phagocytosis accurately
8 At the end of this session phase 1 student must be able to explain the steps of phagocytosis accurately
9 At the end of this session phase 1 student must be able to explain the steps of pinocytosis accurately
10 At the end of this session phase 1 student must be able to list the function eosinophil accurately

PY 2.7 Describe the formation of platelets, functions and variations.

1 At the end of this session phase 1 student must be able to Draw the structure of platelets accurately
2 At the end of this session phase 1 student must be able to correlates structure with platelets function accurately
3 At the end of this session phase 1 student must be able to write the step of thrombopoisis accurately
4 At the end of this session phase 1 student must be able to define hemostasis accurately
5 At the end of this session phase 1 student must be able to list he the major steps of hemostasis accurately
6 At the end of this session phase 1 student must be able to explain the role platelate in hemostasis accurately
7 At the end of this session phase 1 student must be able to describe its regulation accurately
8 At the end of this session phase 1 student must be able to List the causes of thrombocytosis accurately
9 At the end of this session phase 1 student must be able to List the causes of thrombocytopenia accurately

PY 2.8 Descibe the Physiological bassis of hemostasis and anticoagulants. Describe bleeding and clotting disorder (hemophilia, purpura)

1 At the end of this session phase 1 student must be able to define clotting time accurately
2 At the end of this session phase 1 student must be able to explain the normal values clotting time accurately
3 At the end of this session phase 1 student must be able to Name the clotting factors accurately
4 At the end of this session phase 1 student must be able to write intrinsic mechanism of blood coagulation accurately
5 At the end of this session phase 1 student must be able to write extrinsic mechanism of blood coagulation accurately
6 At the end of this session phase 1 student must be able to Explain the clotting mechanism accurately

	7	At the end of this session phase 1 student must be able to write the difference between intrinsic & extrinsic mechanism of blood coagulation accurately
	8	At the end of this session phase 1 student must be able to Enumerate the common abnormality of coagulation accurately
	9	At the end of this session phase 1 student must be able to explain their pathophysiology accurately
	10	At the end of this session phase 1 student must be able to Define bleeding accurately
	11	At the end of this session phase 1 student must be able to write normal values of bleeding accurately
	12	At the end of this session phase 1 student must be able to Describe physiological basis of investigation of bleeding accurately
	13	At the end of this session phase 1 student must be able to Describe physiological basis of investigation clotting disorder accurately
PY 2.9		**Describe different blood groups and discuss the clinical importence of blood grouping, blood banking and transfusion.**
	1	At the end of this session phase 1 student must be able to Classify blood & give the physiological bases of B.G. accurately
	2	At the end of this session phase 1 student must be able to explain the physiological bases of B.G. accurately
	3	At the end of this session phase 1 student must be able to Discuss the importance of B.G.accurately
	4	At the end of this session phase 1 student must be able to Give the etiology of blood group accurately
	5	At the end of this session phase 1 student must be able to Give the Physiological basis of erythroblastosis fetalis accurately
	6	At the end of this session phase 1 student must be able to explain prevention of erythroblastosis fetalis accurately
	7	At the end of this session phase 1 student must be able to define blood bank accurately.
	8	At the end of this session phase 1 student must be able to enumerate the anticoagulant used for blood collection
	9	At the end of this session phase 1 student must be able to list the changes in red cells following storage of blood accurately.
	10	At the end of this session phase 1 student must be able to Explain the hazards of blood transfusion accurately .
PY 2.10	**9**	**define and classify different types of immunity, describe the devlopment of immunity and its regulation.**
	1	At the end of this session phase 1 student must be able to define immunity accurately
	2	At the end of this session phase 1 student must be able to Classify immunity accurately
	3	At the end of this session phase 1 student must be able to give example of immunity accurately
	4	At the end of this session phase 1 student must be able to define cellular immunity accurately
	5	At the end of this session phase 1 student must be able to define hummoral immunity accurately
	6	At the end of this session phase 1 student must be able to define the difference b/w cellular & hummoral immunity accurately
	7	At the end of this session phase 1 student must be able to Explain the mechanism of cellular immunity
	8	At the end of this session phase 1 student must be able to Explain the mechanism of hummoral immunity
PY2.11		**estimate Hb RBC, TLC, RBC indices, DLC, Blood Groups, BT/CT.**
	1	At the end of this session phase 1 student must be able to give normal values of hemoglobin in males and females accurately
	2	At the end of this session phase 1 student must be able to discuss functions of hemoglobin correctly
	3	At the end of this session phase 1 student must be able to perform estimation of hemoglobin by sahli's method.
	4	At the end of this session phase 1 student must be able to enumerate precautions of estimation of hemoglobin by sahli's method
	5	At the end of this session phase 1 student must be able to define anemia correctly
	6	At the end of this session phase 1 student must be able to classify anemias correctly
	7	At the end of this session phase 1 student must be able to enumerate other methods of hemoglobin estimation correctly
	8	At the end of this session phase 1 student must be able to give normal values of RBC in males and females accurately
	9	At the end of this session phase 1 student must be able to discuss functions of RBC accurately
	10	At the end of this session phase 1 student must be able to estimate RBC count using Neubauer's chamber accurately
	11	At the end of this session phase 1 student must be able to give composition and function of each constituent of RBC diluting fluid
	12	At the end of this session phase 1 student must be able to define polycythemia correctly
	13	At the end of this session phase 1 student must be able to give normal values of TLC accurately

14 At the end of this session phase 1 student s must be able to discuss functions of leucocytes correctly
15 At the end of this session phase 1 student must be able to estimate TLC using Neubauer's chamber accurately
13 At the end of this session phase 1 student must be able to give composition and function of each constituent of WBC diluting fluid
14 At the end of this session phase 1 student must be able to define RBC indices correctly
15 At the end of this session phase 1 student must be able to give normal values of each RBC indices accurately
16 At the end of this session phase 1 student must be able to discuss calculation of RBC indices correctly
17 At the end of this session phase 1 student must be able to discuss physiological significance of RBC indices correctly
18 At the end of this session phase 1 student must be able to give normal values of differential leucocyte count accurately
19 At the end of this session phase 1 student must be able to discuss functions of each leucocyte correctly
20 At the end of this session phase 1 student must be able to discuss causes of increase in different leucocyte correctly
21 At the end of this session phase 1 student must be able to discuss causes of decrease in different leucocyte correctly
22 At the end of this session phase 1 student must be able to estimate DLC accurately
23 At the end of this session phase 1 student must be able to describe different types of blood groups correctly
24 At the end of this session phase 1 student must be able to discuss importance of blood grouping precisely
25 At the end of this session phase 1 student must be able to discuss Rh Incompatibility correctly
26 At the end of this session phase 1 student must be able to describe Landsteiner law corrcetly
27 At the end of this session phase 1 student must be able to estimate blood group correctly
28 At the end of this session phase 1 student must be able to define bleeding time correctly
29 At the end of this session phase 1 student must be able to give normal values of BT by different methods correctly
30 At the end of this session phase 1 student must be able to enumerate different methods of BT estimation correctly
31 At the end of this session phase 1 student must be able to estimate BT by Duke's method accurately
32 At the end of this session phase 1 student must be able to describe bleeding disorders correctly
33 At the end of this session phase 1 student must be able to define clotting time correctly
34 At the end of this session phase 1 student must be able to give normal values of CT by different methods correctly
35 At the end of this session phase 1 student must be able to enumerate clotting factors correctly
36 At the end of this session phase 1 student must be able to enumerate different methods of CT estimation correctly
37 At the end of this session phase 1 student must be able to estimate CT by Capillary tube method accurately
38 At the end of this session phase 1 student must be able to describe clotting disorders correctly

PY 2.12 Discuribe test for ESR, osmotic fragility, hematocrite. Note the findings and interpet the test results ETC.

1 At the end of this session phase 1 student must be able to define ESR Correctly
2 At the end of this session phase 1 student must be able to give normal values of ESR in males and females accurately
3 At the end of this session phase 1 student must be able to discuss factors causing increase in ESR Correctly
4 At the end of this session phase 1 student must be able to discuss factors causing decrease in ESR correctly
5 At the end of this session phase 1 student must be able to describe test for estimation of ESR correctly
6 At the end of this session phase 1 student must be able to interpret the test results accurately
7 At the end of this session phase 1 student must be able to define osmotic fragility Correctly
8 At the end of this session phase 1 student must be able to discuss factors causing increase in osmotic fragility Correctly
9 At the end of this session phase 1 student must be able to discuss factors causing decrease in osmotic fragility correctly
10 At the end of this session phase 1 student must be able to describe test for estimation of osmotic fragility correctly
11 At the end of this session phase 1 student must be able to interpret the test results of osmotic fragility accurately
12 At the end of this session phase 1 student must be able to define hematocrit Correctly
13 At the end of this session phase 1 student must be able to give normal values of hematocrit in males and females accurately
14 At the end of this session phase 1 student must be able to discuss factors causing increase in hematocrit Correctly

15 At the end of this session phase 1 student must be able to discuss factors causing decrease in hematocrit correctly
16 At the end of this session phase 1 student must be able to describe test for estimation of hematocrit correctly
17 At the end of this session phase 1 student must be able to interpret the test results of hematocrit accurately

PY 2.13 Describe steps for reticulocyte and platelet count.

1 At the end of this session phase 1 student must be able to define reticulocyte
2 At the end of this session phase 1 student must be able to give normal value of reticulocyte in peripheral smear correctly
3 At the end of this session phase 1 student must be able to describe reticulocytosis correctly
4 At the end of this session phase 1 student must be able to give causes of increase in reticulocyte count correctly
5 At the end of this session phase 1 student must be able to give causes of decrease in reticulocyte count correctly
6 At the end of this session phase 1 student must be able to describe steps of reticulocyte count correctly
7 At the end of this session phase 1 student must be able to identify reticulocytes correctly
8 At the end of this session phase 1 student must be able to draw well labeled diagram of structure of platelet correctly
9 At the end of this session phase 1 student must be able to give normal value of platelets correctly
10 At the end of this session phase 1 student must be able to give causes of increase in platelet count correctly
11 At the end of this session phase 1 student must be able to give causes of decrease in platelet count correctly
12 At the end of this session phase 1 student must be able to enumerate functions of platelet correctly
13 At the end of this session phase 1 student must be able to describe steps of platelet count by indirect method correctly
14 At the end of this session phase 1 student must be able to identify platelets correctly

Nerve muscle

PY 3.1 Describe the structure & function of neuron and neuroglia, discuss nerve growth factor and other growth factors/cytokines.

1 At the end of this session phase 1 student must be able to define neuron accurately
2 At the end of this session phase 1 student must be able to well lebelled diagram of neuron correctly.
3 At the end of this session phase 1 student must be able to Draw a well lebelled diagram. of neuroglia accurately
4 At the end of this session phase 1 student must be able to Difference b/w mylinated & unmylinated neuron accurately
3 At the end of this session phase 1 student must be able to classify different types of neurons accurately
4 At the end of this session phase 1 student must be able to discuss growth of neurons accurately
5 At the end of this session phase 1 student must be able to explain the function of neuroglia accurately
6 At the end of this session phase 1 student must be able to function of nerve fiber accurately
7 At the end of this session phase 1 student must be able to explain their function accurately
8 At the end of this session phase 1 student must be able to discuss the mechanism of genesis of electronic potencial accurately
9 At the end of this session phase 1 student must be able to define rehobase accurately
10 At the end of this session phase 1 student must be able to define chronexie accurately
11 At the end of this session phase 1 student must be able to define utilization time accurately
12 At the end of this session phase 1 student must be able to Explain the properties of nerve fiber accurately
13 At the end of this session phase 1 student must be able to draw a diagram of nerve AP accurately
14 At the end of this session phase 1 student must be able to describe the ionic basis of each phase of AP accurately
15 At the end of this session phase 1 student must be able to differentce between graded potencial & AP accurately

Ph 3.2 Describe the types, functions and properties of nerve fibers.

1 At the end of this session phase 1 student must be able to enumerate different types of nerve fibres accurately.
2 At the end of this session phase 1 student must be able to explain functions of different types of nerve fibres accurately.
3 At the end of this session phase 1 student must be able to explain properties of different types of nerve fibres accurately.

PY 3.3 Describe the degeneration and regeneration in peripheral nerves.

1 At the end of this session phase 1 student must be able to define degeneration of nerve accurately.
2 At the end of this session phase 1 student must be able to Explain the degenerative changes in never injury accurately
3 At the end of this session phase 1 student must be able to define regeneration of nerve accurately.
4 At the end of this session phase 1 student must be able to Explain the regenerative changes after nerve injury accurately

PY 3.4 Describe the struture of neuro-muscular junction and transmission of impulses.

1 At the end of this session phase 1 student must be able to define neuromuscular junction accurately
2 At the end of this session phase 1 student must be able to Draw well lebelled diagram of neuromuscular junction accurately
3 At the end of this session phase 1 student must be able to Explain the mechanism of neuromuscular transmission accurately

PY 3.5 Descuss the action of neuro-muscular blocking agents.

1 At the end of this session phase 1 student must be able to define neuromuscular blocking agents accurately
2 At the end of this session phase 1 student must be able to classify different neuromuscular blocking agents accurately
3 At the end of this session phase 1 student must be able to Explain the mechanism of neuromuscular blocking agents accurately

PY 3.6 Desribe the pathophysiology of myasthenia gravis.

1 At the end of this session phase 1 student must be able to Define mythenia gravis accurately
2 At the end of this session phase 1 student must be able to Discuss the pathophysiology of mythenia gravis accurately

PY 3.7 Desribe the Different types of muscle fibers and their structure.

1 At the end of this session phase 1 student must be able to list the types of muscle fibers accurately
2 At the end of this session phase 1 student must be able to Diffentiate b/w different muscle fibers accurately

PY 3.8 Desribe action potential and its properties in different muscle types (skeletal and smooth).

1 At the end of this session phase 1 student must be able to define action potential accurately
2 At the end of this session phase 1 student must be able to Desribe the action potential in skeletal muscle accurately
3 At the end of this session phase 1 student must be able to explain the properties of skeletal muscle accurately
4 At the end of this session phase 1 student must be able to Describethe action potential in smooth muscle accurately
5 At the end of this session phase 1 student must be able to explain the properties of smooth muscle accurately

PY 3.9 Describe the molecular basis of muscle contration in skeletal and in smooth muscles.

1 At the end of this session phase 1 student must be able to enumerate the steps of the molecular basis of muscle contraction in skeletal muscle accurately
2 At the end of this session phase 1 student must be able to explain the mechanism of the molecular basis of muscle contraction in skeletal muscle accurately
3 At the end of this session phase 1 student must be able to explain the mechanism of molecular basis of muscle relaxation in skeletal muscle accurately
4 At the end of this session phase 1 student must be able to enumerate the steps of the molecular basis of muscle contraction in smooth muscle accurately
5 At the end of this session phase 1 student must be able to explain the mechanism of the molecular basis of muscle contraction in smooth muscle accurately
6 At the end of this session phase 1 student must be able to explain the molecular basis of muscle relaxation in smooth muscle accurately
7 At the end of this session phase 1 student must be able to Differentiate b/w molecular basis of muscle contraction in skeletal & smooth muscle accurately

PY 3.10 Describe the mode of muscle contraction (isometric and isotonic).

1 At the end of this session phase 1 student must be able to Define isotonic muscle contraction accurately
2 At the end of this session phase 1 student must be able to Define isometeric muscle contraction accurately
3 At the end of this session phase 1 student must be able to Differentiate b/w isotonic & isometric muscle contraction accurately

Ph 3.11 Explain energy source and muscle metabolism.

1 At the end of this session phase 1 student must be able to enumerate the energy source accurately
2 At the end of this session phase 1 student must be able to Discuss the energy source & muscle metabolism accurately

Ph 3.12 Explain the gradation of muscular activity.

1 At the end of this session phase 1 student must be able to define grading of exercise accurately
2 At the end of this session phase 1 student must be able to explain grading of exercise accurately

Ph 3.13 Describe muscular dystrophy: myopathies.

1 At the end of this session phase 1 student must be able to define muscular dystrophy accurately
2 At the end of this session phase 1 student must be able to classify different types of muscular dystrophy accurately
3 At the end of this session phase 1 student must be able to The write a note on muscular dystrophy accurately
4 At the end of this session phase 1 student must be able to differentiate between myasthenia gravis & eaton lambert syndrome correctly
5 At the end of this session phase 1 student must be able to explain different types of myopathies correctly

Ph 3.14 Perform ergography.

1 At the end of this session phase 1 student must be able to define ergography correctly
2 At the end of this session phase 1 student must be able to discuss fatigue correctly
3 At the end of this session phase 1 student must be able to discuss causes of fatigue after arterial occlusion correctly
4 At the end of this session phase 1 student must be able to discuss causes of fatigue after venous occlusion correctly
5 At the end of this session phase 1 student must be able to perform ergography using mosso's ergograph
6 At the end of this session phase 1 student must be able to perform ergography using mosso's ergograph after arterial occlusion correctly
7 At the end of this session phase 1 student must be able to perform ergography using mosso's ergograph after venous occlusion correctly
8 At the end of this session phase 1 student must be able to calculate work done in different maneuver's of ergography accurately

PY 3.15 Demonstrate effect of mild, moderate and severe exercise and record changes in cardiorespiratory parameters.

1 At the end of this session phase 1 student must be able to classify exercises correctly
2 At the end of this session phase 1 student must be able to give grading of exercise according to WHO.
3 At the end of this session phase 1 student must be able to perform mild exercise and show changes in heart rate correctly
4 At the end of this session phase 1 student must be able to perform mild exercise and explain causes of changes in heart rate correctly
5 At the end of this session phase 1 student must be able to perform mild exercise and show changes in blood pressure correctly
6 At the end of this session phase 1 student must be able to perform mild exercise and explain causes of changes in blood pressure correctly
7 At the end of this session phase 1 student must be able to perform mild exercise and show changes in respiratory rate correctly
8 At the end of this session phase 1 student must be able to perform mild exercise and explain causes of changes in respiratory rate correctly
9 At the end of this session phase 1 student must be able to perform moderate exercise and show changes in heart rate correctly
10 At the end of this session phase 1 student must be able to perform moderate exercise and explain causes of changes in heart rate correctly
11 At the end of this session phase 1 student must be able to perform moderate exercise and show changes in blood pressure correctly
12 At the end of this session phase 1 student must be able to perform moderate exercise and explain causes of changes in blood pressure correctly
13 At the end of this session phase 1 student must be able to perform moderate exercise and show changes in respiratory rate correctly
14 At the end of this session phase 1 student must be able to perform moderate exercise and explain causes of changes in respiratory rate correctly
15 At the end of this session phase 1 student must be able to perform severe exercise and show changes in heart rate correctly
16 At the end of this session phase 1 student must be able to perform severe exercise and explain causes of changes in heart rate correctly
17 At the end of this session phase 1 student must be able to perform severe exercise and show changes in blood pressure correctly
18 At the end of this session phase 1 student must be able to perform severe exercise and explain causes of changes in blood pressure correctly
19 At the end of this session phase 1 student must be able to perform severe exercise and show changes in respiratory rate correctly
20 At the end of this session phase 1 student must be able to perform severe exercise and explain causes of changes in respiratory rate correctly

PY3.16 Demonstrate Harvard step test and describe the impact on induced physiologic parameters in a simulated environment.

1 At the end of this session phase 1 student must be able to enumerate components of Harvard step test

2 At the end of this session phase 1 student must be able to describe effect of Harvard step test on heart rate correctly
3 At the end of this session phase 1 student must be able to describe effect of Harvard step test on blood pressure correctly
4 At the end of this session phase 1 student must be able to describe effect of Harvard step test on respiratory rate correctly

PY3.17 describe strength-duration curve.

1 At the end of this session phase 1 student must be able to define simple muscle twitch correctly
2 At the end of this session phase 1 student must be able to define latent period correctly
3 At the end of this session phase 1 student must be able to enumerate causes of latent period correctly
4 At the end of this session phase 1 student must be able to correlate SMT and its action potential on same time scale
5 At the end of this session phase 1 student must be able to describe graph of simple muscle twitch correctly
6 At the end of this session phase 1 student must be able to describe effect of temperature on Simple muscle twitch correctly.
7 At the end of this session phase 1 student must be able to describe physiological significance of effect of temperature on SMT correctly
8 At the end of this session phase 1 student must be able to define summation of contraction of skeletal muscle correctly
9 At the end of this session phase 1 student must be able to define summation of stimuli correctly.
10 At the end of this session phase 1 student must be able to describe beneficial effect correctly
11 At the end of this session phase 1 student must be able to describe effect of two successive stimuli on skeletal muscle contraction correctly
12 At the end of this session phase 1 student must be able to define sub-threshold stimulus correctly
13 At the end of this session phase 1 student must be able to define threshold stimulus correctly
14 At the end of this session phase 1 student must be able to define maximal stimulus correctly
15 At the end of this session phase 1 student must be able to define supramaximal stimulus correctly
16 At the end of this session phase 1 student must be able to describe effect of increasing strength of stimuli on skeletal muscle contraction correctly
17 At the end of this session phase 1 student must be able to define staircase phenomenon correctly
18 At the end of this session phase 1 student must be able to define clonus correctly
19 At the end of this session phase 1 student must be able to define tetanus correctly
20 At the end of this session phase 1 student must be able to ennumearte the types of muscle contraction that occurs in body
20 At the end of this session phase 1 student must be able to differentiate between rigor and rigor mortis correctly
21 At the end of this session phase 1 student must be able to describe effect of increasing frequency of stimuli on skeletal muscle contraction correctly
22 At the end of this session phase 1 student must be able to describe physiological significance of increasing frequency of stimuli on skeletal muscle contraction correctly
23 At the end of this session phase 1 student must be able to define after-loaded conditions in skeletal muscle correctly
24 At the end of this session phase 1 student must be able to define pre-loaded conditions in skeletal muscle correctly
25 At the end of this session phase 1 student must be able to demonstrate the effect of load on skeletal muscle contraction correctly
26 At the end of this session phase 1 student must be able to describe physiological significance of the effect of load on skeletal muscle contraction correctly
27 At the end of this session phase 1 student must be able to define fatigue correctly
28 At the end of this session phase 1 student must be able to enumerate causes of fatigue correctly
29 At the end of this session phase 1 student must be able to describe contraction remainder correctly
30 At the end of this session phase 1 student must be able to demonstrate genesis of fatigue in skeletal muscle correctly
31 At the end of this session phase 1 student must be able to enumerate causes of recovery from fatigue correctly
32 At the end of this session phase 1 student must be able to discuss physiological significance of fatigue
33 At the end of this session phase 1 student must be able to classify nerve fibers correctly
34 At the end of this session phase 1 student must be able to enumerate factors effecting conduction velocity correctly
35 At the end of this session phase 1 student must be able to describe graph of conduction velocity of sciatic nerve correctly

36 At the end of this session phase 1 student must be able to give relevance of determination of conduction velocity in nerves correctly Amphibian cardiac experiments

37 At the end of this session phase 1 student must be able to describe anatomy of frogs heart correctly

38 At the end of this session phase 1 student must be able to describe normal cardiogram correctly
39 At the end of this session phase 1 student must be able to describe effect of temperature on normal cardiogram correctly
40 At the end of this session phase 1 student must be able to define extrasystole correctly
41 At the end of this session phase 1 student must be able to enumerate factors causing extrasystole in humans correctly
42 At the end of this session phase 1 student must be able to demonstrate extrasystole in cardiac muscle
43 At the end of this session phase 1 student must be able to define compensatory pause
44 At the end of this session phase 1 student must be able to describe importance of compensatory pause correctly
44 At the end of this session phase 1 student must be able to describe graph of compensatory pause correctly
45 At the end of this session phase 1 student must be able to define absolute refractory period correctly
46 At the end of this session phase 1 student must be able to define relative refractory period correctly
47 At the end of this session phase 1 student must be able to describe graph of refractory period correctly
48 At the end of this session phase 1 student must be able to explain why cardiac muscle cannot be tetanized
49 At the end of this session phase 1 student must be able to name two sites of stannous ligatures correctly
50 At the end of this session phase 1 student must be able to explain effect of 1^{st} stannous ligatures correctly
51 At the end of this session phase 1 student must be able to explain effect of 2nd stannous ligatures correctly
52 At the end of this session phase 1 student must be able to define all or none law correctly
53 At the end of this session phase 1 student must be able to explain graph of all or none law correctly
54 At the end of this session phase 1 student must be able to discuss causes of staircase phenomenon correctly
55 At the end of this session phase 1 student must be able to discuss graph of summation of subliminal stimuli correctly
56 At the end of this session phase 1 student must be able to define white crescentic line correctly
57 At the end of this session phase 1 student must be able to define chronotropic effect correctly
58 At the end of this session phase 1 student must be able to define ionotropic effect correctly
59 At the end of this session phase 1 student must be able to define dromotropic effect correctly
60 At the end of this session phase 1 student must be able to define bathmotropic effect correctly
61 At the end of this session phase 1 student must be able to explain phenomenon of vagal escape correctly
62 At the end of this session phase 1 student must be able to discuss effect of stimulation of vago-sympathetic trunk correctly
63 At the end of this session phase 1 student must be able to discuss effect of stimulation of white cresentic line correctly
64 At the end of this session phase 1 student must be able to enumerate type of receptors present in frogs heart correctly
65 At the end of this session phase 1 student must be able to explain effect of local application of adrenaline on frogs heart correctly
66 At the end of this session phase 1 student must be able to explain effect of local application of nicotine on frogs heart correctly
67 At the end of this session phase 1 student must be able to explain effect of local application of atropine on frogs heart correctly
68 At the end of this session phase 1 student must be able to name the blockers of cholinergic receptors correctly

PY3.18 observe with computer assisted learning (i.) amphibian nerve-muscle experiments (ii.) amphibian cardiac experiments.

1 At the end of this session phase 1 student must be able to define simple muscle twitch correctly
2 At the end of this session phase 1 student must be able to describe graph of simple muscle twitch correctly
3 At the end of this session phase 1 student must be able to describe effect of temperature on Simple muscle twitch correctly.
4 At the end of this session phase 1 student must be able to describe physiological significance of effect of temperature on SMT correctly
5 At the end of this session phase 1 student must be able to define summation of contraction of skeletal muscle correctly
6 At the end of this session phase 1 student must be able to define summation of stimuli correctly.

7 At the end of this session phase 1 student must be able to describe beneficial effect correctly

8 At the end of this session phase 1 student must be able to describe effect of two successive stimuli on skeletal muscle contraction correctly

9 At the end of this session phase 1 student must be able to define sub-threshold stimulus correctly

10 At the end of this session phase 1 student must be able to define threshold stimulus correctly

11 At the end of this session phase 1 student must be able to define maximal stimulus correctly

12 At the end of this session phase 1 student must be able to define supramaximal stimulus correctly

13 At the end of this session phase 1 student must be able to describe effect of increasing strength of stimuli on skeletal muscle contraction correctly

14 At the end of this session phase 1 student must be able to define staircase phenomenon correctly

15 At the end of this session phase 1 student must be able to define clonus correctly

16 At the end of this session phase 1 student must be able to define tetanus correctly

17 At the end of this session phase 1 student must be able to ennumearte the types of muscle contraction th At occurs in body

18 At the end of this session phase 1 student must be able to differenti Ate between rigor and rigor mortis correctly

19 At the end of this session phase 1 student must be able to describe effect of increasing frequency of stimuli on skeletal muscle contraction correctly

20 At the end of this session phase 1 student must be able to describe physiological significance of increasing frequency of stimuli on skeletal muscle contraction correctly

21 At the end of this session phase 1 student must be able to define after-loaded conditions in skeletal muscle correctly

22 At the end of this session phase 1 student must be able to define pre-loaded conditions in skeletal muscle correctly

23 At the end of this session phase 1 student must be able to demonstr Ate the effect of load on skeletal muscle contraction correctly

24 At the end of this session phase 1 student must be able to describe physiological significance of the effect of load on skeletal muscle contraction correctly

25 At the end of this session phase 1 student must be able to define f Atigue correctly

26 At the end of this session phase 1 student must be able to enumer Ate causes of f Atigue correctly

27 At the end of this session phase 1 student must be able to describe contraction remainder correctly

28 At the end of this session phase 1 student must be able to demonstr Ate genesis of f Atigue in skeletal muscle correctly

29 At the end of this session phase 1 student must be able to enumer Ate causes of recovery from f Atigue correctly

30 At the end of this session phase 1 student must be able to discuss physiological significance of f Atigue

31 At the end of this session phase 1 student must be able to classify nerve fibers correctly

32 At the end of this session phase 1 student must be able to enumer Ate factors effecting conduction velocity correctly

33 At the end of this session phase 1 student must be able to describe graph of conduction velocity of sci Atic nerve correctly

34 At the end of this session phase 1 student must be able to give relevance of determin Ation of conduction velocity in nerves correctly

35 Amphibian cardiac experiments

36 At the end of this session phase 1 student must be able to describe an Atomy of frogs heart correctly

37 At the end of this session phase 1 student must be able to describe normal cardiogram correctly

38 At the end of this session phase 1 student must be able to describe effect of temper Ature on normal cardiogram correctly

39 At the end of this session phase 1 student must be able to define extrasystole correctly

40 At the end of this session phase 1 student must be able to enumer Ate factors causing extrasystole in humans correctly

41 At the end of this session phase 1 student must be able to demonstr Ate extrasystole in cardiac muscle

42 At the end of this session phase 1 student must be able to define compens Atory pause

43 At the end of this session phase 1 student must be able to describe importance of compens Atory pause correctly

44 At the end of this session phase 1 student must be able to describe graph of compens Atory pause correctly

45 At the end of this session phase 1 student must be able to define absolute refractory period correctly

46 At the end of this session phase 1 student must be able to define rel Ative refractory period correctly

47 At the end of this session phase 1 student must be able to describe graph of refractory period correctly

48 At the end of this session phase 1 student must be able to explain why cardiac muscle cannot be tetanized

49 At the end of this session phase 1 student must be able to name two sites of stannous lig Atures correctly

50 At the end of this session phase 1 student must be able to explain effect of 1st stannous lig Atures correctly

51 At the end of this session phase 1 student must be able to explain effect of 2nd stannous lig Atures correctly

52 At the end of this session phase 1 student must be able to define all or none law correctly

53 At the end of this session phase 1 student must be able to explain graph of all or none law correctly

54 At the end of this session phase 1 student must be able to discuss causes of staircase phenomenon correctly

55 At the end of this session phase 1 student must be able to discuss graph of summ Ation of subliminal stimuli correctly

56 At the end of this session phase 1 student must be able to define white crescentic line correctly

57 At the end of this session phase 1 student must be able to define chronotropic effect correctly

58 At the end of this session phase 1 student must be able to define ionotropic effect correctly

59 At the end of this session phase 1 student must be able to define dromotropic effect correctly

60 At the end of this session phase 1 student must be able to define bathmotropic effect correctly

61 At the end of this session phase 1 student must be able to explain phenomenon of vagal escape correctly

62 At the end of this session phase 1 student must be able to discuss effect of stimultion of vago-sympathetic trunk correctly

63 At the end of this session phase 1 student must be able to discuss effect of stimul Ation of white cresentic line correctly

64 At the end of this session phase 1 student must be able to enumer Ate type of receptors present in frogs heart correctly

65 At the end of this session phase 1 student must be able to explain effect of local applic Ation of Atropine on frogs heart correctly

66 At the end of this session phase 1 student must be able to name the blockers of cholinergic receptors correctly

PY4.1 **Describe the structure & functions of digestive system**

1 At the end of this session phase 1 student must be able to Name the layers of wall of GI tract accurately

2 At the end of this session phase 1 student must be able to list the function of GI tract accurately

3 At the end of this session phase 1 student must be able to compare sympathetic & parasympathetic stimulation on GI function

4 At the end of this session phase 1 student must be able to Explain enteric nervous system accurately

PY4.2 Describe the composition ,mechanism of secretion ,functions and regulation of saliva,gastric,pancreatic ,intestinal juices and bile secretion

1 At the end of this session phase 1 student must be able to list the phases of GI secretion accurately
2 At the end of this session phase 1 student must be able to list the general function of GI secretion accurately
3 At the end of this session phase 1 student must be able to name the salivary glands accurately
4 At the end of this session phase 1 student must be able to Discus the composition of saliva accurately
5 At the end of this session phase 1 student must be able to explain the function of saliva accurately
6 At the end of this session phase 1 student must be able to explain the dysfunction occurs due to abnormalaties of saliva secretion accurately
7 At the end of this session phase 1 student must be able to Discus the mechanism of secretion of saliva accurately
8 At the end of this session phase 1 student must be able to Discus the regulation of saliva
9 At the end of this session phase 1 student must be able to list the function of stomach accurately
10 At the end of this session phase 1 student must be able to Discus the mechanism of HCL secretion accurately
11 At the end of this session phase 1 student must be able to explain pathophysiology of peptic ulcer accurately
12 At the end of this session phase 1 student must be able to explain the physiological basis of treatment of peptic ulcer accurately
13 At the end of this session phase 1 student must be able to Discus the composition of gastric juice
14 At the end of this session phase 1 student must be able to Discus the mechanism of secretion of pancreatic juice
15 At the end of this session phase 1 student must be able to list the composition of bile juice accurately

PY 4.3 Describe GIT movements ,regualtions and function.Describe defecation reflex.Explain role of dietary fibres

1 At the end of this session phase 1 student must be able to Discus the physiological abnormality in gallstone formation accurately
2 At the end of this session phase 1 student must be able to Discus the movement of GIT, their regulation & function
3 At the end of this session phase 1 student must be able to list the types of GI motility accurately
4 At the end of this session phase 1 student must be able to list the function of GI accurately
5 At the end of this session phase 1 student must be able to explain the role of various spincter in GI tract accurately
6 At the end of this session phase 1 student must be able to list the function of masticationaccurately
7 At the end of this session phase 1 student must be able to explain the mechanism of deglutation accurately
8 At the end of this session phase 1 student must be able to write a note on defection reflex
9 At the end of this session phase 1 student must be able to write a note on the importance of gastric relaxation reflex accurately
10 At the end of this session phase 1 student must be able to explain machanism of gastric emptying accurately
11 At the end of this session phase 1 student must be able to explain regulation of gastric emptying accurately
12 At the end of this session phase 1 student must be able to discus the role of dietary fiber accurately

PY 4.4 Describe the physiology of digestion and absorption of nutrients.

1 At the end of this session phase 1 student must be able to discus the digestion of carbohydrate accurately
2 At the end of this session phase 1 student must be able to discus the absorption of carbohydrate accurately
3 At the end of this session phase 1 student must be able to discus the digestion of protein accurately
4 At the end of this session phase 1 student must be able to discus the absorption of protein accurately
5 At the end of this session phase 1 student must be able todiscus the digestion of fats accurately

6 At the end of this session phase 1 student must be able to discus the absorption of fats accurately

PY 4.5 Describe the source of GIT hormones, their regualtion & functions

1 At the end of this session phase 1 student must be able to list the GI Hormone accurately

2 At the end of this session phase 1 student must be able to give the source GI Hormone accurately

3 At the end of this session phase 1 student must be able to Explain the role of GI Hormone in the regulation of GI functions

PY 4.6 Desribe the gut brain axis

1 At the end of this session phase 1 student must be able to define Gut Brain axis

2 At the end of this session phase 1 student must be able to Explain Gut Brain axis

PY 4.7 Describe & discuss the structure and functions of liver & gall bladder.

1 At the end of this session phase 1 student must be able to briefly outline functional architecture of hepatic lobule

2 At the end of this session phase 1 student must be able to discuses the function of liver accurately

3 At the end of this session phase 1 student must be able to write the composition of bile accurately

4 At the end of this session phase 1 student must be able to write the composition of bile accurately

5 At the end of this session phase 1 student must be able to write the function of bile accurately

6 At the end of this session phase 1 student must be able to list the difference between hepatic & gallbladder bile accurately

7 At the end of this session phase 1 student must be able to name the bile salts accurately

8 At the end of this session phase 1 student must be able to name the bile acids accurately

9 At the end of this session phase 1 student must be able to explain the function of bile salts accurately

10 At the end of this session phase 1 student must be able to explain the function of bile acids accurately

PY4.8 Describe & discuss gastric function test ,Pancreatic exocrine function test & liver function test

1 At the end of this session phase 1 student must be able to enumerate the components of gastric function test accurately

2 At the end of this session phase 1 student must be able to discuses gastric function test accurately

3 At the end of this session phase 1 student must be able to enumerate the components of pancreatic exocrine function test accurately

4 At the end of this session phase 1 student must be able to discuses pancreatic exocrine test accurately

5 At the end of this session phase 1 student must be able to enumerate the components of liver function test accurately

6 At the end of this session phase 1 student must be able to discuses liver function test accurately

PY 4.9 Discuss the physiology aspects of peptic ulcer ,gastrooesophageal reflux disease ,vomiting, diarrhea,constipation,Adynamic ileus , Hirschsprung's disease

1 At the end of this session phase 1 student must be able to define peptic ulcer accurately

2 At the end of this session phase 1 student must be able to enumerate etiology of peptic ulcer

3 At the end of this session phase 1 student must be able todescribe pathophysiology of peptic ulcer accurately

4 At the end of this session phase 1 student must be able to enumerate causes of gastroesophageal reflux diseases accurately

5 At the end of this session phase 1 student must be able todescribe pathophysiology of gastro oesophageal reflex diseases accurately

6 At the end of this session phase 1 student must be able to define vomiting accurately

7 At the end of this session phase 1 student must be able to describe pathophysiology of vomiting accurately

8 At the end of this session phase 1 student must be able to define diarrhea accurately

9 At the end of this session phase 1 student must be able to describe pathophysiology of diarrhea accurately

10 At the end of this session phase 1 student must be able to define constipation accurately

11 At the end of this session phase 1 student must be able to describe pathophysiology of constipation accurately

12 At the end of this session phase 1 student must be able to discuss adynamic ileus accurately

13 At the end of this session phase 1 student must be able to describe pathophysiology sign of Hirchsprungs' disease accurately
14 At the end of this session phase 1 student must be able to describe pathophysiology symptoms of Hirchsprungs' disease accurately

PY 4.10 **Demonstrate the correct clinical examination of the abdomen in a normal volunteer or simulated environment**

1 At the end of this session phase 1 student must be able to enumerate headings of examination of abdomen correctly
2 At the end of this session phase 1 student must be able to explain standard prerequisites of abdominal examination correctly
3 At the end of this session phase 1 student must be able to demonstrate inspection of abdominal examination precisely
4 At the end of this session phase 1 student must be able to demonstrate palpation of kidneys correctly
5 At the end of this session phase 1 student must be able to demonstrate palpation of spleen correctly
6 At the end of this session phase 1 student must be able to enumerate causes of splenomegaly correctly
7 At the end of this session phase 1 student must be able to demonstrate palpation of liver correctly
8 At the end of this session phase 1 student must be able to enumerate causes of hepatomegaly correctly
9 At the end of this session phase 1 student must be able to demonstrate percussion on abdomen correctly
10 At the end of this session phase 1 student must be able to demonstrate percussion of boundaries of abdominal organs correctly
11 At the end of this session phase 1 student must be able to explain clinical significance of percussion of abdomen correctly
12 At the end of this session phase 1 student must be able to demonstrate Auscultation of abdomen correctly

PY 5.1 **Describe the functional anatomy of heart including chambers, sounds; and Pacemaker tissue and conducting system.**

1 At the end of this session phase 1 student must be able to wrie a note on functional anatomy of heart accurately
2 At the end of this session phase 1 student must be able to list the chambers of heart & valvular arrangment on accurately
3 At the end of this session phase 1 student must be able classify blood vessel on functional bases accurately
4 At the end of this session phase 1 student must be able to write a note on heart sound accurately
5 At the end of this session phase 1 student must be able to draw a well lebelled diagram of conducting system of heart accurately
6 At the end of this session phase 1 student must be able to list the pacemaker tissue accurately
7 At the end of this session phase 1 student must be able to explain Pacemaker potential accurately
8 At the end of this session phase 1 student must be able to explain role of cardiac muscle as functional syncytium accurately
9 At the end of this session phase 1 student must be able to discuss the myocardial contractile system accurately
10 At the end of this session phase 1 student must be able to discuss the arrengment of sarcotubular system accurately
11 At the end of this session phase 1 student must be able to explain the length- tension relationship of cardiac muscle accurately
12 At the end of this session phase 1 student must be able to define f rank- starling law of heart accurately
13 At the end of this session phase 1 student must be able to mechanism of f rank- starling law of heart accurately
14 At the end of this session phase 1 student must be able to Draw the well labelled diagram of cardiac muscle accurately

PY5.2 **Describe the properties of cardiac muscle including its morphology, electrical, mechanical and metabolic functions**

1 At the end of this session phase 1 student must be able to Discuses the morphological properties of cardiac muscle accurately
2 At the end of this session phase 1 student must be able to Discuses the electrical properties of cardiac muscle accurately
3 At the end of this session phase 1 student must be able to Discuses the mechanical properties of cardiac muscle accurately
4 At the end of this session phase 1 student must be able toexplain why cardiac muscle cannot titanized accurately
5 At the end of this session phase 1 student must be able to define all -or -none law accurately
6 At the end of this session phase 1 student must be able to discuss compansatory pause accurately
7 At the end of this session phase 1 student must be able to discuss staircase phenomenon accurately
8 At the end of this session phase 1 student must be able discusse length-tension relationship accurately
9 At the end of this session phase 1 student must be able discusse frequency-force relationship accurately
10 At the end of this session phase 1 student must be able discusse load-velocity accurately

11 At the end of this session phase 1 student must be able to write metabolic function of heart accurately

PY5.3 **Discuss the events occurring during the cardiac cycle**

1 At the end of this session phase 1 student must be able to define cardiac cycle accurately
2 At the end of this session phase 1 student must be able to list the Phases of cardiac cycle accurately
3 At the end of this session phase 1 student must be able to Draw the changes in left atrial , ventricular Pressure, aortic pressure, left ventricle accurately
4 At the end of this session phase 1 student must be able to Draw the changes in aortic blood flow accurately
5 At the end of this session phase 1 student must be able to Draw the changes in JVP heart sound accurately
6 At the end of this session phase 1 student must be able to list the waves of JVP accurately
7 At the end of this session phase 1 student must be able to explain the causes of waves of JVP accurately
8 At the end of this session phase 1 student must be able to Draw the changes in ECG of cardiac cycle on the same time scale accurately
9 At the end of this session phase 1 student must be able to describe the various electro mechanical events of cardiac cycle accurately
10 At the end of this session phase 1 student must be able to discuss the pressure volume relationshipof left ventrical accurately

PY5.4 **Describe generation, conduction of cardiac impulse**

1 At the end of this session phase 1 student must be able to explain the various ionic currents in cardiac tissues accurately
2 At the end of this session phase 1 student must be able to draw the labelled diagram of fast & slow response of AP accurately
3 At the end of this session phase 1 student must be able to explain the ionic bases fast & slow response of AP accurately
4 At the end of this session phase 1 student must be able to explain the effect of sympathetic & vagal stimulation of pacemaker potenctial accurately
5 At the end of this session phase 1 student must be able to explain the propagation of electrical impulse in conducting system of heart accurately

PY 5.5 **Describe the physiology of electrocardiogram (E.C.G), its applications and the cardiac axis**

1 At the end of this session phase 1 student must be able to define ECG accurately
2 At the end of this session phase 1 student must be able to explain use of ECG accurately
3 At the end of this session phase 1 student must be able to classify ECG leads accurately
4 At the end of this session phase 1 student must be able to list the different waves of ECG accurately
6 At the end of this session phase 1 student must be able to discuss the waves of ECG accurately
7 At the end of this session phase 1 student must be able to draw a wall level diagram oflead II ECG accurately
8 At the end of this session phase 1 student must be able to identify the ECG waves accurately
9 At the end of this session phase 1 student must be able to identify the ECG waves accurately
10 At the end of this session phase 1 student must be able to identify the ECG segments accurately
11 At the end of this session phase 1 student must be able to identify the ECG intervals accurately
12 At the end of this session phase 1 student must be able to determined mean QRS axis accurately
13 At the end of this session phase 1 student must be able to list the common causes of right & left axis deviation accurately
14 At the end of this session phase 1 student must be able to describe the physiological basis of geneses of ECG wave accurately

PY 5.6 **Describe abnormal ECG, arrythmias, heart block and myocardial Infarction**

1 At the end of this session phase 1 student must be able to write the physiological basis of arrthythmia accurately
2 At the end of this session phase 1 student must be able to write the physiological basis of heart block accurately
3 At the end of this session phase 1 student must be able to write the physiological basis of Myocardial Infection accurately
4 At the end of this session phase 1 student must be able to write the physiological basis of electrolyte imbalance accurately

PY 5.7 **Describe and discuss haemodynamics of circulatory system**

1 At the end of this session phase 1 student must be able to Explain the application of law of laplace in principal health accurately

2 At the end of this session phase 1 student must be able to Explain the application of law of laplace in disease accurately
3 At the end of this session phase 1 student must be able to write the differences b/w laminar flow & turbulent flow accurately.
4 At the end of this session phase 1 student must be able to disease the factor concerning peripheral resistance accurately

PY5.8 **Describe and discuss local and systemic cardiovascular regulatory mechanisms**

1 At the end of this session phase 1 student must be able to Explain the mechanism continuing cardiovascular functions accurately
2 At the end of this session phase 1 student must be able to Explain regulation of peripheral blood slow accurately.

PY5.9 **Describe the factors affecting heart rate, regulation of cardiac output & blood pressure**

1 At the end of this session phase 1 student must be able to Define HR accurately
2 At the end of this session phase 1 student must be able to give the normal value of HR accurately
3 At the end of this session phase 1 student must be able to explain physilogical variation of HR accurately
4 At the end of this session phase 1 student must be able to explain the mechanism of regulation of HR accurately
5 At the end of this session phase 1 student must be able to list the causes of bradycardia accurately
6 At the end of this session phase 1 student must be able to list the causes of tachycardia accurately
7 At the end of this session phase 1 student must be able to Discuss the factor affecting HR accurately
8 At the end of this session phase 1 student must be able to define C.O accurately
9 At the end of this session phase 1 student must be able to define stroke volume accurately
10 At the end of this session phase 1 student must be able to define end diastolic volume accurately
11 At the end of this session phase 1 student must be able to define end systolic volume accurately
12 At the end of this session phase 1 student must be able to discuss the variation in Cardiac output in different physiological conditions accurately
13 At the end of this session phase 1 student must be able to list the methods of measurment of C.O accurately
14 At the end of this session phase 1 student must be able to Explain the regulation of C.O accurately
15 At the end of this session phase 1 student must be able to Explain the factors affacting C.O accurately
16 At the end of this session phase 1 student must be able to Explain the mechanism regulating B.Paccurately

PY5.10 **Describe & discuss regional circulation including microcirculation, lymphatic circulation, coronary, cerebral, capillary, skin, foetal, pulmonary and splanchnic circulation**

1 At the end of this session phase 1 student must be able to Discuss the factor cautioning microcirculation & explain their Mechanism of regulation accurately
2 At the end of this session phase 1 student must be able to Discuss the factor cautioning accurately
3 At the end of this session phase 1 student must be able to Discuss the factor cautioning lymphatic accurately
4 At the end of this session phase 1 student must be able to Discuss the factor cautioning coronary accurately
5 At the end of this session phase 1 student must be able to Discuss the factor cautioning cereal accurately
6 At the end of this session phase 1 student must be able to Discuss the factor cautioning skinaccurately
7 At the end of this session phase 1 student must be able to Discuss the factor cautioning capillaryaccurately
8 At the end of this session phase 1 student must be able to Discuss the factor cautioning foctal accurately
9 At the end of this session phase 1 student must be able to Discuss the factor cautioning Pulenooazy accurately

PY 5.11 **Describe the patho-physiology of shock, syncope and heart failure**

1 At the end of this session phase 1 student must be able to Define shock accurately
2 At the end of this session phase 1 student must be able to classify shock accurately
3 At the end of this session phase 1 student must be able to discuss each type of shock & its example accurately
4 At the end of this session phase 1 student must be able to explain the mechanism of refracting shock accurately
5 At the end of this session phase 1 student must be able to describe the compensatory Mechanism of hypovolemic shock accurately

6 At the end of this session phase 1 student must be able to Explain the Physiology bases of treatment of shock accurately
7 At the end of this session phase 1 student must be able to Explain the PathoPhysiology of shock accurately
8 At the end of this session phase 1 student must be able to Explain the Pathology of syncope accurately.
9 At the end of this session phase 1 student must be able to define heart failure accurately
10 At the end of this session phase 1 student must be able to classify heart failure accurately
11 At the end of this session phase 1 student must be able to explain the Pathophysiology of heart failure accurately
12 At the end of this session phase 1 student must be able to list the features of heart failure accurately
13 At the end of this session phase 1 student must be able to explain the physiological basis of treatmet of heart failure accurately

PY 5.12 **Record blood pressure & pulse at rest and in different grades of exercise and postures in a volunteer or simulated environment**

1 At the end of this session phase 1 student must be able to define blood pressure correctly
2 At the end of this session phase 1 student must be able to name components of blood pressure correctly
3 At the end of this session phase 1 student must be able to define pulse pressure correctly
4 At the end of this session phase 1 student must be able to define mean pressure correctly
5 At the end of this session phase 1 student must be able to give normal values of blood pressure
6 At the end of this session phase 1 student must be able to describe types of hypertension accur Ately to l Atest
7 At the end of this session phase 1 student must be able to classify hypertension according JNC guidelines
8 At the end of this session phase 1 student must be able to enumer Ate methods of measurements of blood pressure correctly
9 At the end of this session phase 1 student must be able to describe parts and functioning of stethoscope correctly
10 At the end of this session phase 1 student must be able to describe parts and functioning of sphygmomanometer
11 At the end of this session phase 1 student must be able to describe direct method of measurement of blood pressure correctly
12 At the end of this session phase 1 student must be able to demonstr Ate palp Atory method of measurement of blood pressure correctly
13 At the end of this session phase 1 student must be able to explain advantages and disadvantages of palp Atory method correctly
14 At the end of this session phase 1 student must be able to describe phases of korotkoff's sounds correctly
15 At the end of this session phase 1 student must be able to demonstr Ate auscult Atory method of measurement of blood pressure correctly
16 At the end of this session phase 1 student must be able to explain advantages and disadvantages of auscult Atory method correctly
17 At the end of this session phase 1 student must be able to classify exercises correctly
18 At the end of this session phase 1 student must be able to give grading of exercise according to WHO.
19 At the end of this session phase 1 student must be able to perform mild exercise and show changes in blood pressure correctly
20 At the end of this session phase 1 student must be able to perform mild exercise and explain causes of changes in blood pressure correctly
21 At the end of this session phase 1 student must be able to perform moder Ate exercise and show changes in blood pressure correctly
22 At the end of this session phase 1 student must be able to perform moder Ate exercise and explain causes of changes in blood pressure correctly
23 At the end of this session phase 1 student must be able to perform severe exercise and show changes in blood pressure correctly
24 At the end of this session phase 1 student must be able to perform severe exercise and explain causes of changes in blood pressure correctly
25 t the end of this session phase 1 student must be able to define pulse correctly
26 At the end of this session phase 1 student must be able to give normal pulse r Ate correctly
27 At the end of this session phase 1 student must be able to define tachypnea correctly
28 At the end of this session phase 1 student must be able to give causes of tachypnoea correctly
29 At the end of this session phase 1 student must be able to define bradypnoea correctly
30 At the end of this session phase 1 student must be able to give causes of bradypnoea correctly
31 At the end of this session phase 1 student must be able to perform examin Ation of pulse under different headings correctly
32 At the end of this session phase 1 student must be able to describe rhythm of pulse correctly
33 At the end of this session phase 1 student must be able to describe volume of pulse correctly

34 At the end of this session phase 1 student must be able to describe character of pulse correctly
35 At the end of this session phase 1 student must be able to describe character of pulse correctly
36 At the end of this session phase 1 student must be able to describe character of pulse correctly
37 At the end of this session phase 1 student must be able to describe all peripheral pulses correctly
38 At the end of this session phase 1 student must be able to perform mild exercise and show changes in pulse r Ate correctly
39 At the end of this session phase 1 student must be able to perform mild exercise and explain causes of changes in pulse r Ate correctly
40 At the end of this session phase 1 student must be able to perform moder Ate exercise and show changes in pulse r Ate correctly
41 At the end of this session phase 1 student must be able to perform moder Ate exercise and explain causes of changes in pulse r Ate correctly
42 At the end of this session phase 1 student must be able to perform severe exercise and show changes in pulse r Ate correctly
43 At the end of this session phase 1 student must be able to perform severe exercise and explain causes of changes in pulse r Ate correctly
44 At the end of this session phase 1 student must be able to perform measurement of blood pressure in change of posture from lying to standing correctly
45 At the end of this session phase 1 student must be able to discuss the changes in blood pressure on changing of posture from lying to standing correctly
46 At the end of this session phase 1 student must be able to perform measurement of pulse r Ate in different postures correctly

PY5.13 Record and interpret normal ecg in a volunter or simulated environment

1 At the end of this session phase 1 student must be able to define electrocardiogram correctly
2 At the end of this session phase 1 student must be able to describe electrocardiograph correctly
3 At the end of this session phase 1 student must be able to describe principle of recording ECG correctly
4 At the end of this session phase 1 student must be able to describe all leads of ECG correctly
5 At the end of this session phase 1 student must be able to describe uses of ECG correctly
6 At the end of this session phase 1 student must be able to define all components of ECG Correctly
7 At the end of this session phase 1 student must be able to describe all components of ECG Correctly
8 At the end of this session phase 1 student must be able to record ECG in a volunteer correctly
9 At the end of this session phase 1 student must be able to interpret the Heart r Ate in ECG Correctly
10 At the end of this session phase 1 student must be able to interpret dur Ation and magnitude of all components of ECG correctly
11 At the end of this session phase 1 student must be able to interpret axis of normal ECG correctly

PY 5.14 observe cardiovascular autonomic tests in a volunteer orsimulated environment

1 At the end of this session phase 1 student must be able to define autonomic nervous system correctly
2 At the end of this session phase 1 student must be able to give functional differences between two division of ANS correctly
3 At the end of this session phase 1 student must be able to enumerate tests of sympathetic nervous system correctly
4 At the end of this session phase 1 student must be able to enumerate tests of parasympathetic nervous system correctly
5 At the end of this session phase 1 student must be able to demonstrate change of heart rate in standing to lying correctly
6 At the end of this session phase 1 student must be able to explain cause of change of heart rate in standing to lying correctly
7 At the end of this session phase 1 student must be able to demonstrate change of heart rate on lying to standing correctly
8 At the end of this session phase 1 student must be able to explain cause of change of heart rate in lying to standing correctly
9 At the end of this session phase 1 student must be able to define valsalva manoeuvre correctly
10 At the end of this session phase 1 student must be able to demonstrate effect of valsalva manoeuvre on blood pressure correctly
11 At the end of this session phase 1 student must be able to demonstrate effect of valsalva manoeuvre on heart rate correctly
12 At the end of this session phase 1 student must be able to explain the cause of change in blood pressure in different phases of valsalva manoeuvre correctly

13 At the end of this session phase 1 student must be able to explain the cause of change in heart rate in different phases of valsalva manoeuvre correctly

14 At the end of this session phase 1 student must be able to define sinus arrhythmia correctly

15 At the end of this session phase 1 student must be able to demonstrate heart rate variation with respiration correctly

16 At the end of this session phase 1 student must be able to explain causes of heart rate variation with respiration correctly

17 At the end of this session phase 1 student must be able to define isometric exercise correctly

18 At the end of this session phase 1 student must be able to demonstrate blood pressure response to isometric exercise by using hand grip dynamometer correctly

19 At the end of this session phase 1 student must be able to demonstrate causes of change in blood pressure in respones to isometric exercise by using hand grip dynamometer correctly

20 At the end of this session phase 1 student must be able to demonstrate change in blood pressure in cold pressor test correctly

21 At the end of this session phase 1 student must be able to explain causes of change in blood pressure in cold pressor test correctly

PY 5.15 Demonstrate the correct clinical examination of the cardiovascular system in a normal volunteer or simulated environment

1 At the end of this session phase 1 student must be able to enumerate headings of cardiovascular system examination correctly

2 At the end of this session phase 1 student must be able to enumerate headinds of examination of precordium correctly

3 At the end of this session phase 1 student must be able to demonstrate inspection of precordium correctly

4 At the end of this session phase 1 student must be able to define apex beat correctly

5 At the end of this session phase 1 student must be able to demonstrate palpation of precordium correctly

6 At the end of this session phase 1 student must be able to demonstrate palpation of apex beat correctly

7 At the end of this session phase 1 student must be able to explain causes of shifting of apex beat correctly

8 8At the end of this session phase 1 student must be able to demonstrate percussion of borders of heart correctly

9 At the end of this session phase 1 student must be able to locate cardiac areas over chest wall correctly

10 At the end of this session phase 1 student must be able to demonstrate method of counting intercostals spaces correctly

11 At the end of this session phase 1 student must be able to give significance of cardiac areas over chest wall correctly

12 At the end of this session phase 1 student must be enumerate heart sounds correctly

13 At the end of this session phase 1 student must be able to differentiate between 1^{st} and 2^{nd} heart sounds correctly

14 At the end of this session phase 1 student must be able to explain why heart sounds are produced due to closure of valves correctly

15 At the end of this session phase 1 student must be able to demonstrate auscultation of 1^{st} and 2^{nd} heart sounds correctly

PY 5.16 Record Arterial pulse tracing using finger plethysmography in a volunteer or simulated environment

1 At the end of this session phase 1 student must be able to define pulse correctly

2 At the end of this session phase 1 student must be able to demonstrate recording of arterial pulse using finger plethysmography correctly

3 At the end of this session phase 1 student must be able to name different waves in pulse tracing correctly

4 At the end of this session phase 1 student must be able to explain causes of formation of each wave in arterial pulse Correctly

5 At the end of this session phase 1 student must be able to describe abnormal character of arterial pulse correctly

PY 6.1 Describe the functional anatomy of respiratory tract

1 At the end of the session phase 1students must be able to enumerate the names of different structures forming Respiratory tract correctly.

2 At the end of the session phase 1 mbbs students should be able to draw microscopic structure of respiratory pessage correctly

3 At the end of the session phase1 sudent must be able to describe functions of respiratory passages correctly

4 At the end of the session phase1 sudent must be able to describe microscopic structure of alveoli correctly.

5 At the end of the session phase1 sudent must be able to describe about function of individual cells correctly.

6 At the end of the session phase1 sudent must be able to define dead space correctly

7 At the end of the session phase1 sudent must be able to give normal values of dead space air accurately.

8 At the end of the session phase1 sudent should be able to describe one method for finding out dead space, Correctly.

PY 6.2 **Describe the mechanics of normal respiration, pressure changes during ventilation, lung volume and capacities, alveolar surface tension, compliance, airway resistance, ventilation, V/P ratio, diffusion capacity of lungs**

1 At the end of the session phase1 sudent must be able to define internal and external respiration correctly.

2 At the end of the session phase1 sudent must be able to enumerate the main muscles of inspiration & expiration during quiet breathing correctly and should be able to comment on role of accessory muscles of inspiration & expiration correctly.

3 At the end of the session phase1 sudent must be able to define intrapulmonary & intrapleural pressures correctly.

4 At the end of the session phase1 sudent must be able to tell about intrapulmonary & intrapleural pressure changes during respiration accurately with graph.

5 At the end of the session phase1 sudent must be able to describe the role of inspiratory & expiratory muscles during quiet breathing correctly.

6 At the end of the session phase1 sudent must be able to enumerate & define various static & dynamic lung volumes & capacities correctly.

7 At the end of the session phase1 sudent must be able to tell values of various static & dynamic lung volumes & capacities accurately.

8 At the end of the session phase1 sudent must be able to know the procedure of recording vol. & capacities correctly.

9 At the end of the session phase1 sudent must be able to know about interpretation of values in pathological condition correctly.

10 At the end of the session phase1 sudent must be able to define alveolar surface tension correctly.

11 At the end of the session phase1 sudent must know about the surfactant, its chemical structure, synthesis & functions correctly

12 At the end of the session phase1 sudent must be able to explain Respiratory distress syndrome, correctly.

13 At the end of the session phase1 sudent must be able to define lung compliance correctly.

14 At the end of the session phase1 sudent must be able to describe compliance of lungs & chest wall together & separately, during respiratorion correctly with graphs.

15 At the end of the session phase1 sudent must be able to know the conditions in which compliance is abnormal correctly.

16 At the end of the session phase1 sudent must be able to draw diagram of respiratory membrane correctly.

17 At the end of the session phase1 sudent must be able to describe respiratory membrane correctly.

18 At the end of the session phase1 sudent must be able to define diffusion capacity of lungs correctly.

19 At the end of the session phase1 sudent must be able to discuss the factors & conditions affecting diffusion of gases across respiration membrane correctly.

20 At the end of the session phase1 sudent must be able to define ventilation perfusion ratio correctly.

21 At the end of the session phase1 sudent must know about V/P ratio in 3 zones of lungs and their relation to gaseous exchange correctly.

22 At the end of the session phase1 sudent must be able to define airways resistance correctly.

23 At the end of the session phase1 sudent should be able to comment on effect of variation in resistance on ventilation correctly.

PY 6.3 **Describe and discuss the transport of respiratory gases: Oxygen and Carbon dioxide**

1 At the end of the session phase1 sudent must be able to define transport of gases in body correctly.

2 At the end of the session phase1 sudent must be able to tell why O2 is required by body correctly.

3 At the end of the session phase1 sudent must be able to know the concept of partial pressure of gases and pressure gradient for diffusion correctly.

4 At the end of the session phase1 sudent must be able to know the oxygen content/pO2 in atmospheric air, alveolar air, pulmonary capillary blood, arterial and venous blood accurately.

5 At the end of the session phase1 sudent must be able to define what is oxygen transport correctly.

6 At the end of the session phase1 sudent must be able to describe the forms in which O2 is carried by blood correctly.

7 At the end of the session phase1 sudent must be able to tell about the process of oxygenation of haemoglobin correctly.

8 At the end of the session phase1 sudent must be able to about oxygen carrying capacity and oxygen content of blood CORRECTLY.

9 At the end of the session phase1 sudent must be able to tell about O2 transport from atmosphere to lungs correctly.

10 At the end of the session phase1 sudent should be able to describe the process of O2 transport across respiratory membrane and factors affecting it correctly with diagram.

11 x : At the end of the session phase1 sudent should be able to describe the O2 transport at tissue level correctly.

12 xi: At the end of the session phase1 sudent should be able to draw oxygen dissociation curve and discuss the factors shifting it to right or left correctly.

13 At the end of the session phase1 sudent must be able to define CO2 transport correctly.

14 At the end of the session phase1 sudent must state the values of PCO2 in tissue, arterial Blood, venous blood, alveolar air and atmosphere accurately.

15 At the end of the session phase1 sudent must know the forms in which CO2 is transported by blood from tissues to lungs.

16 At the end of the session phase1 sudent must be able to discuss the phenomenon of shift, Bohr's effect Haldane's effect.

17 At the end of the session phase1 sudent should be able to discuss about oxygen carrying capacity of foetal Hb and myoglobin.

18 At the end of the session phase1 sudent should be able to discuses CO2 dissociation curve & factor shifting it correctly.

19 At the end of the session phase1 sudent should be able to discuss changes occulting in pulmonary ventilation & variation in alveolar pCo2 correctly.

PY6.4 **Describe and discuss the physiology of high altitude and deep sea diving**

1 At the end of the session phase1 sudent must be able to define high altitude physiology.

2 At the end of the session phase1 sudent must be able to know about changes in atmospheric Pressure with change in height from sea level correctly.

3 At the end of the session phase1 sudent must be able to know about deferent zones of altitude affecting life correctly.

4 **At the end of the session phase1 sudent must know hazards of rapid ascent to high altitude correctly.**

5 At the end of the sessionphase1 sudentmust know effects of slow ascent on body.

6 At the end of the sessionphase1 sudentmust be able to define acclimatization correctly.

7 At the end of the sessionphase1 sudentmust be able to enumerate & discuss the adaptive changes taking place at high altitude correctly.

8 At the end of the session phase1 sudent must be able to tell about high altitude pulm. oedema mountain sickness & measures to prevent it correctly.

9 At the end of the session phase1 sudent must be able to tell about effects of increased atmospheric pressure on body correctly.

10 At the end of the session phase1 sudent must be able to describe caisson's disease dysbarism of the bends with characteristic features, correctly.

11 At the end of the session phase1 sudent must be able to state characteristic features of N2 narcosis Correctly.

12 At the end of the sessionphase1 sudent must be able to describe preventive measures & treatment for caisson's disease correctly.

13 At the end of the session phase1 sudent must be able to discuss clinical significance of effects of deep pressure correctly.

14 At the end of the session phase1 sudent must define the function of SCUBA diving correctly.

15 At the end of the session phase1 sudent must be able to discuss the function of SCUBA apparatus correctly.

PY6.5 **Describe and discuss the principles of artificial respiration, oxygen theraPY, acclimatization and decompression sickness**

1 At the end of the session phase1 sudent must be able to define artificial respiration correctly.

2 At the end of the session phase1 sudent must be able to discuss principles of artificial respiration correctly.

3 At the end of the session phase1 sudent must be able to discuss indications for artificial respiration correctly.

4 At the end of the session phase1 sudent must be able to enumerate different methods for artificial respiration correctly.

5 At the end of the session phase1 sudent must be able to discuss the ad vantages & disadvantages of different methods correctly.

6 At the end of the session phase1 sudent must be able to describe the role & importance of Oxygen theraPY in different abnormal conditions correctly.

PY6.6 **Describe and discuss the pathophysiology of dyspnoea, hypoxia, cyanosis asphyxia; drowning, periodic breathing**

1. At the end of the session phase1 sudent must be able to define dyspnoea correctly.
2. At the end of the session phase1 sudentmust be able to calculate Dyspnoic index accurately.
3. At the end of the session phase1 sudent must be able to dicuss factors affecting & causes for Dyspnoea correctly.
4. At the end of the session phase1 sudentmust be able to define Hypoxia correctly.
5. At the end of the session phase1 sudentmust be able to enumerate 4 types of hypoxia correctly.
6. At the end of the session phase1 sudentmust be able to discuss characteristics of different types of hypoxia correctly .
7. At the end of the session phase1 sudentmust be able to discuss causes for different types of hypoxia correctly .
8. At the end of the session phase1 sudentmust be able to define cyanosis correctly.
9. At the end of the session phase1 sudentmust be able to enumerate causes for cyanosis correctly.
10. At the end of the session phase1 sudentmust be able to define Asphyxia correctly.
11. At the end of the session phase1 sudent must be able to state causes & effects of asphyxia correctly.
12. At the end of the session phase1 sudentmust be able to describe the effects of drowning correctly.
13. At the end of the session phase1 sudentmust be able to discuss measures taken to save the patient correctly.
14. At the end of the session phase1 sudentmust be able to define periodic breathing correctly.
15. At the end of the session phase1 sudentmust be able to name 2 types of periodic breathing correctly.
16. At the end of the session phase1 sudentmust be able to state about characteristic & causes of each type of periodic breathing correctly.

PY 6.7 **Describe and discuss lung function tests & their clinical significance**

1. At the end of the session phase1 sudentmust be able to enumerate different LFTs accurately.
2. At the end of the session phase1 sudentmust be able to state the clinical importance of the LUNG FUNCTION TESTS correctly.
3. At the end of the session phase1 sudentmust be able to describe procedure for important LFTs. & should be able to interprete the result correctly.
4. At the end of the session phase1 sudentmust be able to describe & discuss the tests for detecting obstructive & destructive disorders of RS correctly.

PY.6.8 **Demonstrate the correct technique to perform & interpret Spirometry**

1. At the end of the session phase1 sudentmust be able to state the principle of spirometry correctly.
2. At the end of the session phase1 sudentmust be able to demonstrate the recording of lung volumes & capacities by Open circuit spirometry accurately.
3. At the end of the session phase1 sudentmust be able to interprete the result obtained by spirometry correctly.

PY.6.9 **Demonstrate the correct clinical examination of the respiratory system in a normal volunteer or simulated environment**

1. At the end of the session phase1 sudentmust be able to name important signs & symptoms of most common respiratory disorders correctly.
2. At the end of the session phase1 sudentmust be able to state the importance of clinical exam. Of RS. Correctly.
3. At the end of the session phase1 sudentmust be able to state the names of clinical procedures under which the clinical examination of respiratory system is performed, correctly.
4. phase1 sudentmust be able to demontrate the various points for which inspection on of R.S. is done normal subject or simulated environment, correctly.
5. At the end of the session phase1 sudentmust be able to differentiate between abdominal & thoracic breathing correctly.
6. At the end of the session phase1 sudentmust be able to perform palpation for RS. On normal subject or simulated environment Correctly.
7. At the end of the session phase1 sudentmust be able to demonstrate vocal fremitus on normal subject or simulated environment correctly.
8. At the end of the session phase1 sudentmust be able to perform percussion for RS.on normal subject or simulated environment Correctly.
9. At the end of the session phase1 sudentmust be able to perform auscultatory examination for RS. On normal subject or simulated environment correctly.

10 At the end of the sessionphase1 sudentmust be able to demontrate vocal fremitus on normal subject or simulated environment correctly.
11 At the end of the session phase1 sudentmust be able to differentiate between bronchial & vescicular breathing correctly.

12 At the end of the session phase1 sudentmust be able to discuss & correlate the findings on inspection percussion, palpation & auscultation correctly.

PY 6.10 **Demonstrate the correct technique to perform measurement of peak expiratory flow rate in a normal volunteer or simulated environment**

1 At the end of the session phase 1 student student must be able to define PEFR correctly.
2 At the end of the session phase1 student must be able to give normal values of PEFR correctly.
3 At the end of the session phase1 student must be able to explain PEFR correctly.
4 At the end of the session phase 1 must be able to record PEFR by using peak flow meter correctly.

PY7.1 **Describe structure and function of kidney**

1 At the end of this session phase 1 student must be able to enumerate the parts of kidney accurately.
2 At the end of this session phase 1 student must be able to List the function of kidney accurately
3 At the end of this session phase 1 student must be able to Enumerate the parts of nephrons accurately
4 At the end of this session phase 1 student must be able to differentiate between cortical & Juxta Glomular nephrons accurately
5 At the end of this session phase 1 student must be able to discuss the functions of Kidney accurately

PY7.2 **Describe the structure & function of JG apparatus & role of angiotensin system.**

1 At the end of this session phase 1 student must be able to define Juxta Glomerular apparatus correctly
2 At the end of this session phase 1 student must be able to enumerate the parts of Juxta Glomerular apparatus correctly
3 At the end of this session phase 1 student must be able to describe the structure of JGA accurately.
4 At the end of this session phase 1 student must be able to describe the function of JGA accurately
5 At the end of this session phase 1 student must be able to explain the function of Renin Angiotensin system accurately

PY 7.3 2 **Describe the mechanism of urine formation involving process of filtration, tubular reabsorption & secretion :concentration& dilution mechanism.**

3 At the end of this session phase 1 student must be able to Define GFR accurately
4 At the end of this session phase 1 student must be able to give the normal value of GFR accurately
5 At the end of this session phase 1 student must be able to enumerate the determinants of GFR accurately.
At the end of this session phase 1 student must be able to enumerate the factors affecting GFR
1 At the end of this session phase 1 student must be able to explain the mechanisms of glomular filtration accurately.
2 At the At the end of this session phase 1 student must be able to explain the tubulo glomerulo feedback accurately.
3 At the At the end of this session phase 1 student must be able to explain the Glomerulotubular balance accurately.
4 At the end of this session phase 1 student must be able to define Tubular reabsorption accurately.
5 At the end of this session phase 1 student must be able to define Tubular secretion accurately.
6 At the end of this session phase 1 student must be able to define Transport maximum of glucose (TMG) accurately.
7 At the end of this session phase 1 student must be able to give the value of transport maximum of glucose (TMG) accurately.
8 At the end of this session phase 1 student must be able to define Splay accurately
9 At the end of this session phase 1 student must be able to explain Splay accurately
10 At the end of this session phase 1 student should be able to describe the reabsorption of Na+ in kidney tubules accurately
11 At the end of this session phase 1 student must be able to describe the reabsorption of glucose in kidney tubules accurately
12 At the end of this session phase 1 student must be able to describe the reabsorption of water in kidney tubules accurately.
13 At the end of this session phase 1 student must be able to Define countercurennt multiplier accurately.
14 At the end of this session phase 1 student must be able to Define countercurrent exchanger accurately.
15 At the end of this session phase 1 student must be able to explain the countercurrent multiplier mechanism accurately.
16 At the end of this session phase 1 student must be able to explain the countercurrent exchanger mechanism accurately.

17 At the end of this session phase 1 student must be able to define the urea recycling accurately.
18 At the end of this session phase 1 student must be able to define obligatory volume of urine accurately.
19 At the end of this session phase 1 student must be able to give value obligatory volume of urine accurately
20 At the end of this session phase 1 student must be able to explain mechanism of concentration of urine accurately.
21 At the end of this session phase 1 student must be able to explain mechanism of dilution of urine accurately.

PY 7.4 Describe & discuss the significance & implication of Renal clearance.

1 At the end of this session phase 1 student must be able to Define renal clearance accurately
2 At the end of this session phase 1 student must be able to compare inulin clearance test & creatinine clearance test accurately
3 At the end of this session phase 1 student must be able to explain physiological basis of clearance test in kidney diseases accurately

PY 7.5 Describe the renal regulation of fluid and electrolyte & acid base balance

1 At the end of this session phase 1 student must be able to Discuss the renal mechanism of regulation of fluid & electrolytes accurately
2 At the end of this session phase 1 student must be able to List the factors that contribute to acidification of urine accurately
3 At the end of this session phase 1 student must be able to explain the mechanism of acidification of urine accurately
4 At the end of this session phase 1 student must be able to explain how kidney responds in acid base disorders accurately

PY 7.6 Describe the innervations of urinary bladder ,physiology of micturition & its abnormalities

1 At the end of this session phase 1 student must be able to enumerate the parts of bladder.
2 At the end of this session phase 1 student must be able to explain functional anatomy of bladder accurately .
3 At the end of this session phase 1 student must be able to enumerate the nerves that innervates different parts of bladder correctly.
4 4. At the end of this session phase 1 student must be able to explain the innervation of urinary bladder accurately.
5 At the end of this session phase 1 student must be able to Define Micturition accurately
6 At the end of this session phase 1 student must be able to give the normal value of daily urine output accurately.
7 At the end of this session phase 1 student must be able to give the enumerate the components of micturition reflex accurately.
8 At the end of his session phase 1 student must able to Explain the mechanism of micturition reflex accurately
9 At the end of his session phase 1 student must be able to Explain the Role of higher centre in micturition accurately
10 At the end of this session phase 1 student must be able to define automatic bladder accurately.
11 At the end of this session phase 1 student must be able to define autogenic bladder accurately.
12 At the end of this session phase 1 student must be able to compare between autogenic bladder & automatic bladder accurately.

PY 7.7 Desribe artificial kidney,dialysis and renal transplantaion

1 At the end of this session phase 1 student must be able to Define artificial kidney accurately
2 At the end of this session phase 1 student must be able to Define Hemodialysis accurately
3 At the end of this session phase 1 student must be able to Define Peritoneal dialysis accurately
4 At the end of this session phase 1 student must be able to Differentiate between hemodylysis & peritoneal dialysis accurately
5 At the end of this session phase 1 student must be able to Define renal transplantation accurately
6 At the end of this session phase 1 student must be able to Discus renal transplantation accurately

PY 7.8 Describe & discuss Renal Function tests

1 At the end of this session phase 1 student must be able to Classify kidney function test accurately
2 At the end of this session phase 1 student must be able to explain the physiological basis of each kidney function test accurately

PY 7.9 Describe cytometry & discuss the normal cystometrogram.

1 At the end of this session phase 1 student must be able to Define cystometrogram accurately.
2 At the end of this session phase 1 student must be able to Draw the graph of cystometrogram accurately.
3 At the end of this session phase 1 student must be able to explain the graph of cystometrogram accurately.

PY 8.1 Describe the physiology of bone and calcium metabolism.

1 At the end of the session the phase 1 students must be able to enumerate the different types of bone correctly.

2 At the end of the session the phase 1 students must be able to enumerate the different parts of bone correctly.
3 At the end of the session the phase 1 students must be able to enumerate the composition of bone correctly.
4 At the end of the session the phase 1 students must be able to enumerate structure of bone correctly.
5 At the end of the session the phase 1 students must be able to enumerate the organization of different types of cells in bones correctly.
6 At the end of the session the phase 1 students must be able to enumerate the process of bone formation correctly.
7 At the end of the session the phase 1 students must be able to enumerate the process of bone resorption correctly.
8 At the end of the session the phase 1 students must be able to enumerate the process of bone remodelling including the hormones regulating it correctly.
9 At the end of the session the phase 1 students must be able to enumerate the normal values of different forms of plasma calcium in human body correctly.
10 At the end of the session the phase 1 students must be able to enumerate the physiological and biochemical functions of calcium in human body correctly.
11 At the end of the session the phase 1 students must be able to enumerate the distribution of calcium in body correctly.
12 At the end of the session the phase 1 students must be able to enumerate the daily dietary requirement and sources of calcium correctly.
13 At the end of the session the phase 1 students must be able to enumerate the various calcitropic hormones correctly.
14 At the end of the session the phase 1 students must be able to describe the hormonal maintainance of calcium homeostasis in body correctly.
15 At the end of the session the phase 1 students must be able to describe the process of formation of calcitriol correctly.
16 At the end of the session the phase 1 students must be able to describe the mechanism of action of calcitriol correctly.
17 At the end of the session the phase 1 students must be able to describe the various actions of calcitriol correctly.
18 At the end of the session the phase 1 students must be able to describe the synthesis and regulation of secretion of calcitonin correctly.
19 At the end of the session the phase 1 students must be able to describe the actions and physiological role of calcitonin correctly.
20 At the end of the session the phase 1 students must be able to describe the characteristic features of hypercalcemia precisely.
21 At the end of the session the phase 1 students must be able to describe the characteristic features of hypocalcemia precisely.
22 At the end of the session the phase 1 students must be able to describe tetany including its clinical features and management correctly.
23 At the end of the session the phase 1 students must be able to enumerate the different metabolic bone diseases correctly.
24 At the end of the session the phase 1 students must be able to differentiate between rickets and osteomalacia including their pathogenesis, clinical features and management correctly.
25 At the end of the session the phase 1 students must be able to define osteoporosis correctly.
26 At the end of the session the phase 1 students must be able to describe the characteristic features and management of osteoporosis correctly.

PY8.2 **Describe the synthesis, secretion, transport, physiological actions, regulation and effect of altered secretion of pituitary gland, thyroid gland, PTH gland, adrenal gland, pancreas and hypothalamus.**

1 At the end of the session the phase 1 students must be able to enumerate the different parts of pituitary gland with labeled diagram correctly.
2 At the end of the session the phase 1 students must be able to enumerate the blood supply of pituitary gland correctly.
3 At the end of the session the phase 1 students must be able to enumerate the various hormones secreted by the anterior pituitary correctly.
4 At the end of the session the phase 1 students must be able to describe the synthesis and secretion of growth hormone correctly.
5 At the end of the session the phase 1 students must be able to describe the regulation of growth hormone secretion correctly.
6 At the end of the session the phase 1 students must be able to describe the plasma levels, binding and metabolism of growth hormone correctly.
7 At the end of the session the phase 1 students must be able to describe the receptors and mechanism of action of growth hormone correctly.
8 At the end of the session the phase 1 students must be able to describe the physiological actions of growth hormone correctly.
9 At the end of the session the phase 1 students must be able to enumerate the abnormalities of anterior pituitary hormones correctly.
10 At the end of the session the phase 1 students must be able to describe the effects of hyper secretion of growth hormone correctly.
11 At the end of the session the phase 1 students must be able to describe the effects of hypo secretion of growth hormone correctly.
12 At the end of the session the phase 1 students must be able to enumerate the hormones secreted by the posterior pituitary correctly.
13 At the end of the session the phase 1 students must be able to describe the synthesis, secretion and transport of ADH and Oxytocin correctly.
14 At the end of the session the phase 1 students must be able to describe the various actions of ADH correctly.
15 At the end of the session the phase 1 students must be able to describe the physiological actions of Oxytocin correctly.

16 At the end of the session the phase 1 students must be able to describe the regulation of ADH secretion correctly.
17 At the end of the session the phase 1 students must be able to define SIADH correctly.
18 At the end of the session the phase 1 students must be able to describe the characteristic features and treatment of SIADH correctly.
19 At the end of the session the phase 1 students must be able to define Diabetes insipidus (DI) correctly.
20 At the end of the session the phase 1 students must be able to enumerate the various causes of DI correctly.
21 At the end of the session the phase 1 students must be able to describe the characteristic features, diagnostic tests and treatment of DI correctly.
22 At the end of the session the phase 1 students must be able to enumerate different types of cells within thyroid gland correctly.
23 At the end of the session the phase 1 students must be able to enumerate different hormones secreted by thyroid gland correctly.
24 At the end of the session the phase 1 students must be able to enumerate the normal plasma concentration of thyroid hormones correctly.
25 At the end of the session the phase 1 students must be able to describe the steps involved in thyroid hormone synthesis with labelled diagram correctly.
26 At the end of the session the phase 1 students must be able to describe the secretion along with its regulation and transport of thyroid hormones correctly.
27 At the end of the session the phase 1 students must be able to describe the mechanism of action of thyroid hormones correctly.
28 At the end of the session the phase 1 students must be able to describe the functions of thyroid hormone correctly.
29 At the end of the session the phase 1 students must be able to describe the clinical features, diagnosis and treatment of Graves disease correctly.
30 At the end of the session the phase 1 students must be able to describe the causes, clinical features diagnosis and treatment of hypothyroidism correctly.
31 At the end of the session the phase 1 students must be able to define goitre correctly.
32 At the end of the session the phase 1 students must be able to describe endemic goitre including its management correctly.
33 At the end of the session the phase 1 students must be able to enumerate the types of cells of parathyroid gland correctly.
34 At the end of the session the phase 1 students must be able to describe the synthesis, secretion and regulation of PTH correctly.
35 At the end of the session the phase 1 students must be able to describe the mechanism of action and physiological functions of PTH correctly.
36 At the end of the session the phase 1 students must be able to describe the clinical conditions associated with hyper and hypo parathyroidism correctly.
37 At the end of the session the phase 1 students must be able to enumerate the different layers of adrenal cortex correctly.
38 At the end of the session the phase 1 students must be able to enumerate the different hormones secreted by adrenal cortex correctly.
39 At the end of the session the phase 1 students must be able to describe the synthesis of glucocorticoids correctly.
40 At the end of the session the phase 1 students must be able to describe the transport and mechanism of action of glucocorticoids correctly.
41 At the end of the session the phase 1 students must be able to describe the actions and regulation of glucocorticoids secretion correctly.
42 At the end of the session the phase 1 students must be able to enumerate different types of mineralocorticoids correctly.
43 At the end of the session the phase 1 students must be able to describe the synthesis, secretion and transport of aldosterone correctly.
44 At the end of the session the phase 1 students must be able to describe the mechanism of action and regulation of secretion of aldosterone correctly.
45 At the end of the session the phase 1 students must be able to describe the various actions of aldosterone correctly.
46 At the end of the session the phase 1 students must be able to define aldosterone escape correctly.
47 At the end of the session the phase 1 students must be able to enumerate the adrenal sex steroid hormones correctly.
48 At the end of the session the phase 1 students must be able to describe the synthesis and actions of sex steroids correctly.
49 At the end of the session the phase 1 students must be able to enumerate the hormones of adrenal medulla correctly.
50 At the end of the session the phase 1 students must be able to describe the synthesis, secretion and its regulation correctly.
51 At the end of the session the phase 1 students must be able to enumerate the different types of adrenergic receptors correctly.
52 At the end of the session the phase 1 students must be able to describe the various actions of catecholamines correctly.
53 At the end of the session the phase 1 students must be able to describe the integrated response of adrenal hormones to stress correctly.
54 At the end of the session the phase 1 students must be able to define Cushings syndrome correctly.
55 At the end of the session the phase 1 students must be able to enumerate the causes, clinical features and diagnosis of Cushings syndrome correctly.
56 At the end of the session the phase 1 students must be able to define Addisons disease correctly.
57 At the end of the session the phase 1 students must be able to describe the causes, diagnosis and treatment of Adissons disease correctly.
58 At the end of the session the phase 1 students must be able to describe Pheochromocytoma correctly.

59 At the end of the session the phase 1 students must be able to describe the characteristic features of hyperaldosteronism correctly.
60 At the end of the session the phase 1 students must be able to describe adrenogenital syndrome correctly.
61 At the end of the session the phase 1 students must be able to enumerate the different types of cells and hormones secreted by pancreas correctly.
62 At the end of the session the phase 1 students must be able to describe the structure and synthesis of insulin correctly.
63 At the end of the session the phase 1 students must be able to describe the mechanism of insulin secretion including its regulation correctly.
64 At the end of the session the phase 1 students must be able to describe the mechanism of action of insulin correctly.
65 At the end of the session the phase 1 students must be able to describe the actions of insulin correctly.

66 At the end of the session the phase 1 students must be able to describe the synthesis, secretion and mechanism of action including regulation of glucagon secretion correctly.

67 At the end of the session the phase 1 students must be able to describe the actions of glucagon correctly.
68 At the end of the session the phase 1 students must be able to enumerate the normal blood glucose levels correctly.
69 At the end of the session the phase 1 students must be able to describe the hormonal regulation of blood glucose levels correctly.

70 At the end of the session the phase 1 students must be able to describe the structure, synthesis and regulation of somatostatin and pancreatic polypeptide secretion correctly.

71 At the end of the session the phase 1 students must be able to describe the actions of somatostatin and pancreatic polypeptide correctly.
72 At the end of the session the phase 1 students must be able to define Diabetes mellitus (DM) correctly.
73 At the end of the session the phase 1 students must be able to enumerate the types and stages of DM correctly.
74 At the end of the session the phase 1 students must be able to describe the pathophysiology of DM correctly.
75 At the end of the session the phase 1 students must be able to describe the clinical features, complications and diagnosis of DM correctly.
76 At the end of the session the phase 1 students must be able to describe the management of DM correctly.
77 At the end of the session the phase 1 students must be able to define hypoglycemia correctly.
78 At the end of the session the phase 1 students must be able to enumerate the types and causes of hypoglycemia correctly.
79 At the end of the session the phase 1 students must be able to describe the clinical features and management of hypoglycemia correctly.
80 At the end of the session the phase 1 students must be able to enumerate the different subdivisions and nuclei of hypothalamus correctly.
81 At the end of the session the phase 1 students must be able to enumerate the endocrinal functions of hypothalamus correctly.
82 At the end of the session the phase 1 students must be able to describe the hypothalamo-hypophyseal portal system with labelled diagram correctly.

83 At the end of the session the phase 1 students must be able to describe the mechanism of action of various hypothalamic-hypophysiotropic hormones correctly.

PY8.3 Describe the physiology of thymus and pineal gland.

1 At the end of the session the phase 1 students must be able to enumerate the location and functions of thymus gland precisely.
2 At the end of the session the phase 1 students must be able to describe the immunological role of thymus gland correctly.
3 At the end of the session the phase 1 students must be able to describe the effects of removal of thymus gland in neonates and adults correctly.
4 At the end of the session the phase 1 students must be able to enumerate the salient features & functions of pineal gland precisely.
5 At the end of the session the phase 1 students must be able to describe the synthesis, metabolism and regulation of secretion of melatonin correctly.
6 At the end of the session the phase 1 students must be able to describe the role of melatonin in circadian rhythm of body correctly.

PY8.4 Desribe function tests- Thyroid gland,adrenal cortex,adrenal medulla,and Pancreas

1 At the end of the session the phase 1 students must be able to enumerate the various tests done to assess the thyroid gland function correctly.

2 At the end of the session the phase 1 students must be able to describe the different thyroid function tests and mention which is the most widely used test correctly.

3 At the end of the session the phase 1 students must be able to enumerate the various tests done to assess the adrenal gland function correctly.
4 At the end of the session the phase 1 students must be able to describe the different tests done to assess adrenal insufficiency correctly.
5 At the end of the session the phase 1 students must be able to enumerate the various tests to assess the endocrine pancreatic function correctly.
6 At the end of the session the phase 1 students must be able to describe glucose tolerance test precisely.

PY8.5 **Describe the metabolic and endocrine consequences of obesity and metabolic syndrome. Stress response. Outline the psychiatry component pertaining to metabolic syndrome.**

1 At the end of the session the phase 1 students must be able to define obesity according to WHO guidelines correctly.
2 At the end of the session the phase 1 students must be able to define metabolic syndrome according correctly.
3 At the end of the session the phase 1 students must be able to describe the metabolic & endocrinal effects of obesity & metabolic syndrome precisely.
4 At the end of the session the phase 1 students must be able to describe stress response correctly.
5 At the end of the session the phase 1 students must be able to describe the psychiatric component pertaining to metabolic syndrome precisely.

PY8.6 **Describe and differentiate the mechanism of action of steroid, protein and amine hormones.**

1 At the end of the session the phase 1 students must be able to define hormone correctly.
2 At the end of the session the phase 1 students must be able to enumerate the chemical classification of hormones correctly.
3 At the end of the session the phase 1 students must be able to enumerate the synthesis, storage and release of different types of hormones correctly.
4 At the end of the session the phase 1 students must be able to enumerate the functions and regulation of hormone secretion correctly.
5 At the end of the session the phase 1 students must be able to enumerate the characteristic features of hormone receptors correctly.
6 At the end of the session the phase 1 students must be able to enumerate the structure and classification of hormone receptors correctly.
7 At the end of the session the phase 1 students must be able to describe the different mechanisms of action of different classes of hormones with labelled diagram precisely.
8 At the end of the session the phase 1 students must be able to describe the various methods used to measure hormone levels in blood correctly.

Reproductive Physiology

PY9.1 **Describe and discuss sex determination, sex differentiation and their abnormalities. Outline the practical implication of sex determination.**

1 At the end of the session the phase 1 students must be able to define sex determination correctly.
2 At the end of the session the phase 1 students must be able to enumerate the formation and significance of barr body correctly.
3 At the end of the session the phase 1 students must be able to define sex differentiation correctly.
4 At the end of the session the phase 1 students must be able to enumerate the stages of sex differentiation correctly.
5 At the end of the session the phase 1 students must be able to describe the regulation of sex differentiation and development correctly.
6 At the end of the session the phase 1 students must be able to discuss the role of testis in sex differentiation correctly.
7 At the end of the session the phase 1 students must be able to enumerate the various clinical conditions associated with abnormal sex development precisely.
8 At the end of the session the phase 1 students must be able to describe the characteristic features of Klinefelters syndrome correctly.
9 At the end of the session the phase 1 students must be able to describe the characteristic features of Turners syndrome correctly.
10 At the end of the session the phase 1 students must be able to describe the characteristic features of Pseudohermaphroditism correctly.
11 At the end of the session the phase 1 students must be able to enumerate the psychiatric & practical implications of sex determination correctly.

PY 9.2 **Describe and discuss puberty- onset, progression, stages, early and delayed puberty. Outline the adolescent clinical and psychological association.**

1 At the end of the session the phase 1 students must be able to define puberty correctly.
2 At the end of the session the phase 1 students must be able to enumerate the components and hormonal changes during puberty correctly.
3 At the end of the session the phase 1 students must be able to describe the onset, progression and stages of puberty correctly.
4 At the end of the session the phase 1 students must be able to describe about early and delayed onset puberty precisely.
5 At the end of the session the phase 1 students must be able to enumerate the adolescent clinical and psychological association of puberty correctly.

PY9.3 **Describe male reproductive system- functions of testis and control of spermatogenesis and factors modifying it. Outline its association with psychiatric illness.**

1 At the end of the session the phase 1 students must be able to enumerate the parts of male reproductive system precisely.
2 At the end of the session the phase 1 students must be able to enumerate the functions of testis correctly.

3 At the end of the session the phase 1 students must be able to define spermatogenesis correctly.
4 At the end of the session the phase 1 students must be able to enumerate the characteristic features and phases of spermatogenesis correctly.

PY9.4 At the end of the session the phase 1 students must be able to describe the structure of a mature spermatozoa correctly.

1 At the end of the session the phase 1 students must be able to describe the control of spermatogenesis including factors modifying it correctly.
2 At the end of the session the phase 1 students must be able to enumerate the different abnormal clinical conditions of the male reproductive system correctly.
3 At the end of the session the phase 1 students must be able to define cryptorchidism correctly.
4 At the end of the session the phase 1 students must be able to enumerate the characteristic features of cryptorchidism correctly.
5 At the end of the session the phase 1 students must be able to describe the association of abnormal development of male reproductive system with psychiatric illness correctly.

PY 9.5 Describe female reproductive system- functions of ovary and its control, menstrual cycle – hormonal, uterine and ovarian changes.

1 At the end of the session the phase 1 students must be able to enumerate the parts of female reproductive system precisely.
2 At the end of the session the phase 1 students must be able to enumerate the functions of ovary correctly.
3 At the end of the session the phase 1 students must be able to define oogenesis correctly.
4 At the end of the session the phase 1 students must be able to describe the phases of oogenesis correctly.
5 At the end of the session the phase 1 students must be able to define female sexual cycle correctly.
6 At the end of the session the phase 1 students must be able to enumerate the components of female sexual cycle precisely.
7 At the end of the session the phase 1 students must be able to enumerate the phases of ovarian cycle correctly.
8 At the end of the session the phase 1 students must be able to define ovulation correctly.
9 At the end of the session the phase 1 students must be able to enumerate the process of ovulation correctly.
10 At the end of the session the phase 1 students must be able to enumerate the phases of endometrial cycle correctly.
11 At the end of the session the phase 1 students must be able to define the menstrual cycle correctly.
12 At the end of the session the phase 1 students must be able to enumerate the sequence of changes occurring during menstrual cycle correctly.
13 At the end of the session the phase 1 students must be able to discuss the hormonal control of female sexual cycle / hypothalamo-hypophyseal ovarian axis correctly.

PY9.6 Describe and discuss physiological effects of sex hormones.

1 At the end of the session the phase 1 students must be able to enumerate the various reproductive hormones in males and females correctly.
1 At the end of the session the phase 1 students must be able to describe the mechanism of synthesis of androgens, oestrogen and progesterone correctly.
2 At the end of the session the phase 1 students must be able to describe the mechanism of action of these hormones with labelled diagram precisely.
3 At the end of the session the phase 1 students must be able to describe the various physiological effects of androgens on fetal period, puberty and adult correctly.
4 At the end of the session the phase 1 students must be able to describe the various functions of oestrogen correctly.
5 At the end of the session the phase 1 students must be able to enumerate the different types of synthetic oestrogens and their therapeutic uses correctly.
6 At the end of the session the phase 1 students must be able to describe the various functions of progesterone correctly.
7 Enumerate the contraceptive methods for male and female. Discuss their advantages and disadvantages.
8 At the end of the session the phase 1 students must be able to define contraception correctly.
9 At the end of the session the phase 1 students must be able to enumerate the aims of contraception correctly.
10 At the end of the session the phase 1 students must be able to enumerate the various contraceptive methods for males and females correctly.
11 At the end of the session the phase 1 students must be able to describe rhythm method precisely.
12 At the end of the session the phase 1 students must be able to describe the different types of barrier methods for females correctly.
13 At the end of the session the phase 1 students must be able to describe the different types of oral contraceptives correctly.
14 At the end of the session the phase 1 students must be able to describe the different types of IUCDs correctly.
15 At the end of the session the phase 1 students must be able to define the terminal methods of contraception correctly.

16 At the end of the session the phase 1 students must be able to describe the types of terminal methods for females correctly.
17 At the end of the session the phase 1 students must be able to enumerate the criterias for Medical termination of pregnancy/Abortion correctly.
18 At the end of the session the phase 1 students must be able to enumerate the various methods for MTP correctly.
19 At the end of the session the phase 1 students must be able to describe the barrier methods for males correctly.
20 At the end of the session the phase 1 students must be able to describe the terminal methods for males correctly.
21 At the end of the session the phase 1 students must be able to discuss the advantages and disadvantages of these contraceptive methods correctly.

PY9.7 Describe and discuss the effects of removal of gonads on physiological functions.

1 At the end of the session the phase 1 students must be able to define gonads correctly.
2 At the end of the session the phase 1 students must be able to enumerate the functions of male and female gonads correctly.
3 At the end of the session the phase 1 students must be able to enumerate the indications for removal of gonads in both males and females correctly.
4 At the end of the session the phase 1 students must be able to discuss the various physiological effects of removal of gonads before and after puberty in males correctly.
5 At the end of the session the phase 1 students must be able to discuss the various physiological effects of removal of gonads before and after puberty in females correctly.

PY9.8 Describe and discuss the physiology of pregnancy, parturition and lactation and outline the psychology and psychiatry disorders associated with it.

1 At the end of the session the phase 1 students must be able to define pregnancy correctly.
2 At the end of the session the phase 1 students must be able to enumerate the process of fertilization and implantation with labelled diagrams precisely.
3 At the end of the session the phase 1 students must be able to describe the changes occurring during the embryonic period of pregnancy precisely.
4 At the end of the session the phase 1 students must be able to discuss the role of placental hormones during pregnancy correctly.
5 At the end of the session the phase 1 students must be able to discuss the maternal changes occurring during pregnancy correctly.
6 At the end of the session the phase 1 students must be able to define parturition correctly.
7 At the end of the session the phase 1 students must be able to enumerate the mechanics of parturition correctly.
8 At the end of the session the phase 1 students must be able to describe the phases of parturition correctly.
9 At the end of the session the phase 1 students must be able to describe the factors initiating and controlling parturition precisely.
10 At the end of the session the phase 1 students must be able to enumerate the phases of breast development correctly.
11 At the end of the session the phase 1 students must be able to enumerate the hormones controlling breast development correctly.
12 At the end of the session the phase 1 students must be able to enumerate the phases of lactation correctly.
13 At the end of the session the phase 1 students must be able to define lactogenesis correctly.
14 At the end of the session the phase 1 students must be able to enumerate the stages of lactogenesis correctly.
15 At the end of the session the phase 1 students must be able to enumerate the types and composition of human milk correctly.
16 At the end of the session the phase 1 students must be able to enumerate the characteristic features of suckling reflex correctly.
17 At the end of the session the phase 1 students must be able to enumerate the advantages of lactation for both baby and mother correctly.
18 At the end of the session the phase 1 students must be able to describe the hormonal control of lactation correctly.
19 At the end of the session the phase 1 students must be able to enumerate the psychology and psychiatric disorders associated with it precisely.

PY9.9 Interpret the normal semen analysis report including- sperm count, sperm morphology and sperm motility, as per WHO guidelines and discuss the results.

1 At the end of the session the phase 1 students must be able to define seminal fluid correctly.

	2	At the end of the session the phase 1 students must be able to enumerate the characteristic features of seminal fluid correctly.
	3	At the end of the session the phase 1 students must be able to enumerate the components of semen and their functions correctly.
	4	At the end of the session the phase 1 students must be able to enumerate the normal sperm count correctly.
	5	At the end of the session the phase 1 students must be able to discuss the analysis of normal seminal fluid report including – sperm count, morphology and motility as per WHO guidelines correctly.
PY9.10		**Discuss the physiological basis of various pregnancy tests.**
	1	At the end of the session the phase 1 students must be able to define pregnancy test correctly.
	2	At the end of the session the phase 1 students must be able to enumerate the various types of pregnancy tests correctly.
	3	At the end of the session the phase 1 students must be able to enumerate the types of Biological pregnancy tests correctly.
	4	At the end of the session the phase 1 students must be able to discuss the physiological basis of Immunological test / Gravindex pregnancy test correctly.
PY9.11		**Discuss the hormonal changes and their effects during perimenopause and menopause.**
	1	At the end of the session the phase 1 students must be able to define perimenopause correctly.
	2	At the end of the session the phase 1 students must be able to define menopause correctly.
	3	At the end of the session the phase 1 students must be able to discuss the various hormonal changes and their effects during these phases correctly.
PY9.12		**Discuss the common causes of infertility in a couple and role of IVF in managing a case of infertility.**
	1	At the end of the session the phase 1 students must be able to define infertility correctly.
	2	At the end of the session the phase 1 students must be able to enumerate the various causes of infertility in males and females precisely.
	3	At the end of the session the phase 1 students must be able to discuss the role of IVF in management of infertility correctly.
PY 10.1		**Describe and discuss the organization of nervous system**
	1	At the end of session phase I student must be able to classify the organisation of nervous system.
	2	At the end of the session phase 1 student must be able to explain the various components of nervous system.
PY 10.2		**Describe and discuss the functions and properties of synapse, reflex, receptors**
	1	at the end of the session phase I student must be able to define synapse
	2	at the end of the session the phase one student must be able to classify synapse
	3	at the end of the session the phase one student must be able to explain the properties of synapse
	4	at the end of the session the phase 1 student must be able to enumerate the types of synaptic inhibition.
	5	at the end of the session the phase 1 student must be able to define reflex
	6	at the end of the session phase 1 student must be able to describe reflex arc
	7	at the end of the session the phase 1 student must be able to classify reflex.
	8	at the end of the session phase 1 student must be able to describe the various types of muscle spindle.
	9	at the end of the session phase 1 student must be able to describe the innervation of muscle spindle.
	10	at the end of the session phase 1 student must be able to list the functions of muscle spindle.
	11	at the end of the session phase 1 student must be able to define tone.
	12	at the end of the session phase one student must be able to describe hypotonia.
	13	at the end of the session phase one student must be able to describe hypotonia.
	14	at the end of the session phase 1 student must be able to describe inhibition of stretch reflex.
	15	at the end of the session phase 1 student is equal to to enumerate polysynaptic reflex.
	16	at the end of the session phase 1 student must be able to list the properties of reflex.
	17	at the end of the session phase 1 student must be able to define sensory receptor.
	18	at the end of the session phase 1 student must be able to enumerate the functions of receptor.
	19	at the end of the session phase 1 student must be able to classify receptors.

	20	at the end of the session phase 1 student must be able to describe properties of receptor.
PY 10.3		**Describe and discuss somatic sensations & sensory tracts**
	1	at the end of the session phase 1 student must be able to list the somatic sensations.
	2	at the end of the session phase 1 student must be able to describe somatic sensations.
	3	at the end of the session phase 1 student must be able to who described touch receptors.
	4	at the end of the session phase one student must be able to describe touch pathway.
	5	at the end of the session phase one student must be able to describe pressure receptors.
	6	At the end of the session free is one student must be able to describe pressure pathway
	7	at the end of the session phase 1 student is equal to who described proprioceptive receptors
	8	at the end of the session phase 1 student is equal to describe proprioceptive pathway.
	9	the end of the session phase one student must be able to define pain.
	10	at the end of the session phase one student must be able to you classify the types of pain
	11	at the end of the session phase one student must be able to enumerate neural pathway for pain.
	12	at the end of the session phase 1 student must be able to describe analgesia.
	13	at the end of the session phase 1 student must be able to describe the mechanism of analgesia.
	14	at the end of the session phase 1 student must be able to classify the ascending tracts in spinal cord.
	15	at the end of the session phase one student must be able to enumerate the pathway of ascending tracts.
	16	at the end of the session phase 1 student must be able to describe somato sensory area.
PY 10.4		**Describe and discuss motor tracts, mechanism of maintenance of tone, control of body movements, posture and equilibrium & vestibular apparatus**
	1	the end of the session phase 1 student must be able to describe motor tracts
	2	at the end of the session phase I student must be able to describe the importance of motor tracts.
	3	at the end of the session phase 1 student must be able to classify motor tracts.
	4	at the end of the session to describe the pathways of motor tracts
	5	At the end of the session phase 1 student must be able to define tone.
	6	At the end of session phase 1 student must be able to describe mechanism of muscle tone.
	7	at the end of the session phase 1 student must be able to describe the various levels of motor control of body movement.
	8	at the end of the phase 1 student must be able to describe control of postural reflex.
	9	at the end of the session phase 1 student must be able to list the various structures of vestibular apparatus.
	10	at the end of the session phase 1 student must be able to to describe the vestibular pathway.
	11	at the end of session phase one student must be able to describe the functioning of vestibular apparatus.
PY 10.5		**Describe and discuss structure and functions of reticular activating system, autonomic nervous system (ANS)**
	1	at the end of the session phase one student must be able to define reticular formation.
	2	at the end of the session phase 1 student must be able to enumerate the various parts of reticular formation.
	3	at the end of the session phase 1 student must be able to describe functioning of ascending reticular system.
	4	at the end of the session phase one student must be able to describe the functioning of descending reticular system.
	5	at the end of the session phase 1 student must be able to define autonomic nervous system.
	6	at the end of the session phase 1 student must be able to classify autonomic nervous system.
	7	at the end of the session phase 1 student must be able to describe the chemical transmission of autonomic junctions.
PY 10.6		**Describe and discuss Spinal cord, its functions, lesion & sensory disturbances**

1 at the end of the session phase 1 student must be able to describe the physiological anatomy of spinal cord.
2 at the end of the session phase 1 student must be able to list the various functions of spinal cord.
3 at the end of the session phase 1 student able to describe types of lesions of spinal cord.
4 at the end of the session phase 1 student must be able to list the features of complete transection of spinal cord.
5 at the end of the session phase 1 student must be able to list the features of of incomplete transaction spinal cord.
6 at the end of the session phase 1 student must be able to list the features of hemisection of spinal cord.
7 at the end of the session phase 1 student must be able to describe the various sensory disturbances of spinal cord.

PY 10.7 **Describe and discuss functions of cerebral cortex, basal ganglia, thalamus, hypothalamus, cerebellum and limbic system and their abnormalities**

1 at the end of the session phase 1 student must be able to describe the physiological anatomy of cerebral cortex.
2 at the end of the session phase 1 student must be able to enumerate the various functions of cerebral cortex.
3 at the end of the session phase 1 student must be able to describe the physiological anatomy of basal ganglia
4 at the end of the session phase 1 student must be able to list the various functions of basal ganglia.
5 at the end of the session phase 1 student is equal to describe various diseases associated with basal ganglia.
6 at the end of the session phase 1 student must be able to describe the physiological anatomy of thalamus.
7 at the end of the session phase 1 student must be able to list the various thalamic nuclei.
8 at the end of the session phase 1 student must be able to described various connections of thalamus.
9 at the end of the session phase 1 student must be able to list the various functions of thalamus.
10 at the end of the session phase 1 student must be able to describe the important diseases associated with thalamus.
11 at the end of the session phase 1 student must be able to describe the physiological anatomy of hypothalamus.
12 at the end of the session phase 1 student must be able to list the various functions of hypothalamus.
13 at the end of the session phase 1 student must be able to enumerate the various functions of hypothalamus.
14 at the end of the session phase 1 student must be able to describe the physiological anatomy of cerebellum.
15 at the end of the session phase 1 student must be able to list the various connections of cerebellum.
16 at the end of the session phase 1 student must be able to list the various functions of cerebellum.
17 at the end of the session phase 1 student must be able to describe cerebellar lesions.
18 at the end of the session phase 1 student must be able to describe the functional anatomy of limbic system.
19 at the end of the session phase 1 student must be able to describe the various connections of limbic system.
20 at the end of the session phase 1 student must be able to list the functions of limbic system.

PY 10.8 **Describe and discuss behavioural and EEG characteristics during sleep and mechanism responsible for its productions**

1 at the end of the session phase 1 student must be able to define EEG.
2 at the end of the session phase 1 student must be able to describe the various waves of EEG during sleep.
3 at the end of the session phase 1 student is equal to describe the procedure for recording EEG.
4 at the end of the session phase 1 student able to describe the physiological basis of EEG.
5 at the end of the session phase 1 student must be able to list the various uses of EEG during sleep.
6 at the end of the session phase 1 student must be able to define sleep.
7 at the end of the session phase 1 student must be able to classify sleep.
8 at the end of the session phase 1 student must be able to describe the genesis of NREM sleep
9 at the end of the session phase 1 student must be able to describe the genesis of REM sleep.

PY 10.9 **Describe and discuss the physiological basis of memory, learning and speech**

1 at the end of the session phase 1 student must be able to define memory.

2 at the end of the session phase 1 student must be able to classify memory.
3 at the end of the session phase 1 student must be able to describe the mechanism of memory formation.
4 at the end of the session phase 1 student must be able to enumerate the various diseases affecting memory.
5 at the end of the session phase 1 student must be able to define learning.
6 at the end of the session phase 1 student is equal to list the various types of learning.
7 at the end of the session phase 1 student is describe the mechanism of learning.
8 at the end of the session phase 1 student must be able to define speech.
9 at the end of the session phase 1 student must be able to list the various organs of speech.
10 at the end of the session phase 1 student must be able to describe the speech centres.
11 at the end of the session phase 1 student must be able to enumerate the speech pathway.
12 at the end of the session phase 1 student must be able to describe speech disorders.

PY 10.10 **Describe and discuss chemical transmission in the nervous system. (Outline the psychiatry element).**

1 at the end of the session phase 1 student must be able to describe neuroeffect communication.
2 at the end of the session phase 1 student must be able to classify neurotransmitters.
3 at the end of the session phase 1 student must be able to describe the important features of common neurotransmitters.
4 at the end of the session phase 1 student must be able to describe diseases associated with neurotransmitters.

PY 10.11 **Demonstrate the correct clinical examination of the nervous system: Higher functions, sensory system, motor system, reflexes, cranial nerves in a normal volunteer or simulated environment**

1 at the end of the session phase 1 student must be able to describe various higher functions.
2 at the end of the session phase 1 student must be able to describe various higher functions tests.
3 at the end of the session phase 1 student must be able to demonstrate various higher function tests.
4 at the end of the session phase 1 student must be able to define speech.
5 at the end of the session phase 1 student must be able to describe components of speech.
6 at the end of the session phase 1 student must be able to describe speech disorders.
7 at the end of the session phase 1 student must be able to describe components of sensory system.
8 at the end of the session phase 1 student must be able to describe the pathways of general sensations.
9 at the end of the session phase 1 student must be able to describe clinical testing of general sensation
10 at the end of the session phase 1 student must be able to demonstrate examination of sensory system.
11 at the end of the session phase 1 student must be able to describe the components of motor system.
12 at the end of the session phase 1 student must be able to describe motor pathways.
13 at the end of the session phase 1 student must be able to describe bulk.
14 at the end of the session phase 1 student must be able to describe testing bulk.
15 at the end of the session phase 1 student must be able to demonstrate testing bulk.
16 at the end of the session phase 1 student must be able to define tone.
17 at the end of the session phase 1 student must be able to describe change in tone.
18 at the end of the session phase 1 student must be able to describe testing tone.
19 at the end of the session phase 1 student must be able to demonstrate testing tone.
20 at the end of the session phase 1 student must be able to describe power.
21 at the end of the session phase 1 student must be able to describe grades of power.
22 at the end of the session phase 1 student must be able to describe testing of power.
23 at the end of the session phase 1 student must be able to demonstration power.

24 at the end of the session phase 1 student must be able to describe coordination of movements.
25 at the end of the session phase 1 student must be able to describe testing of coordination of movements.
26 at the end of the session phase 1 student must be able to demonstrate testing of coordination of movements.
27 at the end of the session phase 1 student must be able to describe gait.
28 at the end of the session phase 1 student must be able to describe types of gait.
29 at the end of the session phase 1 student must be able to describe examination of gait.
30 at the end of the session phase 1 student must be able to demonstrate examination of gait.
31 at the end of the session phase 1 student must be able to describe attitude.
32 at the end of the session phase 1 student must be able to describe various abnormal movements.
33 at the end of the session phase 1 student must be able to define reflex.
34 at the end of the session phase 1 student must be able to classify reflex.
35 at the end of the session phase 1 student must be able to describe grades of reflex.
36 at the end of the session phase 1 student must be able to describe various examination of reflex.
37 at the end of the session phase 1 student must be able to demonstrate examination of various examination of reflex.
38 at the end of the session phase 1 student must be able to describe the functions of various cranial nerves.
39 at the end of the session phase 1 student must be able to explain the examination of cranial nerves.
40 at the end of the session phase 1 student must be able to demonstrate the examination of various cranial nerves.

PY 10.12 **Identify normal EEG forms**

1 at the end of the session phase 1 student must be able to define EEG
2 at the end of the session phase 1 student must be able to describe various forms of EEG waves.
3 at the end of the session phase 1 student must be able to describe the mechanism of formation of EEG.
4 at the end of the session phase 1 student must be able to describe the importance of EEG.
5 at the end of the session phase 1 student must be able to describe how to record EEG.

PY 10.13 **Describe and discuss perception of smell and taste sensation**

1 at the end of the session phase 1 student must be able to describe the physiological anatomy of olfaction.
2 at the end of the session phase 1 student must be able to describe the olfactory receptors.
3 at the end of the session phase 1 student must be able to describe olfactory pathway.
4 at the end of the session phase 1 student must be able to physiological mechanism of olfaction.
5 at the end of the session phase 1 student must be able to describe physiological anatomy of taste.
6 at the end of the session phase 1 student must be able to describe physiological mechanism of taste.

PY10.14 **Describe and discuss patho-physiology of altered smell and taste sensation**

1 at the end of the session phase 1 student must be able to describe applied aspects of olfaction.
2 at the end of the session phase 1 student must be able to describe applied aspects of taste.

PY 10.15 **Describe and discuss functional anatomy of ear and auditory pathways & physiology of hearing**

1 at the end of the session phase 1 student must be able to describe the physiological anatomy of ear.
2 at the end of the session phase 1 student must be able to describe cochlea.
3 at the end of the session phase 1 student must be able to describe part of organ of Corti.
4 at the end of the session phase 1 student must be able to describe auditory pathway.
5 describe auditory areas of cerebral cortex.
6 at the end of the session phase 1 student must be able to describe physiological properties of sound.
7 at the end of the session phase 1 student must be able to describe mechanism of hearing.

8 at the end of the session phase 1 student must be able to describe electrical activity of cochlea.
9 at the end of the session phase 1 student must be able to describe cochlear microphonic potential.
10 at the end of the session phase 1 student must be able to describe action potential of auditory nerve fibres.
11 at the end of the session phase 1 student must be able to describe auditory cortex.

PY 10.16 **Describe and discuss pathophysiology of deafness. Describe hearing tests**

1 at the end of the session phase 1 student must be able to define deafness.
2 at the end of the session phase 1 student must be able to classify deafness.
3 at the end of the session phase 1 student must be able to describe types of deafness.
4 at the end of the session phase 1 student must be able to describe tinnitus.
5 at the end of the session phase 1 student must be able to describe masking.
6 at the end of the session phase 1 student must be able to describe types of hearing tests.
7 at the end of the session phase 1 student must be able to describe the procedure of tuning fork test.
8 at the end of the session phase 1 student must be able to describe action potential of auditory nerve fibers.
9 at the end of the session phase 1 student must be able to describe audiometry test .

PY 10.17 **Describe and discuss functional anatomy of eye, physiology of image formation, physiology of vision including colour vision, refractive errors, colour blindness, physiology of pupil and light reflex**

1 at the end of the session phase 1 student must be able to describe physiological anatomy of eye.
2 at the end of the session phase 1 student must be able to describe the layers of retina.
3 at the end of the session phase 1 student must be able to describe rods.
4 at the end of the session phase 1 student must be able to describe cones.
5 at the end of the session phase 1 student must be able to describe visual pathway.
6 at the end of the session phase 1 student must be able to describe visual cortex.
7 at the end of the session phase 1 student must be able to describe principles of optics.
8 at the end of the session phase 1 student must be able to describe reduce or schimatic eye.
9 at the end of the session phase 1 student must be able to describe visual acuity.
10 at the end of the session phase 1 student must be able to describe photoreceptor potential.
11 at the end of the session phase 1 student must be able to describe function of lateral geniculate body.
12 at the end of the session phase one student must be able to describe response of visual cortex.
13 at the end of the session phase 1 student must be able to describe photopic vision.
14 at the end of the session phase 1 student must be able to describe scotopic vision.
15 at the end of the session phase 1 student must be able to describe visibility curve.
16 at the end of the session phase 1 student must be able to describe light adaptation.
17 at the end of the session phase 1 student must be able to describe dark adaptation.
18 at the end of the session phase 1 student must be able to describe colour vision.
19 at the end of the session phase 1 student must be able to describe theories of colour vision.
20 at the end of the session phase 1 student must be able to describe important refractive errors.
21 at the end of the session phase 1 student must be able to describe the defects of image formation.
22 at the end of the session phase 1 student must be able to describe defects of image formation correction.
23 at the end of the session phase 1 student must be able to describe colour vision
24 at the end of the session phase 1 student must be able to define colour blindness
25 at the end of the session phase 1 student must be able to describe types of colour blindness.

26 at the end of the session phase 1 student must be able to describe test for detecting colour blindness.

PY 10.18 **Describe and discuss the physiological basis of lesion in visual pathway**

1 at the end of the session phase 1 student must be able to describe visual pathway.
2 at the end of the session phase 1 student is able describe the lesions of visual pathway.
3 at the end of the session phase 1 student must be able to describe the presentation of lesions of visual pathway.

PY 10.19 **Describe and discuss auditory & visual evoke potentials**

1 at the end of the session phase 1 student must be able to describe the role of inner ear.
2 at the end of the session phase 1 student must be able to describe the vibration of basal membrane.
3 at the end of the session phase 1 student must be able to describe the functions of hair cell.
4 at the end of the session phase 1 student must be able to describe the mechanism of pitch discrimination.
5 at the end of the session phase 1 student must be able to describe endolymphatic potential.
6 at the end of the session phase 1 student must be able to describe cochlear microphonics potential.
7 at the end of the session phase 1 student must be able to describe action potential of auditory nerve fibres.
8 at the end of the session phase 1 student must be able to describe pitch discrimination.
9 at the end of the session phase 1 student must be able to describe intensity discrimination.
10 at the end of the session phase 1 student must be able to describe importance of auditory cortex.
11 at the end of the session phase 1 student must be able to describe photo receptor potential.
12 at the end of the session phase 1 student must be able to describe the role of bipolar,amacrine cells
13 at the end of the session phase 1 student must be able to describe the role of ganglion cells.
14 at the end of the session phase 1 student must be able to describe the neurotransmitters in retina.
15 at the end of the session phase 1 student must be able to the response of lateral geniculate body.
16 at the end of the session phase 1 student must be able to describe the response of visual cortex.
17 at the end of the session phase 1 student must be able to define electroretinogram.
18 at the end of the session phase 1 student must be able to describe the importance of electroretinogram.

PY 10.20 **Demonstrate (i) Testing of visual acuity, colour and field of vision and (ii) hearing (iii) Testing for smell and (iv) taste sensation in volunteer/ simulated environment**

1 at the end of the session phase 1 student must be able to define visual acuity.
2 at the end of the session phase 1 student must be able to describe testing visual acuity by Snellen's Chart.
3 at the end of the session phase 1 student must be able to demonstrate testing visual acuity by Snellen's Chart.
4 at the end of the session phase 1 student must be able to describe testing visual acuity by Jaeger's Chart.
5 at the end of the session phase 1 student must be able to demonstrate testing visual acuity by Jaeger's Chart.
6 at the end of the session phase 1 student must be able to define colour vision.
7 at the end of the session phase 1 student must be able to describe testing of colour vision.
8 at the end of the session phase 1 student must be able to demonstrate testing colour vision.
9 at the end of the session phase 1 student must be able to define visual field.
10 at the end of the session phase 1 student must be able to describe testing visual field.
11 at the end of the session phase 1 student must be able to demonstrate testing visual field.
12 at the end of the session phase 1 student must be able to describe Functions of VIII Cranial nerve.
13 at the end of the session phase 1 student must be able to describe Rinnes Test.
14 at the end of the session phase 1 student must be able to describe Weber Test.
15 at the end of the session phase 1 student must be able to describe Schwabachs Test.

16 at the end of the session phase 1 student must be able to demonstrate Rinnes Test
17 at the end of the session phase 1 student must be able to demonstrate Weber Test.
18 at the end of the session phase 1 student must be able to demonstrate Schwabachs Test
19 at the end of the session phase 1 student must be able to describe Watch Test.
20 at the end of the session phase 1 student must be able to demonstrate Watch Test.
21 at the end of the session phase 1 student must be able to describe Audiometry test.
22 at the end of the session phase 1 student must be able to describe olfactory pathway.
23 at the end of the session phase 1 student must be able to describe various smells used for olfaction tests.
24 at the end of the session phase 1 student must be able to describe testing Olfaction.
25 at the end of the session phase 1 student must be able to demonstrate testing Olfaction
26 at the end of the session phase 1 student must be able to describe taste receptors.
27 at the end of the session phase 1 student must be able to describe nerve supply of tongue.
28 at the end of the session phase 1 student must be able to describe testing taste.
29 at the end of the session phase 1 student must be able to demonstrate testing taste.

Integrative Physiology

PY 11.1 Describe and discuss mechanism of temperature regulation.

1 At the end of this session phase1 student must be able to enumerate the components of temperature control system accurately.
2 At the end of this session phase1 student must be able to define thermoreceptors correctly .
3 At the end of this session phase1 student must be able to define peripheral thermoreceptors accurately.
4 At the end of this session phase1 student must be able to define central thermoreceptors correctly.
5 At the end of this session phase1 student must be able to define sensing neurons or feedback detectors accurately.
6 At the end of this session phase1 student must be able to define heat loss centre correctly.
7 At the end of this session phase1 student must be able to define heat production or conservation centre accurately.
8 At the end of this session phase1 student must be able to explain the function of sensing neurons or feedback detectors accurately.
9 At the end of this session phase1 student must be able to explain the function of heat loss centre accurately.
10 At the end of this session phase 1 student must be able to explain the function of heat production or conservation centre accurately.

PY11.2 Describe and discuss adaptaion to altered temperature (heat & cold)

1 At the end of this session phase 1 student must be able to enumerate Mechanisms activated by heat accurately.
2 At the end of this session phase 1 student must be able to enumerate the Mechanisms activated by cold correctly.
3 At the end of this session phase 1 student must be able to enumerate Mechanisms activated by heat correctly.
4 At the end of this session phase 1 student must be able to explain the Mechanisms activated by cold correctly.

PY11.3 Describe and discuss mechanism of fever,cold injuries and heat stroke

1 At the end of this session phase 1 student must be able to define fever correctly.
2 At the end of this session phase 1 student must be able to give the value of normal body temperature correctly.
3 At the end of this session phase 1 student must be able to enumerate the causes of fever correctly
4 At the end of this session phase 1 student must be able to explain the mechanism of fever correctly
5 At the end of this session phase 1 student must be able to explain the beneficial effects of fever correctly
6 At the end of this session phase 1 student must be able to explain the harmful effects of fever correctly
7 At the end of this session phase 1 student must be able to define hypothermia correctly.
8 At the end of this session phase 1 student must be able to explain the effects of hypothermia correctly
9 At the end of this session phase 1 student must be able to define heat stroke correctly
10 At the end of this session phase 1 student must be able to define heat exhaustion correctly

11 At the end of this session phase 1 student must be able to differentiate between heat exhaustion and heat stroke correctly

PY 11.4 **Describe and discuss cardio-respiratory and metabolic adjustments during exercise, physical training effects**

1 At the end of this session phase 1 student must be able to classify the degrees of exercise correctly
2 At the end of this session phase 1 student must be able to list the factors affecting exercise correctly
3 At the end of this session phase 1 student must be able to define motor units correctly
4 At the end of this session phase 1 student must be able to describe energy source in exercise correctly
5 At the end of this session phase 1 student must be able to enumerate cardiovascular changes during exercise correctly
6 At the end of this session phase 1 student must be able to discuss change in heart rate after exercise correctly
7 At the end of this session phase 1 student must be able to discuss cause of change in heart rate after exercise correctly
8 At the end of this session phase 1 student must be able to discuss change in blood pressure after exercise correctly
9 At the end of this session phase 1 student must be able to discuss cause of change in blood pressure after exercise correctly
10 At the end of this session phase 1 student must be able to discuss cardiovascular changes in exercise correctly
11 At the end of this session phase 1 student must be able to enumerate respiratory changes during exercise correctly
12 At the end of this session phase 1 student must be able to discuss mechanism and effects of increased ventilation after exercise correctly
13 At the end of this session phase 1 student must be able to define VO2 max. correctly
14 At the end of this session phase 1 student must be able to classify phases of muscular exercise depending on O_2 uptake.
15 At the end of this session phase 1 student must be able to define aerobic training correctly
16 At the end of this session phase 1 student must be able to enumerate importance of aerobic training correctly
17 At the end of this session phase 1 student must be able to discuss the benefits of exercise correctly

PY 11.5 **Describe and discus physiological consequences of sedentary lifestyle**

1 At the end of this session phase 1 student must be able to define sedentary lifestyle correctly
2 At the end of this session phase 1 student must be able to enumerate consequences of sedentary life style correctly
3 At the end of this session phase 1 student must be able to discuss effect of sedentary lifestyle on body weight correctly
4 At the end of this session phase 1 student must be able to discuss effect of sedentary lifestyle on cardiovascular system correctly

PY11.6 **Describe physiology of infancy**

1 At the end of this session phase 1 student must be able to define infants correctly
2 At the end of this session phase 1 student must be able define physiological jaundice of newborn correctly
3 At the end of this session phase 1 student must be able discuss physiological jaundice of infants correctly
4 At the end of this session phase 1 student must be able discuss cardiovascular system of infants correctly
5 At the end of this session phase 1 student must be able discuss respiratory system of infants correctly
6 At the end of this session phase 1 student must be able discuss gastrointestinal system of infants correctly
7 At the end of this session phase 1 student must be able discuss musculoskeletal system of infants correctly
8 At the end of this session phase 1 student must be able discuss central nervous system of infants correctly

PY 11.7 **Describe and discuss physiology of ageing, free radicals and antioxidants**

1 At the end of this session phase 1 student must be able enumerate biological changes of ageing correctly
2 At the end of this session phase 1 student must be able enumerate theories of ageing correctly
3 At the end of this session phase 1 student must be able discuss genetic theories of ageing correctly
4 At the end of this session phase 1 student must be able discuss random damage theories of ageing correctly
5 At the end of this session phase 1 student must be able discuss role of calories intake in ageing correctly
6 At the end of this session phase 1 student must be able define free radicals correctly
7 At the end of this session phase 1 student must be able discuss role of free radicals in ageing correctly
8 At the end of this session phase 1 student must be able discuss role of oxidative stress in ageing correctly

	9	At the end of this session phase 1 student must be able to define anti-oxidants correctly
	10	At the end of this session phase 1 student must be able discuss role of anti-oxidants in prevention n of ageing correctly
	11	At the end of this session phase 1 student must be able to discuss the factors that help in delaying ageing correctly
PY 11.8		**Discuss and compare cardio-respiratory changes in exercise (isotonic and isometric) with that in resting state and in different environmental conditions(heat and cold)**
	1	At the end of this session phase 1 student must be able define exercise correctly
	2	At the end of this session phase 1 student must be able classify types of exercise correctly
	3	At the end of this session phase 1 student must be able define isotonic exercise correctly
	4	At the end of this session phase 1 student must be able define isometric exercise correctly
	5	At the end of this session phase 1 student must be able discuss cardiovascular changes in isotonic exercise correctly
	6	At the end of this session phase 1 student must be able to define thermoneutral environment correctly
	7	At the end of this session phase 1 student must be able discuss cardiovascular changes in isotonic exercise in hot environment correctly
	8	At the end of this session phase 1 student must be able discuss cardiovascular changes in isotonic exercise in cold environment correctly
	9	At the end of this session phase 1 student must be able discuss cardiovascular changes in isometric exercise correctly
	10	At the end of this session phase 1 student must be able discuss cardiovascular changes in isometric exercise in hot environment correctly
	11	At the end of this session phase 1 student must be able discuss cardiovascular changes in isometric exercise in cold environment correctly
	12	At the end of this session phase 1 student must be able discuss cardiovascular changes in isotonic exercise in hot environment correctly
	13	At the end of this session phase 1 student must be able compare cardiovascular changes in isometric and isotonic exercise in resting state,heat and cold environment correctly
	14	At the end of this session phase 1 student must be able discuss respiratory changes in isotonic exercise correctly
	15	At the end of this session phase 1 student must be able discuss respiratory changes in isotonic exercise in hot environment correctly
	16	At the end of this session phase 1 student must be able discuss respiratory changes in isotonic exercise in cold environment correctly
	17	At the end of this session phase 1 student must be able discuss respiratory changes in isometric exercise correctly
	18	At the end of this session phase 1 student must be able discuss respiratory changes in isometric exercise in hot environment correctly
	19	At the end of this session phase 1 student must be able discuss respiratory changes in isometric exercise in cold environment correctly
	20	At the end of this session phase 1 student must be able discuss cardiovascular changes in isotonic exercise in hot environment correctly
	21	At the end of this session phase 1 student must be able compare respiratory changes in isometric and isotonic exercise in resting state, heat and cold environment correctly
PY 11.9		**interpret growth charts**
	1	At the end of this session phase 1 student must be able define growth correctly
	2	At the end of this session phase 1 student must be able define growth chart correctly
	3	At the end of this session phase 1 student must be able discuss advantages of growth chart correctly
	4	At the end of this session phase 1 student must be able interpret growth chart correctly
PY 11.10		**Interpret anthropometric assessment of infants**
	1	At the end of this session phase 1 student must be able define anthropometry correctly
	2	At the end of this session phase 1 student must be able enumerate parameters of anthropometry correctly
	3	At the end of this session phase 1 student must be able discuss changes in weight according to age correctly
	4	At the end of this session phase 1 student must be able discuss changes in height according to age correctly
	5	At the end of this session phase 1 student must be able discuss changes in head circumference according to age correctly
	6	At the end of this session phase 1 student must be able interpret anthropometric assessment of infants correctly
PY 11.11		**Discuss the concept, criteria for diagnosis of brain death and its implications**
	1	At the end of this session phase 1 student must be able define brain death correctly
	2	At the end of this session phase 1 student must be able enumerate essential findings of brain death correctly

3 At the end of this session phase 1 student must be able discuss criteria of diagnosis of brain death correctly
4 At the end of this session phase 1 student must be able discuss signs of brain death correctly
5 At the end of this session phase 1 student must be able discuss implications of brain death correctly

PY 11.12 Discuss the physiological effects of meditation

1 At the end of this session phase 1 student must be able define meditation correctly
2 At the end of this session phase 1 student must be able enumerate the physiological effects of meditation correctly
3 At the end of this session phase 1 student must be able discuss the effects of meditation on cardiovascular system correctly
4 At the end of this session phase 1 student must be able discuss the effects of meditation on respiratory system correctly
5 At the end of this session phase 1 student must be able discuss the effects of meditation on sympathetic system correctly
6 At the end of this session phase 1 student must be able discuss the effects of meditation on parasympathetic system correctly
7 At the end of this session phase 1 student must be able discuss the effects of meditation on central nervous system correctly
8 At the end of this session phase 1 student must be able discuss the effects of meditation on gastrointestinal system correctly

PY 11.13 obtain history and perform general examination in the volunteer/simulated environment

1 At the end of this session phase 1 student must be able enumerate headings of history taking correctly
2 At the end of this session phase 1 student must be able obtain particulars of volunteer correctly
3 At the end of this session phase 1 student must be able to obtain chief complaints in chronological order
4 At the end of this session phase 1 student must be able obtain history of present illness correctly
5 At the end of this session phase 1 student must be able obtain history of past illness correctly
6 At the end of this session phase 1 student must be able family history correctly
7 At the end of this session phase 1 student must be able to obtain personal history of correctly
8 At the end of this session phase 1 student must be able obtain history of drugs correctly
9 At the end of this session phase 1 student must be able discuss importance of all points of history taking correctly
10 At the end of this session phase 1 student must be able enumerate prerequisites of general examination correctly
11 At the end of this session phase 1 student must be able enumerate components of general examination correctly
12 At the end of this session phase 1 student must be able describe general appearance of volunteer correctly
13 At the end of this session phase 1 student must be able describe mental and emotional states of volunteer correctly
14 At the end of this session phase 1 student must be able describe appearance of skin of volunteer correctly
15 At the end of this session phase 1 student must be able describe temperature of volunteer correctly
16 At the end of this session phase 1 student must be able describe pulse rate of volunteer correctly
17 At the end of this session phase 1 student must be able describe respiratory rate of volunteer correctly
18 At the end of this session phase 1 student must be able describe examination of neck of volunteer correctly
19 At the end of this session phase 1 student must be able discuss abnormalities of general examination correctly

PY 11.14 Demonstrate basic life support in simulated environment

1 At the end of this session phase 1 student must be able define basic life support.
2 At the end of this session phase 1 student must be able enumerate methods of artificial ventilation correctly
3 At the end of this session phase 1 student must be able enumerate indications of cardiopulmonary resuscitation correctly
4 At the end of this session phase 1 student must be able enumerate steps of basic life support correctly
5 At the end of this session phase 1 student must be able demonstrate mouth to mouth respiration correctly
6 At the end of this session phase 1 student must be able demonstrate cardiac compression correctly
7 At the end of this session phase 1 student must be able demonstrate respiration and cardiac compression maintaining correct ratio.