

relevance in the service industry ?

- (c) Does maintenance management differ from Production management ? If yes, in what way ?
- (d) How the cost analysis of a typical maintenance department is carried out ?
- (e) In a computerized inventory system, what are the typical data files and what kind of output reports generated ?
- (f) What are typical down time costs which are associated with breakdown ?

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

PAPER ID : 2985

Roll No.

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**B.Tech.**

(SEM. VIII) THEORY EXAMINATION 2011-12

**MAINTENANCE ENGINEERING AND  
MANAGEMENT**

Time : 3 Hours

Total Marks : 100

Note :—Attempt all questions.

1. Attempt any **four** parts of the following :— (5×4=20)
  - (a) Explain the operating life cycle taking the example of radio and transistor.
  - (b) How does reliability helps in performance of maintenance function ?
  - (c) Explain the following briefly :
    - (i) Redundancy
    - (ii) Availability
    - (iii) Maintainability.
  - (d) A system is composed of 5 identical independent elements in parallel. What should be the reliability of each element to achieve a system reliability of 0.96 ?



- (e) A five-component system is connected as shown in figure. Draw logic diagram for evaluating the system reliability. If all the components are identical and independent with a reliability of 0.8, determine the system reliability.
- (f) What do you understand by Failure rate curve ?
2. Attempt any **four** parts of the following :— (4×5=20)
- (a) Do maintenance management principles have any relevance in the service industry ?
- (b) What do you understand by break down maintenance ? Discuss the various features of breakdown maintenance management ?
- (c) How is preventive maintenance different from break down maintenance ?
- (d) What is the need for better maintenance ? What are the elements of maintenance planning ?
- (e) What are the responsibilities of maintenance planning and scheduling ?
- (f) What do you understand by the term 'Total Productive Maintenance' ? What are the main features of Total Productive Maintenance ?
3. Attempt any **two** parts of the following :— (2×10=20)
- (a) Explain how the theory of replacement is used in the following problems :
- (i) Replacement of items whose maintenance cost varies with time ?
- (ii) Replacement of items that completely fail ?

- (b) In what kind of situation will 'group replacement' find an application ?
- (c) Suppose a special purpose type of light bulb never lasts longer than two weeks. There is a chance of 0.3 that a bulb will fail at the end of the next week. Initially there are 100 new bulbs. The cost per bulb for individual replacement is Re. 1 and the cost per bulb for a group replacement is Re. 0.50. Is it cheapest to replace all bulbs :
- (i) Initially,
- (ii) Every week,
- (iii) Every second week
- (iv) Every third week ?
4. Attempt any **two** parts of the followings :— (2×10=20)
- (a) Can there be multiple optimal solutions to an assignment problem ? How to identify such situations ?
- (b) Explain PERT and its importance in network analysis. What are the requirements for application of PERT techniques ?
- (c) Discuss the various features of breakdown maintenance planning ? What are the reasons for breakdown maintenance ?
5. Attempt any **four** parts of the following :— (4×5=20)
- (a) What is the objective of Manpower Planning ?