

DEPARTMENT OF MECHANICAL ENGINEERING

**ME 6012 MAINTENANCE ENGINEERING
QUESTION BANK**

Unit-I-Principles And Practices Of Maintenance Planning :

Part-A (2 Marks) :

1. What is meant by maintenance planning
2. What are the objectives of maintenance
3. What are the principles of planned maintenance activity
4. What are the benefits of sound maintenance system
5. Define machine availability
6. What are the factors for availability?
7. Give the types of maintenance organization
8. What are the sources of maintenance cost?
9. What is meant by MTBF and MTTR
10. Define Reliability
11. Define failure rate.
12. Define maintenance action rate
13. Define failure Density
14. State the benefits of reliability analysis in Industries
15. Define maintenance action rate
16. State the types of reliability
17. Define maintainability
18. list the main factors of maintenance cost.
19. State the types of maintenance budget
20. State the components of maintenance cost

Part-B (16 Marks) :

1. What do you mean by maintenance job planning? Discuss various steps of maintenance job planning.
2. What is long term plan? Discuss few long term planning?
3. What are the objectives of maintenance organization and what different types of organizations are in use in Indian industries?
4. What is equipment availability and what are the three basic approaches to define and quantity availability.

5. Explain MTBS, MTBF, MTTF, MTTR and failure rate?
6. Explain briefly different types and classes of maintenance cost
7. What are the importance factors considering maintenance planning
8. What are the different types of organization used in Indian Industries
9. Mention the maintenance functions and activities
10. Explain with sketch various types of maintenance approach.

Unit-II -Maintenance Policies – Preventive Maintenance :

Part-A (2 Marks) :

1. What are the types of maintenance?
2. Differentiate brake down and preventive maintenance.
3. Give the merits of condition based maintenance.
4. What is meant by Give routine maintenance
5. List the purpose of lubrication
6. What is meant by maintenance schedule
7. Explain repair cycle
8. What is TPM? Give the benefits
9. Give the eight pillars of TPM
10. What is meant by risk based maintenance
11. Define the term Preventive Maintenance?
12. Classify various planned maintenance approach.
13. List the objectives of corrective maintenance?
14. What is meant by reliability centered maintenance (RCM)?
15. What is total productive maintenance and discuss its similarities with TQM?
16. list the benefits of implementing preventive maintenance
17. Define corrective maintenance approach.
18. What does safety, health and environment pillar of TPM aims at?
19. What is limitation of breakdown maintenance?
20. List the various pillars of TPM?

Part-B (16 Marks) :

1. What do you understand by maintenance categories? Explain common types and explain the basis of their selection.
2. What are all the steps involved in preventive maintenance why preventive maintenance is better than reactive maintenance.
3. Distinguish between fixed time maintenance and condition based maintenance. Give the merits and demerits.
4. Briefly explain the procedure for TPM.
5. Explain the repair cycle of metallic materials.
6. What are the functions of lubrication and give the tips on lubrication
7. Explain with sketch various types of maintenance approach?8. Explain briefly about TPM with the help of flow chart?9. Discuss in brief the roles of various stakeholders of maintenance scheduling communication chain?10. Explain briefly the stages in implementation of TPM

Unit-III -Condition Monitoring :

Part-A (2 Marks) :

1. Define condition monitoring
2. What are the advantages of condition monitoring?
3. What are the techniques used in condition monitoring
4. What are the instruments used in condition monitoring
5. Differentiate on load testing and off load testing.
6. What are the causes of vibration?
7. How to analyze the vibration?
8. How to identify the cracks?
9. What is the use of condition monitoring
10. Why the temperature monitoring is necessary

11. What is equipment health monitoring?

12. List down the key features of condition monitoring.13. What are three types of condition monitoring

14. Mention the various costs involved in costing of condition monitoring mainly15. What are two main types of infrared themography?

17. What are the principles very important for the study of eddy current test .18. What are the limitations of ultrasonic test?

19. State the various methods of corrosion monitoring?20. Name some of the methods of leakage monitoring

Part-B (16 Marks) :

1. What is condition monitoring and explain condition monitoring What type of condition monitoring are normally used in industry

2. What is leakage monitoring ?Explain some of the leakage mediums used for condition monitoring

3. What is wear debris analysis what are the three wear debris analysis techniques commonly used and compare their performance and uses?

4. Briefly explain the cost comparison with and without condition monitoring

5. What is thermal monitoring and what thermal monitoring are used in industries Explain principle and uses of thermograph

6. Briefly explain various methods and instruments for condition monitoring

7. Explain briefly the process involved in condition monitoring?8. Explain on-load and off-load testing used in condition monitoring with its flow chart?9. Detail the methods and instruments of CM.

10. What are temperature sensitive tapes, pistol thermometers and wear debris analysis?

Unit-IV –Repair Methods For Basic Machine Elements :

Part-A (2 Marks) :

1. What are beds?
2. What are slide ways?
3. What are spindles?
4. What are gears?
5. What are lead screws?
6. What are Bearings
7. What are called Age- Dependent Failures?
8. What are called Time- Dependent Failures?
9. What are Unpredictable Failures? .
10. What are predictable Failures?
11. What are Running-In-Failures?
12. What are cause and effect diagrams?
13. Define Fault tree diagrams.
14. What are the benefits of Fault Tree Diagram?
15. Differentiate between Fault tree diagrams and Reliability Block Diagrams.
16. Write down the capabilities of Fault Tree Diagram.
17. Define Event Tree Analysis (ETA).
18. What is the aim of Event Tree Analysis (ETA)?
19. What are the steps of Event Tree Analysis (ETA)?
20. Define Root Cause Analysis (RCA.)

Part-B (16 Marks) :

1. Briefly explain the repair methods of machine beds.
2. Briefly explain the repair methods of slide ways.
3. Briefly explain the repair methods of spindles.
4. Briefly explain the repair methods of gears.
5. Explain the repair method of worn-out bearing.
6. Explain the repair methods of slide ways and spindle.
7. Briefly explain the procedure for the repair cycle of gears and lead screw.
8. What is failure analysis? Explain their development.
9. Explain the logical fault location methods.
10. Explain the sequential fault location methods.

UNIT-V Repair Methods For Material Handling Equipments :

Part-A (2 Marks) :

1. State few examples of material handling equipments.
2. State the benefits of proper maintenance of material handling equipments.
3. State the major stages in preventive maintenance of material handling equipments.
4. State the various phases present in a good maintenance management system.
5. Define the term Computerized Maintenance Management System (CMMS).
6. State the objectives of CMMS.
7. State the advantages of CMMS.
8. Define work order systems.
9. Mention the use of work order backlog.
10. What is work permit?

11. What is job card?
12. State the benefits of job card system.
13. State the role of equipment records in maintenance.
14. List the repair methods of conveyors.
15. What is an MHE?
16. Name a few equipment records.
17. What is job order?
18. Brief Computers in Maintenance.
19. List CMMS softwares.
20. List Computing hardware required for maintenance.

PART-B (16 Marks)

1. Explain repair methods of conveyors. .
2. Explain the repair methods for crane and hydraulic lift. .
3. Briefly explain the equipment record. .
4. Explain job order system.
5. Explain various hydraulic and pneumatic equipment used in material handling purpose.
How to maintain it. .
6. Explain the maintenance procedure for various small equipment for material handling purpose like chain block, chain, rope, trolley, and R.G.B.
7. Narrate the use of computers in maintenance.
8. Explain repair methods of MHE .
9. What is CMMS?
10. Detail a few Maintenance Software's widely used in the Industry.