BACHELOR OF TECHNOLOGY IN MECHANICAL ENGINEERING (COMPUTER INTEGRATED MANUFACTURING)

Term-End Examination

December, 2013

BME-025 : CONDITION MONITORING AND MAINTENANCE ENGINEERING

Time : 3 hours   *Maximum Marks : 70*

*Note :   Answer **any seven** questions. All question carry equal marks. Use of scientific calculator is allowed.*

1. (a) Explain the objectives of plant engineering and management.   5

    (b) Explain the role of plant engineering in enhancing the machine life.   5

2. Differentiate the terms and Explain :

    (a) Planned Maintenance and Maintenance Planning   5

    (b) Preventive Maintenance and Maintenance Prevention   5

3. A company divides its maintenance crew into three teams for its preventive maintenance of heavy .vehicles The first team looks after the replacement of wornout parts, the second team with oiling and resetting and the third with checking and test running . The estimated time for maintenance of each of these vehicles is given in hours in the following table and passing on is not allowed. Find the sequence and schedule them so as to minimise the total elapsed time and idle time. Also interpret it in Ganttchart.   **10**

Team/Vehicle No. → ↓	1	2	3	4	5	6	7
Replacement Team	3	8	7	4	9	8	7
Resetting Team	4	3	2	5	1	4	3
Inspection Team	6	7	5	11	5	6	12

4. Write notes on :   **5+5=10**
   (a) GOLF Analysis   (b) XYZ Analysis

5. Distinguish the four philosophies clearly and explain the concept of each.   **10**
   (a) Time Based Maintenance
   (b) Failure Based Maintenance
   (c) Reliability Centred Maintenance
   (d) Condition Based Maintenance

6. What is Maintenance Information System ? How do you design it ?   **10**

7. A firm is thinking of a particular machine whose **10** cost price is ₹ 12,200. The scrap price of this machine is only ₹ 200. The maintenance costs are found to be as follows :

Year	1	2	3	4	5	6	7	8
Maintenance Cost	220	500	800	1200	1800	2500	3200	4000

Determine when the firm should get the machine replaced.

8. Define the following reliability characteristics in **10** designing of reliability centered maintenance planning and scheduling.
(a) T (mode)
(b) T (median)
(c) T (optimal)
(d) Characteristic life
(e) Bl life

9. What is Modular design (or modularigation) **10** while designing reliability system. What are its advantages ? Also discuss the term redundancy in Reliability Systems.

10. Describe any five of Eight Pillars of TPM. **10**

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