

TME-702

Paper ID and Roll No. to be filled in your Answer Book

Roll No.

B. Tech.

(SEM. VII) (ODD SEM.) (REG.) EXAMINATION, 2012-13

MAINTENANCE & SAFETY ENGINEERING

Time : 3 Hours]

[Total Marks : 100

Note : Answer all questions. Assume any missing data suitably.

1 Answer any four of the following : 5×4=20

- (a) What should be the objectives of maintenance management for successful working of maintenance department ?
- (b) Write the disadvantages of excessive maintenance.
- (c) What are the consequences of insufficient maintenance ?
- (d) Briefly explain the objectives of planned preventive maintenance
- (e) How does a planned preventive maintenance system help in identifying the critical areas of maintenance function ?
- (f) Discuss the methods employed for maintenance evaluation

2 Answer any two of the following : 10×2=20

- (a) Briefly explain the concept of life cycle costing of equipment.

- (b) Discuss the ^o impact of maintenance cost on the overall cost of production
- (c) Briefly describe the objectives of manpower planning.
- (d) How can forecasting techniques help in manpower planning? Explain.
- (e) What do you understand by safety in handling and storage?
- (f) Discuss preventive maintenance of equipment used in industry.

3 Answer any two of the following : 10×2=20

- (a) A system consists of four components connected in series with failure rates of 0.75, 1.0, 0.1 and 0.1. Compute the probability of their failure after six months.
- (b) What do you mean by maintenance budgeting? Develop guidelines for maintenance budgeting for (a) a pump house, (b) a transportation company with 40 trucks and (c) a plant with 10 presses.
- (c) How does the cost parameter play its role towards achieving the desired degree of maintainability? Explain.

4 Answer any two of the following : 10×2=20

- (a) Discuss the important maintenance aspects of the following mechanical components (a) bearing (b) Friction Clutches (c) Coupling (d) Belts.
- (b) What is the role of ancillary equipment/facilities in an organization? How should such facilities be maintained? Give your answer with particular reference to air-conditioning equipment,

Compressor & cooling tower.

- (c) A standby feed water system consists of 'n' identical pumps and a flow diverter. The diverter enables the discharge from any pump to be connected to the output pipe so that the system is seen with one pump operational and the remainder standby. The overall system is to have reliability better than 0.97 over a period of six months. Use the data to find the value of 'n'. Constant failure rate for a single pump = 0.45 per year. Reliability of a single diverter operation = 0.900.

5 Write short notes on any four of the following : $5 \times 4 = 20$

- (a) Occupational diseases due to physical and chemical agents.
 - (b) Safety in heat treatments.
 - (c) Zero break down.
 - (d) Sources of hazardous fumes.
 - (e) Group replacement
 - (f) Hazard models.
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