Printed Pages : **2**   **TMT501**

(Following Paper ID and Roll No. to be filled in your Answer Book)
PAPER ID : 4086   **Roll No.**

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 :   **10×2=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 :   **5×4=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 :   **10×2=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 :   **10×2=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 :   **5×4=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.