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**Question Paper Code : 21838**

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2015.

Eighth Semester

Mechanical Engineering

ME 2037/ME 803/10122 MEE 45 — MAINTENANCE ENGINEERING

(Common to Production Engineering, Mechanical and Automation Engineering)

(Regulations 2008/2010)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define reliability.
2. What is Mean Time Between Failures (MTBF) and Mean Time to Failure (MTTF)?
3. List down the key features of condition monitoring.
4. What is the difference between Predictive Maintenance and corrective maintenance?
5. What is meant by Reliability Centered Maintenance (RCM)?
6. Define Root Cause Analysis (RCA.)
7. State the applications and limitations of thermistors.
8. What is work permit? What are the types of work permit?
9. Differentiate between fault tree diagrams and reliability block diagrams.
10. State the various phases present in a good maintenance management system.

PART B — (5 × 16 = 80 marks)

11. (a) What is equipment availability and describe the three basic approaches in detail.

Or

- (b) State the various objectives of maintenance planning. Derive the expression for determining Mean time to failure (MTTF).

12. (a) What are the steps involved in preventive maintenance? Why preventive maintenance is better than reactive maintenance?

Or

- (b) What do you understand by maintenance categories? Explain common types and explain the basis of their selection.

13. (a) What is wear debris analysis? Discuss in detail about its types.

Or

- (b) What is thermal monitoring? Explain its principle and uses of thermograph.

14. (a) (i) List out possible causes of failure of machine beds and how to overcome them.

- (ii) With aid of suitable sketches, describe the method of repairing cracks in machine bed by

(1) Riveting

(2) Hot Clamping.

Or

- (b) Briefly discuss the following in regard to bearings

(i) Failures

(ii) Characterization of failures

(iii) Causes

(iv) Solutions.

15. (a) Explain the repair method for any three material handling equipments.

Or

- (b) Discuss the following :

(i) Job order system

(ii) Use of computers in maintenance.