

Code No: 118CQ

**R13**

**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD**

**B. Tech IV Year II Semester Examinations, May - 2017**

**MAINTENANCE AND SAFETY ENGINEERING**

**(Common to ME, AME, MSNT)**

**Time: 3 hours**

**Max. Marks: 75**

**Note:** This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

**PART - A**

**(25 Marks)**

- 1.a) The definition of Reliability has four key elements – What are they? [2]
- b) List the functions of effective maintenance management. [3]
- c) What are the two types of maintenance generally in use? Explain briefly. [2]
- d) What is ABC Inventory Control? What are its objectives? [3]
- e) List the different types of hazards for the safety of industrial workers. [2]
- f) What is 'Maintenance Budgeting'? Explain the need for Maintenance Budget Preparation. [3]
- g) List the RCM Program Components. [2]
- h) What is 'Fault Tree Analysis'? Explain briefly. [3]
- i) What is the difference between Maintenance and Maintainability? [2]
- j) What are the two kinds of maintenance activity can be identified for any product? Explain. [3]

**PART - B**

**(50 Marks)**

2. Describe the various methods of Maintenance Project Control. Supplement your answer with relevant examples. [10]
- OR**
3. Describe the following Maintenance Strategies and their applications : Run – to – failure, Time – based Maintenance, and Condition – based Maintenance. [10]
4. Define 'Preventive Maintenance'. What is its primary goal? How do you evaluate a Preventive Maintenance Program? Explain. [10]
- OR**
5. What are the different Inventory Control Models? Explain the Economic Lot Size Model with Uniform Rate of Demand, Finite Rate of Replenishment – and – having NO Shortages. [10]

6. Explain the methods of estimating the Maintenance Labor Cost and Material Cost. [10]

**OR**

7. Describe the role of Safety Officer in maintenance work. Explain the guidelines to improve safety in maintenance work. [10]

8. Explain the Functional Failures, Failure Modes, Failure Effects, and Failure Consequences of Reliability Centered Maintenance. [10]

**OR**

9.a) Explain the Reliability Measures and Formulas.

b) Describe the RCM Benefits and Reasons for Its Failures. [5+5]

10.a) Discuss the general rules of Design for Maintainability.

b) 'The measures of Maintainability often include a combination of certain factors' – what are they? Explain. [5+5]

**OR**

11. 'The system life cycle may be divided into four phases' – what are they? Explain in detail. [10]

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