Total No. of Questions :5] *[Total No. of Printed Pages :2*

Roll No .....

AU/ME - 801(C)

B.E. VIII Semester

Examination, June 2016

Reliability and Maintenance

(Elective - III)

Time : Three Hours

Maximum Marks : 70

Note: i) Answer five questions. In each question part A, B, C is compulsory and D part has internal choice.
ii) All parts of each question are to be attempted at one place.
iii) All questions carry equal marks, out of which part A and B (Max. 50 words) carry 2 marks, part C (Max. 100 words) carry 3 marks, part D (Max. 400 words) carry 7 marks.
iv) Except numericals, Derivation, Design and Drawing etc.

1. a) Give definition of reliability.
   b) Explain important factors involved in giving reliability of a component.
   c) What is Weibull distribution used in probability calculation?
   d) Explain normal distribution. How reliability can be computed with distribution.

   OR

   Derive an equation showing relation between reliability and MTTF.

2. a) Define maintainability of a mechanical system.
   b) Define redundancy system.
   c) Derive equation for calculation of reliability of a series system.

   d) A parallel system is composed of ten identical independent components. If the system reliability is 0.95, how poor the component can be?

   OR

   Explain Markov analysis in detail. How reliability can be calculated from this model.

3. a) Write function of a maintenance activity in an industry.
   b) Define breakdown maintenance.
   c) Define design-out maintenance. In which industry this type of maintenance can be used.
   d) Compare predictive and preventive maintenance with examples.

   OR

   Explain steps to be taken in adoption of emergency maintenance.

4. a) Explain term Condition Based Maintenance (CBM).
   b) Write benefits of using CBM.
   c) What are steps involved in vibration monitoring.
   d) Write in detail about wear debris monitoring in mechanical system.

   OR

   Explain corrosion monitoring in detail.

5. a) Write benefits of Reliability Centered Maintenance (RCM).
   b) Define Total Productive Maintenance (TPM).
   c) Write in short about Failure Modes and Effects Analysis (FMEA).
   d) Write applications and benefits of using Failure Modes, Effects and Criticality Analysis (FMECA).

   OR

   Differentiate qualitative and quantitative approach used in FMECA.

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