

**B.Tech. MECHANICAL ENGINEERING
(COMPUTER INTEGRATED
MANUFACTURING)**

Term-End Examination

00292

December, 2017

**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.*

1. (a) Distinguish between Centralized and Decentralized plant engineering. 5
- (b) "Mismanaged PEM leads to heavy losses to the organisation." Interpret and comment. 5
2. Describe the following maintenance methods : 10
 - (a) Breakdown maintenance
 - (b) Emergency maintenance
 - (c) No maintenance technique
 - (d) Operate to failure and Corrective maintenance

3. (a) Write a short note on short work schedules. 4

(b) Charminar Car Care Centre, the authorized servicing centre of Maruti Cars, takes up car servicing based on the number of cars arrived till the morning of every Monday and promises delivery accordingly. The estimated repair time, the arrival and the promised delivery dates are given in the following table : 6

Car Number	Date Arrived	Estimated Servicing Time	Promised Delivery Date
AP15 – 1718	11-05-06, 16 hrs	5 days	05-06-06, 16 hrs
MS05 – 1234	15-05-06, 15 hrs	6 days	24-06-06, 15 hrs
DL06 – 6611	14-05-06, 12 hrs	4 days	29-05-06, 12 hrs
TN14A – 555	10-05-06, 11 hrs	9 days	26-05-06, 11 hrs
UP5A – 5995	11-05-06, 10 hrs	7 days	31-05-06, 10 hrs

4. Explain VEO, CIN and VEIN analyses. Discuss their relevance to the maintenance department. List out the advantages of maintenance system optimization by VEIN analysis. 10

5. Explain the analysis procedure for FMEA/FMECA. Explain the applications and merits. 10
6. (a) Distinguish between Fault Diagnosis and Condition Monitoring. 5
- (b) Explain the principles of CBM. 5
7. Explain Bath-tub curve with suitable examples. Explain various maintenance strategies that are appropriate at each stage. 10
8. In a machine shop, the TBF hours of 25 machines were found as follows. Test whether they can fit in log-normal distribution given. $D_{critical}$ for a sample size is 0.165. 10

818.1	1407.5	464.9	4991.0	452.0
1773.0	326.9	964.8	1677.8	282.3
1725.4	652.3	639.2	338.8	1847.8
734.9	220.2	1078.1	1077.3	629.4
240.5	511.8	1083.4	821.3	670.8

9. Discuss the method of evaluation of overall reliability for a circuit with combination (series and parallel) of components. Illustrate with an example. 10
10. (a) Explain the terms Zero Defects, Zero Breakdown, Zero Accidents with reference to TPM. 5
- (b) Distinguish between TPM and TQM. 5
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