Total No. of Pages : 02

Total No. of Questions : 09

B.Tech. (CSE/ECE/ME) (Sem.-7,8) MAINTENANCE AND RELIABILITY Subject Code : BTME617-18 M.Code : 90485 Date of Examination : 11-01-2023

Time: 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

- 1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
- 2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
- 3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

- 1. Write briefly :
 - a) What is Breakdown maintenance?
 - b) How Maintenance Record keeping is different from Inventory record keeping?
 - c) Differentiate between Age replacement and Periodic replacement policy.
 - d) What is the need of maintenance planning for a production system and identify the benefits of effective maintenance?
 - e) How the performance of maintenance is measured?
 - f) Define the concept of system reliability.
 - g) Define Overall Equipment effectiveness (OEE).
 - h) Briefly explain Reliability function.
 - i) Define system Availability?
 - j) How Reliability can be incorporated in the design of equipment?

SECTION-B

- 2. Write various objective and functions of maintenance management.
- 3. Discuss about Maintenance Planning and the factors to be considered in maintenance planning.
- 4. A particular machine has a constant failure rate of $\lambda = 0.02$ hrs. (i) What is the probability that it will fail within first 10 hours, (ii) Suppose that the machine has successfully operated for 100 hrs, what is the probability that it will fail during the next 10 hours of operation.
- 5. Write difference between MTTF and MTBF with suitable examples.
- 6. What are various costs involved with a Machine breakdown? How this can be reduced with proper manpower planning and Training?

SECTION-C

7. a) Find the system reliability of the following series-parallel configuration. The components reliabilities are given as shown below:



- b) Write various reliability improvement techniques.
- 8. What do you understand by diagnostic maintenance? How it can be applied to thermal power plant? Discuss.
- 9. Define the concept of Failure Tree Analysis (FTA). Explain the key elements and steps involved in FTA. State some applications/uses of FTA.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.