

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

**Term-End Examination**

**June, 2017**

**00224**

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

*Time : 3 hours*

*Maximum Marks : 70*

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*Note : Answer any **five** questions. All questions carry equal marks. Use of scientific calculator is allowed.*

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1. (a) What is preventive maintenance ? Explain different preventive maintenance tasks. Compare preventive and breakdown maintenance.

(b) Distinguish between the following :

(i) Productive maintenance and Predictive maintenance

(ii) Planned maintenance and Scheduled maintenance

7+7

2. (a) How do you improve the reliability of equipment using the series and parallel connections ? Illustrate with an example.

- (b) Find the reliability of the following combination of the components whose reliabilities are shown in the blocks of the Diagram 1.

7+7

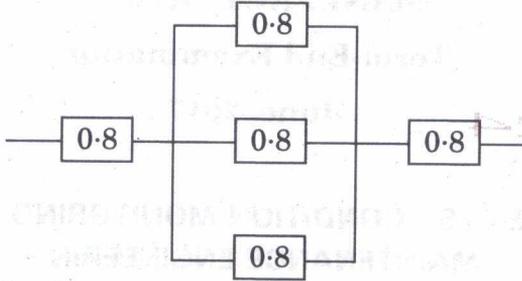


Diagram 1

3. (a) Differentiate between MTBF and MTTR.  
(b) Define and explain the concept of Kaizen. Discuss any two examples of Kaizen in maintenance.
4. (a) Distinguish between process FMEA and design FMEA. Discuss the merits and demerits of FMEA.  
(b) What is standardization ? What are the advantages of standardization ? What are its barriers ?
5. (a) Discuss the four steps — Detection, Diagnosis, Prognosis and Programme used in condition monitoring.  
(b) What do you understand by the term 'Maintenance Planning' ? What are the different phases involved in maintenance planning ?

7+7

7+7

7+7

6. (a) Explain the step-by-step procedure of reliability centred maintenance modelling and analysis.
- (b) Discuss the stages of machine life cycle with the help of Bath-Tub curve. 7+7

7. (a) Define Inventory. Discuss the role of inventory in maintenance management. What are the various methods used for inventory control of spare parts ?
- (b) What is A-B-C Analysis ? Explain the step-by-step method to conduct the A-B-C Analysis. 7+7

8. Write short notes on any **four** of the following :

$$4 \times 3 \frac{1}{2} = 14$$

- (a) Training Function
  - (b) Zero Breakdown
  - (c) Codification
  - (d) F-S-N-D (or F-S-N) Analysis
  - (e) Maintainability
  - (f) 5S Kaizen
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