No. of Printed Pages : 3

BME-025

B.Tech. MECHANICAL ENGINEERING (COMPUTER INTEGRATED MANUFACTURING)

00813

Term-End Examination

December, 2016

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 scientific calculator is allowed.*

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1. List the functions of plant engineering and maintenance department. *10*

2. (a) Differentiate between breakdown and emergency maintenance. *5*

   (b) Distinguish between scheduled maintenance and shutdown maintenance. *5*

3. (a) What is relaxed scheduling policy ? Give its merits and demerits. *4*

(b) The estimated time (based on the condition) on five lathe machines, their reported time (in maintenance log book on 29.12.2006) and due time (as per maintenance master schedules) are given below. Prepare the correct sequence by examining the following rules :

(i) SPT, (ii) Reported time, (iii) LPT, and (iv) EDT with reference to (1) Total completion time, (2) Average completion time, (3) Average number of machines in the system, and (4) Average Delay in Repair. *6*

Machine	Reported time from log book 29.12.2006	Estimated maintenance time (in hours)	Due time (hours from now as per MMS)
Lathe-1	8:00 am	19	55
Lathe-2	8:35 am	14	56
Lathe-3	9:00 am	15	35
Lathe-4	9:15 am	21	65
Lathe-5	9:45 am	16	50

4. What is A-B-C Analysis ? Explain the step-by-step method to conduct the A-B-C analysis. *10*

5. Write detailed notes on the following NDT techniques : *10*

   (a) Liquid penetration

   (b) Radiography

6. Explain the procedural steps in setting up a CBM activity. What consequences do you expect with implementation of CBM ? *10*

7. (a) What do you understand by 'No Trend' ? Explain with an example. *5*

   (b) What is serial correlation ? Discuss its application in the analysis of machine down time. *5*

8. The time between failures for a machine are noticed as follows :

   12, 10, 7, 11, 5, 22, 9, 19, 4, 13, 17, 29, 34, 25, 55, 40, 67, 46, 79, 96

   Draw TTT plot and comment. *10*

9. Deduce the expression for the overall reliability of a circuit containing n components connected in series. Illustrate with an example. *10*

10. (a) Explain the role and focus of TPM in brief. *5*

    (b) Compare TPM and TQM. *5*
