No. of Printed Pages : 3

BME-025

02645

BACHELOR OF TECHNOLOGY IN MECHANICAL ENGINEERING (COMPUTER INTEGRATED MANUFACTURING)

Term-End Examination

June, 2012

BME-025 : CONDITION MONITORING AND MAINTENANCE ENGINEERING

Time : 3 hours *Maximum Marks : 70*

Note : *Answer **any seven** questions, all questions carry equal marks. Use of calculator is **allowed**.*

1. (a) List out the objectives of plant Engineering and Maintenance. 5

   (b) Describe the functions of plant Engineering. 5

2. (a) Distinguish between No Maintenance Technique (NMT) and Operate to Failure and Corrective Maintenance (OFCM). 5

   (b) What are the situations warranting the contractual maintenance ? On what type of equipment do you suggest this policy ? Explain with Suitable Examples ? 5

3. Find the sequence for the following Jobs so as to minimise the idle time. Also prepare gantt chart. Assume that all the jobs first go for repair and then for finish. **10**

Jobs	1	2	3	4	5
Repair	20	28	25	20	22
Finish	24	26	15	27	15

4. List out various methods of classifying the inventory of spare parts and explain any one of them in detail with illustration. **10**

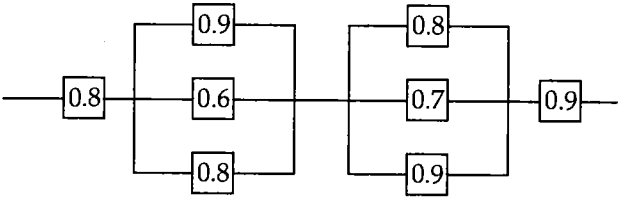
5. List out the Non Destructive Tests to estimate the condition of the equipment and explain two of them in detail. **10**

6. Describe the terms, 'Trend Monitoring' and condition checking'. Distinguish between condition Monitoring the fault Diagnosis. **4+6**

7. Machine A costs Rs. 50,000 and the operating costs are estimated at Rs. 5000 for the first year and increase by Rs. 1000 in the second and subsequent years. Machine B costs Rs. 60,000 and operating costs are Rs. 2000 in the first year and increase by Rs. 4000 in the second and subsequent years. If we now have machine of type A, should we replace it with B ? If so, when ? Assume that both machines have no resale value and future costs are not discounted. **10**

8. The time between failures for machine are found to be 65.5, 63.4, 83.5, 75.3, 83.2, 73.0, 84.3, 77.1, 78.4, 70.0, 65.1, 72.5, 72.7, 72.3 and 61.6 hrs. Test if the machine is behaving normally. Given D critical for a sample size of 15 is 0.201. **10**

9. Consider a system with the combined (series and parallel connections) system as shown in the following fig. The reliability of each of the element is given in figure itself. Find the overall reliability of the total system. **10**



10. What do you understand by 55-KAIZEN ? Explain each term of 55-KAIZEN in detail. **10**