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18MA643

**Sixth Semester B.E. Degree Examination, July/August 2022**  
**Maintenance Engineering**

Time: 3 hrs.

Max. Marks: 100

**Note: Answer any FIVE full questions, choosing ONE full question from each module.**

**Module-1**

- 1 a. What is maintenance? List out objectives and functions of maintenance. (10 Marks)  
b. How do you classify the maintenance system? Explain in brief the preventive maintenance and predictive maintenance. (10 Marks)

**OR**

- 2 a. What is condition monitoring? Explain in brief the various methods and types of condition monitoring? (10 Marks)  
b. What suitable examples, explain in brief:  
i) Total productive maintenance ii) Design out maintenance. (10 Marks)

**Module-2**

- 3 a. Explain in brief the various activities carried out in repair cycle. (10 Marks)  
b. Explain with suitable mathematical model ; How do you fix optimal inspection frequency for an equipment. (10 Marks)

**OR**

- 4 a. Explain the economical and financial factors to be considered while studying replacement analysis. (08 Marks)  
b. A large scale industries uses 100 computers in their organization for various activates. The breakdown probability distribution is recorded of the table as follows :

|                           |     |     |      |      |      |      |     |     |
|---------------------------|-----|-----|------|------|------|------|-----|-----|
| Failure free months       | 1   | 2   | 3    | 4    | 5    | 6    | 7   | 8   |
| Probability of break down | 0.3 | 0.1 | 0.05 | 0.05 | 0.05 | 0.05 | 0.1 | 0.3 |

Average cost per terminal repair is Rs. 800/- while preventive maintenance cost per each machine is Rs. 200/-. Assume no cost is associated with terminal down time.

- i) Calculate cost of maintenance based on only on  
ii) Calculate the cost of preventive maintenance policy preventive maintenance policy.  
iii) Select and suggest best maintenance policy for these 100 computers. (12 Marks)

**Module-3**

- 5 a. How to define failure of a machine? List out the various causes for failure. (08 Marks)  
b. Explain in brief the various activity carried out for inspection, repair, replacement and complete overhaul of a machine tool. (12 Marks)

**OR**

- 6 a. Define maintenance planning and scheduling? Explain in brief scheduling techniques. (08 Marks)  
b. Explain in brief i) Total maintenance planning ii) Spare parts control in maintenance work. (12 Marks)

**Module-4**

- 7 a. Explain in brief the safety standard are following for a mechanical equipment. (08 Marks)  
b. Write a note on : i) Economic importance an Accident ii) Safety organization. (12 Marks)

**OR**

- 8 Write a short notes on the following :  
a) Safety standards for electrical equipment  
b) Safety standards for plant house keeping  
c) Analysis of accident records  
d) Safety standard for exhaust systems. (20 Marks)

**Module-5**

- 9 a. Explain how computer can be effectively used in maintenance management. (10 Marks)  
b. Discuss how a good, computer support to a maintenance organization will enhance the quality of maintenance work. (10 Marks)

**OR**

- 10 a. What are different methods used for dust control in an industry? (08 Marks)  
b. List out various types of pollution in industry. (04 Marks)  
c. What are the techniques to be used to control of noise in an industry? (08 Marks)

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