

**B.Tech. MECHANICAL ENGINEERING  
(COMPUTER INTEGRATED  
MANUFACTURING)**

**00083 Term-End Examination**

**June, 2018**

**BME-025 : CONDITION MONITORING AND  
MAINTENANCE ENGINEERING**

*Time : 3 hours*

*Maximum Marks : 70*

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**Note :** Answer any *seven* questions. *All* questions carry equal marks. Use of calculators/standard tables is allowed.

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1. (a) With reference to maintenance management, describe various states of a machine, which it experiences in its life. Give examples. 5
- (b) What are the functions of maintenance which are non-repetitive in nature ? Explain. 5
2. (a) Distinguish between 'No Maintenance Technique' and 'Operate to Failure and Corrective Maintenance'. 6
- (b) Describe various 'Time Based' Maintenance methods. 4

3. (a) Enumerate the merits and demerits of "Period-End Pile-Up" scheduling policy. 5
- (b) What are Jackson's conditions to solve  $n\text{-jobs} \times 3\text{ machines}$  sequencing problem ? Explain with examples. 5
4. Write short notes on : 5+3+2
- (a) A-B-C Analysis
- (b) G-O-L-F Analysis
- (c) S-D-E Analysis
5. (a) With the help of suitable example explain LEO approach. 5
- (b) Explain briefly various non-destructive testing techniques. 5
6. (a) What is trend monitoring ? Describe various stages that the equipment will experience while monitoring trend. 5
- (b) Describe the terms Prognosis and Diagnosis associated with condition monitoring. 5
7. A machine has been purchased at a cost of ₹ 1,60,000. The value of the machine is depreciated in the first three years by ₹ 20,000 each year and ₹ 16,000 per year thereafter. Maintenance and operating costs for the first three years are ₹ 16,000, ₹ 18,000 and ₹ 20,000 in that order, which increase by ₹ 4,000 every year. Assuming the interest rate of 10%, find the economic life of the machine. 10

8. What is TTT plotting of Reliability Centered Maintenance (RCM) ? Discuss any two methods of TTT plotting. 10
9. (a) Define the three types of availability and list out the factors affecting the availability. 5
- (b) A complex electronic system consisting of electronic gadgets has MTBF 80 hours and MTTR of 100 minutes. Find availability. Give your comments on the answer. 5
10. Write short notes on : 5+5
- (a) 5-S - KAIZEN
- (b) TPM culture and conceptual framework
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