



TEERTHANKER MAHAVEER UNIVERSITY

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Delhi Road, Moradabad (U.P.)

SAMPLE QUESTION PAPER FOR RESEARCH APTITUDE TEST IN ELECTRONICS & COMMUNICATION ENGINEERING

Max. Marks: 100

Time: 2.00 Hrs

Note:

1. The question paper is divided into two parts viz. Part-A and Part-B, carrying 50 marks each.
2. **Part-A** consists of 50 multiple choice questions carrying one mark each. All questions are compulsory. There shall be no negative marking. The answers are to be marked on the OMR sheet with black pencil.
3. **Part-B** consists of 8 descriptive type questions, out of which any 5 questions are to be answered. Each question shall carry 10 marks. A candidate is expected to limit his answer in about 200 words for each question.

Part (A)

Total Marks: 50 X 1 = 50

- Q1. Who said that members of the same species are not alike?
- (a) Darwin
 - (b) Herbert Spencer
 - (c) Best
 - (d) Good
- Q2. A statistical measure based upon the entire population is called parameter while measure based upon a sample is known as
- (a) Sample parameter
 - (b) Inference
 - (c) Statistic
 - (d) None of these
- Q3. Generalized conclusion on the basis of a sample is technically known as
- (a) Statistical inference of external validity of the research
 - (b) Data analysis and interpretation
 - (c) Parameter inference
 - (d) All of the above
- Q4. A researcher selects a probability sample of 100 out of the total population. It is
- (a) A cluster sample
 - (b) A random sample
 - (c) A stratified sample
 - (d) A systematic sample
- Q5. A researcher divides the population into Postgraduates, graduates and 10+2 students and using the random digit table he selects some of them from each. This is technically called
- (a) stratified sampling
 - (b) stratified random sampling
 - (c) representative sampling
 - (d) none of these

Part (B)

Total Marks: 5 X 10 = 50

Q1. Write a short note on any one of the following:

- (a) Tunnel diode
- (b) SCR
- (c) TRIC

Q2. How MOSFET is different from JFET? Explain.

Q3. What is wave guide? What must be the width of rectangular wave guide such that the energy of electromagnetic radiation, whose free space wave length is 3cm, travels down the guide at 95% of the speed of light in principle mode?

Q4. Give brief explanation of ideal Op-amp? A 5mv. 1 KHz sinusoidal is applied to the input of an Op-amp integrator for which $R = 100 \text{ k}\Omega$ and $C = \mu\text{f}$, find the output voltage.

Q5. We have lead and lag compensation which one work as a high pass filter. Derive the expression for transfer function of that.

Q6. Explain the working of RTD with the help of diagram.

Q7. Explain how the phenomenon of hall effect can be used to determine whether a semiconductor is 'n' type or 'p' type. What are relations between hall coefficient (R_H) and hall voltage (V_H).

Q8. What kind of feedback is used in oscillators and why? What do you mean by Bark hausen criterion for oscillation?

Caution: Please note that the questions appearing above in this sample paper are only for the guidance of the candidates.