

MODEL QUESTION PAPER

SIXTH SEMESTER B.TECH DEGREE EXAMINATION
(2013 Scheme)

13.601 INDUSTRIAL STATISTICS (N)

Time: 3 hrs

Max. Marks: 100

Answer all questions from Part A and any one full question from each module in Part-B. Any missing data shall be assumed. All assumptions shall be clearly stated. Use of statistical Tables permitted

Part A

1. Explain the concept of skewness and kurtosis.
2. Distinguish between exploratory statistics and inferential statistics.
3. State and explain central limit theorem.
4. Narrate the various advantages of using non-parametric tests.
5. Explain a relationship between binomial and normal distribution.
6. When and for what purpose 't' test of significance is used.
7. Write a note on Runs test and K-S test.
8. Explain the concept of correlation and regression.
9. Explain how you test the significance of difference between two sample mean.
10. What are the essentials of a good forecast?

(10X2marks=20 marks)

Part B

Module-I

11. Obtain Q1, Q3, D8 and P60 from the given data

| | | | | | | | | |
|----------------|------|-------|-------|-------|-------|-------|-------|-------|
| Age: | 0-10 | 10-20 | 20-30 | 30-40 | 40-50 | 50-60 | 60-70 | 70-80 |
| No of persons: | 15 | 30 | 53 | 75 | 100 | 110 | 115 | 125 |

OR

12. Ten percent of the tools produced in a manufacturing process turn out to defective. Find probability that in a sample of 10 tools chosen at random, exactly two will be defective by using:
- i) Binomial theorem
 - ii) Poisson approximation

PTO

Module-II

13. Explain about all sampling techniques used in research process.

OR

14. Explain different primary scale of measurement used in research and its area of usage.

Module-III

15. The specimens of copper wires drawn form a large lot have the following breaking strength (in kg.weight):

578, 572, 570, 568, 572, 578, 570, 572, 596, 544

Test (using Student's t-statistic) whether the mean breaking strength of the lot may be taken to be 578 kg. weight.

OR

16. Conduct an ANOVA for the following data on yield of varieties of wheat after framing suitable hypothesis.

| Plot | Variety of Wheat | | |
|------|------------------|---|---|
| | A | B | C |
| 1 | 6 | 5 | 5 |
| 2 | 7 | 5 | 4 |
| 3 | 3 | 3 | 3 |
| 4 | 8 | 7 | 4 |

Module-IV

17. Briefly describe the different non-parametric tests explaining the significance of each such test.

PTO

OR

18. The following are the kilometers per gallon which a test driver got for ten tankfuls each of three kinds of gasoline:

Gasoline A 30, 41, 34, 43, 33, 34, 38, 26, 29, 36

Gasoline B 39, 28, 39, 29, 30, 31, 44, 43, 40, 33

Gasoline C 29, 41, 26, 36, 41, 43, 38, 38, 35, 40.

Use the Kruskal-Wallis test at the level of significance $\alpha = 0.05$ to test the null hypothesis that there is no difference in the average kilometer yield of the three types of gasoline.

(4X20 marks = 80 marks)