8E4052

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B. Tech. (Sem. VIII) (Main/Back) Examination, April/May -2012
Mechanical Engineering
8ME4.1 Reliability & Maintenance Engineering

Time : **3** Hours]

[Total Marks : **80**
[Min. Passing Marks : **24**

*Attempt any **five** questions.*
*Selecting **one question** form **each unit**. All questions carry*
equal marks. Schematic diagrams must be shown wherever
necessary. Any data you feel missing suitably be assumed and stated
clerly.
Unit of quantities used/calculated must be stated clearly.
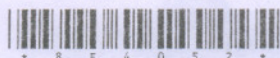
Use of following supporting material is permitted during examination.

1. _____ Nil _____   2. _____ Nil _____

UNIT - I

1   (a)   What are the objectives and functions of maintenance ?

4

    (b)   What is the need of planned maintenance ? Describe various
          maintenance policies.

6

    (c)   Explain preventive and corrective maintenance.

6

2   (a)   Explain the following :
          (i)   Break Down
          (ii)   Time Based Maintenance
          (iii) Scheduled Maintenance

8

    (b)   Write short notes on :
          (i)   Production Delays
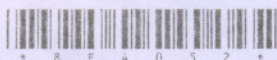   (ii)   Card History system

8

UNIT - II

3 (a) What is predictive maintenance ? Explain equipments used in predictive maintenance. **6**

   (b) Explain :
      (i) Computerized Maintenance
      (ii) Radiographic testing **10**

4 (a) What is condition monitoring ? Give methods of condition monitoring. Describe note non-destructive testing. **8**

   (b) Give short notes on :
      (i) Liquid Penetrate
      (ii) Total productive maintenance **8**

UNIT - III

5 (a) Define reliability. What is failure data analysis ? What are differences between MTTF & MTBF ? **8**

   (b) Explain :
      (i) Mean failure rate
      (ii) Hazard Rate
      (iii) Guarance period **8**

6 (a) Explain use of weibull probability chart for assessing characteristics life. **8**

   (b) Describe bath tub curve.

UNIT - IV

7 (a) What is system reliability ? Explain series parallel and mixed configuration. **8**

   (b) Describe techniques used for improvement in reliability. **8**

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8 (a) Explain following :
       (i)   Pareto Analysis
       (ii) Optimization of Reliability

                                                                    8

   (b) Explain redundancy unit and stand-by redundancy.

                                                                    8

UNIT - V

9 (a) What are the features and categorization of spares ?

                                                                    4

   (b) What is cost consideration ? Explain selective controls
       used in spare parts control.

                                                                    6

   (c) Explain AB Analysis of spare part management.

                                                                    6

10 (a) What are the techniques of cost reduction ? Explain
       inventory control of spares.

                                                                    8

   (b) Explain following :
       (i)   FSN Analysis
       (ii) Ved Analysis

                                                                    8