



Printed Pages : 2

TMT501

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 4086

Roll No.

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B.Tech

(SEM V) ODD SEMESTER THEORY EXAMINATION 2009-10
RELIABILITY & MAINTENANCE ENGINEERING

Time : 3 Hours]

[Total Marks : 100

Note : *Attempt all questions.*

- 1 Attempt any **two** parts of the following : $10 \times 2 = 20$
- (a) Write an essay on "Need for Maintenance".
 - (b) Discuss how preventive maintenance is better than breakdown maintenance.
 - (c) Explain the terms - inspection, inspection interval and inspection reports.
- 2 Attempt any **four** parts of the following : $5 \times 4 = 20$
- (a) Discuss the role of computers in a maintenance program.
 - (b) Name various types of lubrication systems and explain any one of them with the help of a neat diagram.
 - (c) List various non-destructive testing methods and explain magnetic particle testing method.
 - (d) Describe radiographic testing.
 - (e) What is liquid penetrant test ? This test is for which defect ?
 - (f) Explain the procedure of predictive maintenance.



- 3 Attempt any **two** parts of the following : $10 \times 2 = 20$
- (a) Discuss alignment and lubrication problem in gears and suggest their remedies.
 - (b) (i) Differentiate between gear and sprocket.
(ii) Explain shock overloading and normal wear in gears.
 - (c) Enlist the factors which are to be considered for proper maintenance of mechanical drives.
- 4 Attempt any **two** parts of the following : $10 \times 2 = 20$
- (a) Differentiate between a pump and a compressor.
 - (b) Explain the vibration problems associated with compressor. Discuss its maintenance.
 - (c) Enlist the factors associated with the maintenance of reciprocating and a centrifugal pump.
- 5 Attempt any **four** parts of the following : $5 \times 4 = 20$
- (a) System is having 1000 elements each having a Mean Time Between Failures (M.T.B.F.) of 1,00,000 hours. What is the probability of failure of the system, if its cumulative operating time is 10 hours ?
 - (b) Explain the use of Pareto curve in Reliability improvement.
 - (c) Describe the method for improving reliability during design.
 - (d) Define the term 'Redundancy' and 'Group Redundancy'.
 - (e) Explain the following terms :
 - (i) Hazard rate and
 - (ii) Mean Time to failure
 - (f) Discuss failure data analysis.

