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Reg. No. :

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Question Paper Code: 99718

B.E./B.Tech. DEGREE EXAMINATION, NOV 2023

Elective

Mechanical Engineering

19UME918- MAINTENANCE ENGINEERING

(Regulations 2019)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. What is the third phase of equipment life cycle? CO1 - U
(a) Intrinsic (b) Design defect
(c) Wear out failure (d) None of the above
2. The ____ goes on increasing with the increase in degree of maintenance efforts CO1 - U
(a) Cost of down time (b) Cost of spares and maintenance
(c) Labor and Overhead Cost (d) All of the above
3. Maintenance that involves a system of periodic inspection and maintenance designed to keep machine in operation is called CO1 - U
(a) Total productive maintenance (b) Preventive maintenance
(c) Breakdown maintenance (d) Predictive maintenance
4. A lubricant oil is needed to run the machine ____ CO1 - U
(a) Quickly (b) With increased friction
(c) With cleanliness (d) Without noise
5. Condition monitoring is the basic for ____ maintenance. CO1 - U
(a) Shut down (b) Preventive
(c) Predictive (d) Break down

6. Wear debris analysis is related to CO1 - U
 (a) Oil analysis (b) Temperature analysis
 (c) Pressure analysis (d) None of the above
7. The general failure mode in the gears are CO1 - U
 (a) Fatigue (b) Wear (c) Stress rupture (d) All of the above
8. Which of the following is not used in testing the pitch accuracy of lead screw? CO1 - U
 (a) A negative stop (b) Slip gauge
 (c) Length bars (d) Dial gauge
9. Wheel barrows 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= 10Marks)

11. State the components of maintenance cost. CO1 - U
12. Name the five S principles used for implementations of TPM CO1 - U
13. What are three types of condition monitoring? CO1 - U
14. List out the steps of Event Tree Analysis (ETA) CO1 - U
15. Mention the use of work order backlog. CO1 - U

PART – C (5 x 16= 80Marks)

16. (a) Demonstrate how objectives and principles of planned maintenance leading to low maintenance cost? CO2 - U (16)
 Or
 (b) Discuss and choose a type of maintenance organization model among the two types of maintenance organization model with neat sketch. CO2 - U (16)
17. (a) List the pillars of TPM and how the TPM procedures lead to machine availability? CO3 - U (16)

Or

- (b) Explain the process of Reliability centered maintenance and their application. CO3 - U (16)
18. (a) What is the principle and uses of thermograph used in industries? How do you analyze thermographs obtained in thermal power station? CO4 - U (16)
- Or
- (b) Briefly explain the basic steps in conditional monitoring CO4 - U (16)
19. (a) Investigate the procedure for the repair cycle of gears and lead screw. CO5 - U (16)
- Or
- (b) State and draw the various fault tree diagram and reliability block diagram. CO5 - U (16)
20. (a) List various Hydraulic and Pneumatic equipment used in material handling purposes. How to maintain it? CO6- U (16)
- Or
- (b) Examine the preventive maintenance strategies for Conveyors. CO6 - U (16)

