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Question Paper Code: U7901

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2025

Sixth Semester

Mechanical Engineering

21MEV901 MAINTENANCE ENGINEERING

(Regulations 2021)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

- _____ maintenance is regular period planned maintenance which eliminates breakdowns and outages. CO1- U
(a) Routine (b) Preventive (c) corrective (d) Operation
- Maintenance cost consists of the following action
(a) Replacement of the components (b) Repair of components
(c) Service of Components (d) All of the above
- With the increase in cost of preventive maintenance, the breakdown maintenance cost will _____. CO1- U
(a) Decrease (b) Increase at faster rate
(c) No charge (d) Increase
- Casual Maintenance of a machine is called CO1- U
(a) Routine maintenance (b) Preventive maintenance
(c) Unscheduled maintenance (d) Periodic maintenance
- Condition monitoring is the basic for _____ maintenance. CO1- U
(a) Shut down (b) Preventive (c) Predictive (d) Break down
- Which condition monitoring technology is not used to identify problems with bearings CO1- U
(a) Vibration analysis (b) Shock pulse method

- (c) Themography (d) Acoustic leakage monitoring
7. Why failure occurs in bearing? CO1- U
 (a) Proper bearing selection (b) Improper lubrication
 (c) Proper mounting (d) Sufficient lubricant quantity
8. The general failure mode in the gears are CO1- U
 (a) Fatigue (b) Wear (c) Stress rupture (d) All of the above
9. Fork lift truck is used for CO1- U
 (a) lifting and lowering (b) vertical transportation
 (c) both 'a' and 'b' (d) None of the above
10. The following is used to transport materials having flat bottoms CO1- U
 (a) Belt conveyor (b) Roller conveyor
 (c) Chain conveyor (d) None of the above

PART – B (5 x 2= 10 Marks)

11. Explain the Maintenance economics. CO1- U
12. What is meant by Reliability Centered Maintenance? CO1- U
13. Name some of the methods of leakage monitoring CO1- U
14. List some of the inspection performed on gears CO1- U
15. State the benefits of proper maintenance of material handling equipments. CO1- U

PART – C (5 x 16= 80 Marks)

16. (a) Explain the concepts of reliability and machine availability, and their impact on overall production performance. CO1 U (16)
 Or
 (b) Discuss how maintenance planning principles can be applied to reduce downtime and enhance operational efficiency in a manufacturing unit. CO1- U (16)
17. (a) Create a preventive maintenance schedule for a manufacturing plant to reduce machine breakdowns and improve efficiency. CO2- App (16)
 Or
 (b) Construct a repair and maintenance system for railway engines to ensure smooth and safe operation. CO2- App (16)

18. (a) Utilize temperature-sensitive tapes and pistol thermometers to detect overheating issues in industrial motors and transformers. CO3- App (16)
- Or
- (b) Utilize vibration analysis and thermal imaging methods to detect potential failures in high-speed industrial gearboxes. CO3- App (16)
19. (a) Organize a maintenance plan that integrates logical fault location methods for diagnosing failures in industrial gear systems. CO4- App (16)
- Or
- (b) Apply engineering techniques to refurbish damaged gear teeth and extend the service life of industrial gearboxes. CO4- App (16)
20. (a) Construct a systematic approach for diagnosing and repairing failures in forklifts to enhance their operational efficiency. CO5- App (16)
- Or
- (b) Utilize predictive maintenance techniques to enhance the lifespan of conveyor systems in logistics and warehousing operations. CO5- App (16)

