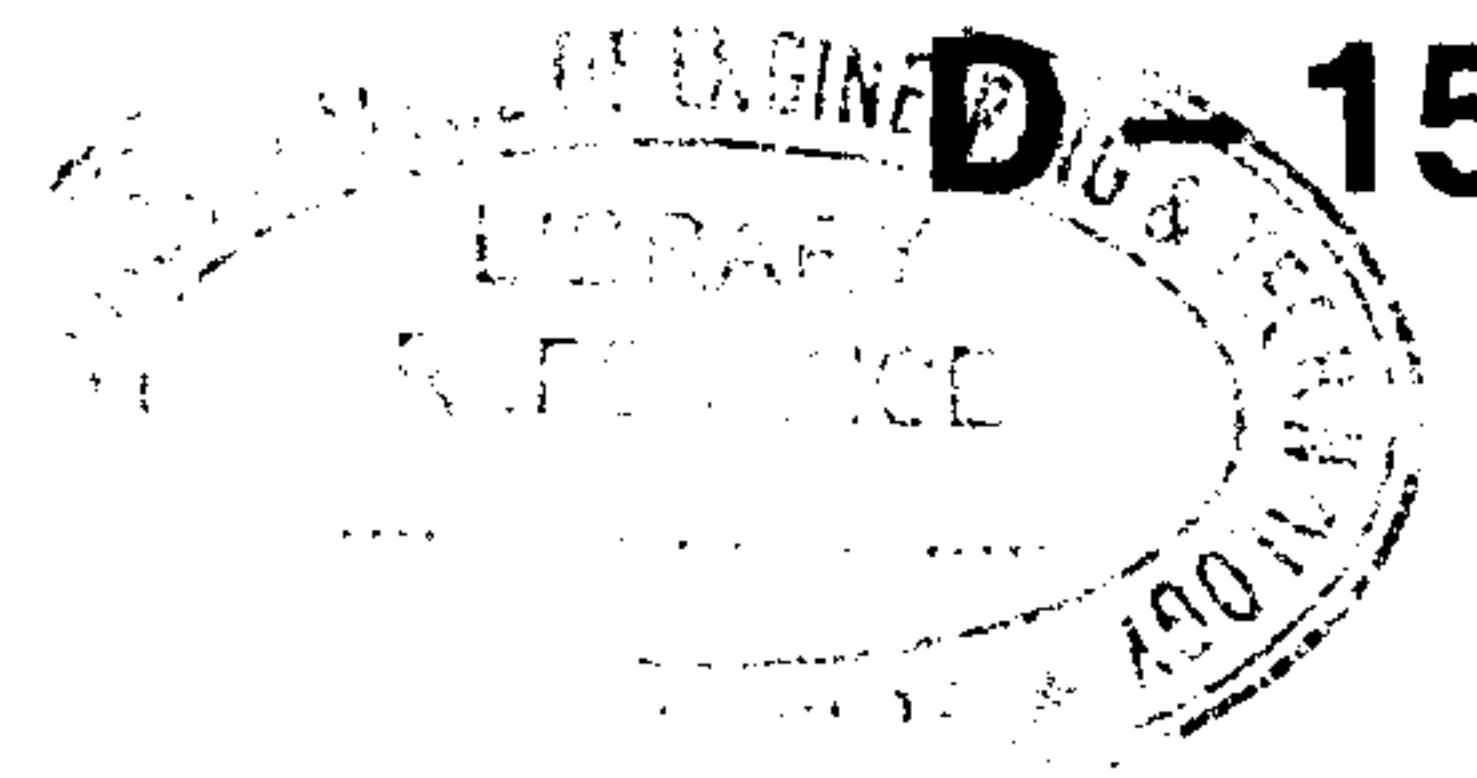




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Reg. No. : .....

Name : .....

**Seventh Semester B.Tech. Degree Examination, November 2017  
(2013 Scheme)**

**13.706.1 : PLANT ENGINEERING AND MAINTENANCE (MPU)**

Time : 3 Hours

Max. Marks : 100

**PART – A**

Answer **all** questions from *Part – A* :

1. Explain the effect of temperature on wear.
2. List down the applications of wear.
3. What are the merits of synthetic lubricants ?
4. What is the significance of Weibull distribution in failure data analysis ?
5. Explain the term system reliability.
6. What are the parameters governing maintainability ?
7. What are the causes of obsolescence ?
8. Enumerate of objectives of maintenance.
9. Give a typical structure of safety organisation.
10. What is meant by TPM ?

**(10×2=20 Marks)**

**PART – B**

Answer **one full** question from **each** Module :

**Module – I**

11. a) Discuss the design considerations to minimize wear in machine parts. **8**
- b) Give an account on important theories associated with wear process. **12**

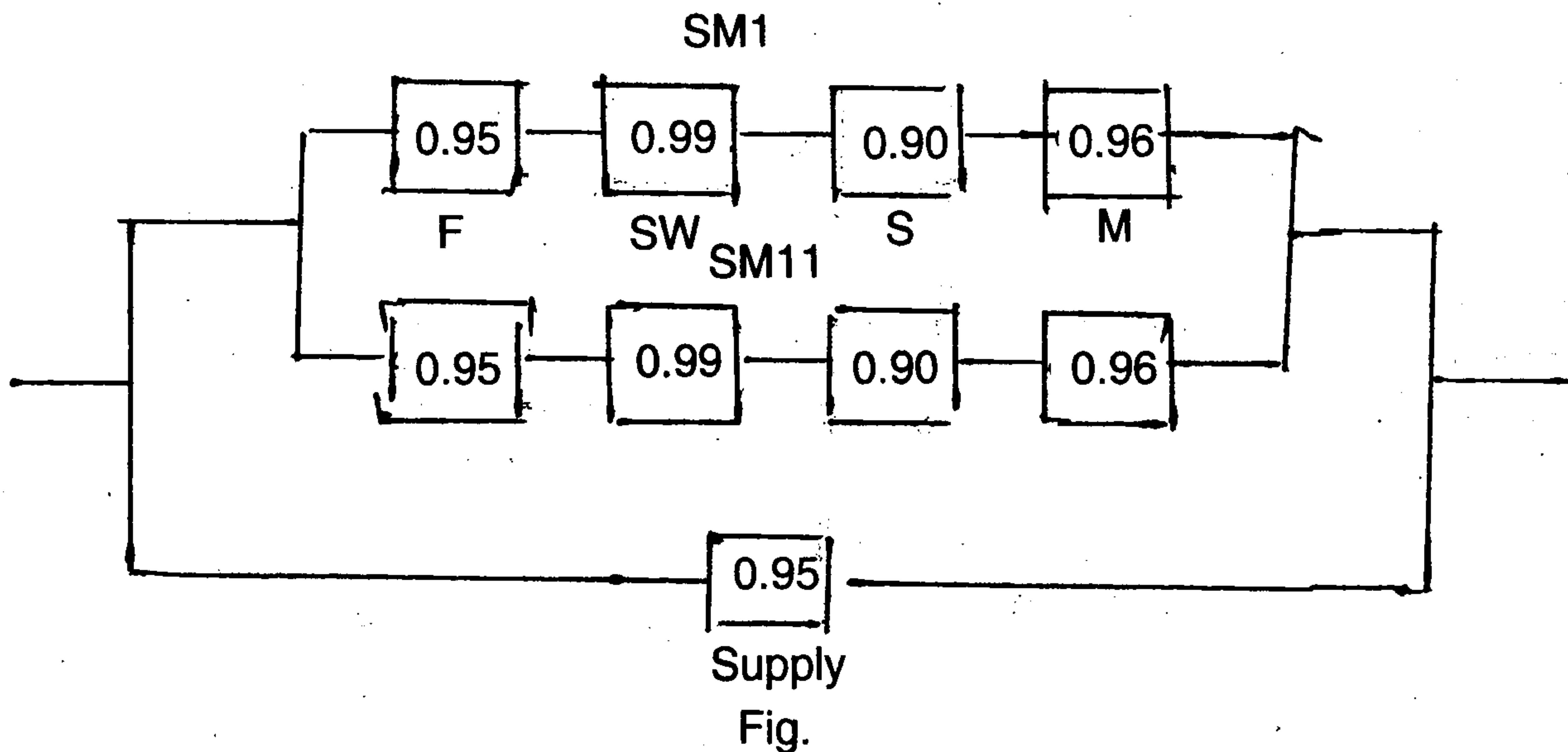
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- 12. a) Describe various types of additives used in lubricants. 10
- b) Enumerate the procedure for determination of viscosity of a lubricating oil. 10

**Module – II**

- 13. a) What are the different methods adopted for improving system reliability ? Explain. 10
- b) 2 shunt motors are running in parallel and connected to a common supply of reliability 0.95 . The reliability of motor fuse, switch, motor starter and motor itself are 0.95, 0.99, 0.90 and 0.96 respectively. Find reliability of total system. (Fig.) 10



- 14. a) Explain the term 'availability'. Discuss different types of availability and differentiate between them. 10
- b) Discuss the procedure for failure data analysis of 1000 number of identical components. 10

**Module – III**

- 15. a) Discuss the factors which are responsible to replace the equipment although it may be running. 10
- b) Debate on the topic 'Repair vs Replacement'. 10



16. a) Distinguish between 'breakdown', 'preventive' and 'predictive' types of maintenance and stating the type of management decisions involved in each of them. **14**
- b) Explain the systematic procedure for MAPI method. **6**

**Module – IV**

17. Enumerate the safety precautions to be observed by workers operating the following machines :
- i) Surface grinding machine
  - ii) Punch press
  - iii) Electric Arc welding machine
  - iv) Lathe. **20**
18. a) Give an account on recent developments of maintenance methods in industries. **10**
- b) Explain the various provisions under Workmen's Compensation Act regarding accidents of workers. **10**

**(4×20=80 Marks)**

