

C037633(037)

B. Tech. (Sixth Semester) Examination, April-May 2022

(AICTE Scheme)

(Mechanical Engineering Branch)

MAINTENANCE and RELIABILITY

Time Allowed : Three hours

Maximum Marks : 100

Minimum Pass Marks : 35

Note : All questions are compulsory. Part (a) of each question is compulsory, and carries 4 marks from each unit. Attempt any two parts from (b), (c) and (d) of each unit. Draw neat sketches wherever required.

Unit-I

1. (a) Explain the need for plant maintenance. 4
- (b) Explain maintenance functions and activities. 8
- (c) Explain the principle of planned maintenance briefly. 8

[2]

- (d) What are 'condition monitoring' techniques generally adopted. List out the key features of condition monitoring. 3

Unit-II

2. (a) What is failure analysis? 4
(b) Explain the statistical and reliability concept of failure analysis. 8
(c) Explain the following : 8
(i) Wear out and cumulative factors
(ii) Classification and selectivity of factors
(d) Explain briefly about equipment replacement policy. 8

Unit-III

3. (a) What is meant by maintainability? 4
(b) Explain 'bath tube' curve with a neat sketch show its various phases. 8
(c) What are reliability improvement and give a case study about reliability through redundancy. 8
(d) Briefly explain : 8
(i) MTBF

C037633(037)

[3]

- (ii) MTTR
(iii) MWT
(iv) Failure rate

Unit-IV

4. (a) Explain work order. 4
(b) Write short note on : 8
(i) Work Measurements
(ii) Maintenance Scheduling
(c) Explain briefly about maintenance cost budget in any organization. 8
(d) Explain briefly how incentive can improve the performance of maintenance work? 8

Unit-V

5. (a) What kind of problems can be faced due to wear of machine components? 4
(b) Explain the maintenance strategies for : 8
(i) Couplings
(ii) Fastening Devices

C037633(037)

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[4]

- (c) Differentiate between preventive maintenance and break down maintenance. 8
- (d) Explain a decision tree for fault tracing with suitable illustrations. 8