

Reg. No.....

Name.....

B.TECH DEGREE EXAMINATION, DECEMBER 2013

Seventh Semester

Branch: Production Engineering

PE 010 706L05- PLANT ENGINEERING AND MAINTENANCE (PE)

MODEL QUESTION PAPER

(Regular-New Scheme -2010 Admission onwards)

Time: Three Hours

Maximum: 100 Marks

Part A

Answer all questions.

Each question carries 3 marks.

1. Discuss the objectives of preventive maintenance.
2. Explain the effect of wear on performance of machine parts.
3. How do you calculate parallel system reliability ?
4. Discuss the major causes of accidents in industries.
5. Define reliability centered maintenance.

5x3 = 15 marks

Part B

Answer all questions.

Each question carries 5 marks.

6. Discuss the role of inspection in reducing breakdown.
7. Describe the various factors influencing wear.
8. Distinguish between chance failure and wear out failure.

Turn over

9. Explain the term Total Productive Maintenance.

10. What are the common safety measures used in an industry ? (5x5 = 25 marks)

Part C

Answer all questions.

Each question carries 12 marks.

11. Explain the concept of preventive maintenance. How does it differ from periodic maintenance ?

OR

12. a. Explain the terms failure rate, MTBF, and MTTR.

b. Describe the failure modes of components with respect to common life characteristic curve.

13. a. What are the different wear mechanisms ? Explain.

b. State and explain Archard's wear equation. What do you mean by the term wear rate ?

OR

14. a. Explain different methods employed to improve wear resistance of machine parts.

b. Distinguish between fretting and corrosion.

15. a. Distinguish between group replacement and individual replacement.

b. The following failure rate have been observed for a certain type of bench lamps.

Months :	1	2	3	4	5	6	7	8
Probability of failure during the month	0.05	0.08	0.12	0.18	0.25	0.20	0.08	0.04

The cost of replacing an individual failed lamp is Rs. 40. The decision is made to replace all lamps simultaneously at fixed intervals and also to replace individual lamps as they fail in service. If the cost of replacement is Rs. 9 per lamp, what is the best interval between group replacements?

OR

16. a. Describe the maintenance cost estimating techniques.

b. What is MAPI method ?

17 a. How does variability of performance affects the reliability and maintainability of a system.

b. Discuss the various design factors which affects the reliability and maintainability of a system.

OR

18. a. Distinguish between economic life and useful life of an equipment.

b. Explain the term Overall Equipment effectiveness (OEE).

19. a. Discuss the legal provisions existing for safety in industries.

b. Write short note on:

- i. Accident proneness
- ii. Fire protection

OR

20. a. Discuss the harmful effects of industrial waste.

b. What is air pollution? Name various sources of air pollution.

12x5 = 60 marks
