

**B.TECH.****THEORY EXAMINATION (SEM–VIII) 2016-17**  
**MAINTENANCE ENGINEERING & MANAGEMENT****Time : 3 Hours****Max. Marks : 100****Note : Be precise in your answer. In case of numerical problem assume data wherever not provided.****SECTION – A****1. Attempt the following:****10 x 2 = 20**

- (a) Define the maintenance.
- (b) What is the preventive maintenance?
- (c) What is the corrective maintenance?
- (d) What is meant by Redundancy?
- (e) Differentiate between adhesive and abrasive wear.
- (f) What is the splash circulating lubricant?
- (g) What is meant by Availability?
- (h) What is the maintainability?
- (i) What is the MTTF?
- (j) Write short note on hazard model.

**SECTION – B****2. Attempt any five of the following questions:****5 x 10 = 50**

- (a) What do you understand by break down maintenance? Discuss the various features of breakdown maintenance management?
- (b) What do you understand by the term 'Total Productive Maintenance'? What are the main features of Total Productive Maintenance?
- (c) A truck owner found from his past record that the maintenance cost was Rs. 200 for the first year and then increased by Rs. 2000 every year. The cost of truck A is Rs. 9000. Truck B type cost Rs. 10000. Annual maintenance cost is Rs. 400 and increase by Rs. 800 every year. Determine the best age at which to replace the trucks.
- (d) How the cost analysis of a typical maintenance department is carried out?
- (e) Explain the operating life cycle taking the example of radio and transistor.
- (f) Does maintenance management differ from Production management? If yes, in what way?
- (g) A system is composed of 5 identical independent elements in parallel. What should be the reliability of each element to achieve a system reliability of 0.96?
- (h) Explain PERT and its importance in network analysis. What are the requirements for application of PERT techniques?

**SECTION – C****Attempt any two of the following questions:****2 x 15 = 30**

- 3. Suppose a special purpose type of light bulb never lasts longer than two weeks. There is a chance of 0.3 that a bulb will fail at the end of the next week. Initially there are 100 new bulbs. The cost per bulb for individual replacement is Re. 1 and the cost per bulb for a group replacement is Re. 0.50. Which is the cheapest to replace all bulbs among given options?
  - (i) Initially,
  - (ii) Every week,
  - (iii) Every second week
  - (iv) Every third week?

4. In a computerized inventory system, what are the typical data files and what kind of output reports generated?
5. Explain how the theory of replacement is used in the following problems:
  - (i) Replacement of items whose maintenance cost varies with time?
  - (ii) Replacement of items that completely fail?