

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

01189

Term-End Examination

June, 2014

**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. List out various functions of Maintenance department and explain each of them. 10

2. Distinguish between
 - (a) Productive Maintenance and Predictive Maintenance 5

 - (b) Planned Maintenance and Scheduled Maintenance 5

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

Car Number	Date and Time Arrived	Estimated Servicing Time	Promised Delivery Date
AP10K-4848	10.06.11, 18 hrs	5 days	04.07.11, 18 hrs
SN20J-1995	14.06.11, 17 hrs	6 days	23.07.11, 17 hrs
DL11M-1965	13.06.11, 14 hrs	11 days	28.06.11, 14 hrs
KS29D-1201	09.06.11, 13 hrs	9 days	25.06.11, 13 hrs
HP20M-2000	10.06.11, 12 hrs	7 days	30.06.11, 12 hrs

What will be the better priority rule if Benz Company insists to the service centre on minimum delay to the customer ? Compare results in (a) SPT (b) FCFS (c) LPT (d) EDD. Also compare the total completion time, average completion time, average number of cars in the system and average delay in service.

10

4. What are the advantages of standardization ?
What are its barriers ?
5. Describe various non-destructive tests employed by the Maintenance department to detect failures in machines.

10

10

6. Discuss the four steps — Detection, Diagnosis, Prognosis and Programme used in Condition Monitoring. 10

7. A fleet owner finds from his past records that the cost per year of running a vehicle whose purchase price is ₹ 50,000 are as under :

Year	1	2	3	4	5	6	7
Running cost	5000	6000	7000	9000	15000	16000	18000
Resale value	30000	15000	7500	3750	2000	2000	2000

Thereafter running costs increase by ₹ 2000, but resale value remains at ₹ 2000. At what age is replacement due ? 10

8. Define and explain the following terms with reference to reliability studies : 10

- (a) Probability Density Function (PDF)
- (b) Cumulative Distribution Function (CDF)
- (c) Reliability Function (R)
- (d) Hazard Function (H)

9. Discuss the stages of machine life cycle with the help of Bath-Tub curve. 10

10. (a) What is KAIZEN ? Discuss.
(b) Explain the components of Standard Work Kaizen. 10