



TEERTHANKER MAHAVEER UNIVERSITY

(Established under Govt. of U. P. Act No. 30, 2008)

Delhi Road, Moradabad (U.P.)

SAMPLE QUESTION PAPER FOR RESEARCH APTITUDE TEST IN MECHANICAL 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. State maximum principal stress theory of failure.
- Q2. A linkage has 14 links and the numbers of loops are 5. Calculate its:
- (a) Degrees of freedom
 - (b) Number of joints
 - (c) Maximum number of ternary links that can be had
 - (d) Assume that all pairs are turning pairs.
- Q3. Explain the process of EDM (Electric Discharge Machining).
- Q4. Explain the principles of material handling.
- Q5. Derive the basic EOQ (Economic Order Quantity) formula of inventory control along with its assumptions.
- Q6. Explain the Kelvin – Planck statement and Clausius' statement of second law of thermodynamics.
- Q7. State and prove Bernoulli's equation.
- Q8. Derive general heat conduction equation for homogeneous and isotropic material in Cartesian co-ordinates.

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