Total No. of printed pages = 5

END SEMESTER (REGULAR / RETEST) EXAMINATION, DECEMBER – 2023

Semester : 5th (New)

Subject Code : Me-503

PLANT MAINTENANCE ENGINEERING

Full Marks – 70

Time – Three hours

The figures in the margin indicate full marks for the questions.

Instructions :

(i) Question Nos. 1 and 2 are compulsory.

(ii) Answer any *five* questions from the rest.

1. Fill in the blanks with appropriate words : 1×10=10

   (a) Industrial maintenance today is essential for companies to deliver high quality _____ at the lowest possible cost.

   (b) The hydrostatic procedure is employed to measure wear on _____ guide surfaces.

   (c) Seals are used to prevent leakages of fluids through any _____ device.

[Turn over

(d) To install heavy machines _____ bolts are commonly used.

(e) The purpose of safety valve is to drain out _____ from the boiler.

(f) The goal of _____ maintenance is to reduce downtime and costs, as well as to increase asset and equipment life span.

(g) A DC motor runs too fast due to short circuiting in _____ winding.

(h) Codification is generally limited to _____ digits.

(i) To take readings of dial indicator on different profiles of guide way _____ is mostly used during measuring extent of wear.

(j) _____ seals are used at extremely high speed.

2. Choose the correct answers from the following : $1 \times 5 = 5$

(a) Lime soda procedure of feed water treatment is a _____ type of purification.

(i) Chemical (ii) Precipitation

(iii) Both (i) and (ii) (iv) None of these

(b) Repair complexity number is helpful to the maintenance department to

(i) finalize the maintenance staff-size

(ii) design the inventory required

(iii) forecast maintenance costs

(iv) All of the above

(c) An AC motor is not getting started because :

(i) Electrical connections may be loose, broken or wrong

(ii) Availability of voltage is too low

(iii) Power trouble

(iv) All of the above

(d) Which is known as corrective maintenance ?

(i) Breakdown maintenance

(ii) Predictive maintenance

(iii) Preventive maintenance

(iv) Scheduled maintenance

(e) Smearing technique is employed

(i) to identify the spot of wearing

(ii) to measure the extent of wear

(iii) None of (i) and (ii)

(iv) Both of (i) and (ii).

3. (a) Explain the term Preventive Maintenance. 2

(b) What are the advantages of preventive maintenance ? 4

(c) Explain repair cycle. 5

4. What steps will you adopt, if

(a) an AC motor gets overheated 3

(b) a DC motor runs noisy 4

(c) an AC motor is not getting started ? 4

5. (a) State the different hand tools which are mostly needed for maintenance work. Describe any two with sketches. 2+6+8

(b) Explain how worn files are reconditioned ? 3

6. (a) Explain with neat sketches the following terms : 2×4=8

(i) Unilateral and bilateral tolerance

(ii) Upper and lower deviation

(iii) Maximum and minimum tolerance

(iv) Lower limit and upper limit.

(b) Explain with neat sketches the difference between "Basic Hole System" and "Basic Shaft System" of fits. 3

7. (a) State the operational steps to be followed in general for installation of manufacturing machines in a workshop. 2

(b) Explain with neat sketches any three types of foundation bolts generally used for the purpose. 3×3=9

8. (a) Why is feed water treatment for a boiler necessary ? 1

(b) What are the different methods of feed water treatment in a boiler ? 2

(c) Describe in brief any two methods of feed water treatment in a boiler. 4+4=8

9. (a) What are the methods generally used for identification and measuring the extent of wear of the guide surfaces ? 1

(b) Explain with neat sketches any *two* of the following : 5+5=10

(i) Smearing technique

(ii) Hydrostatic Procedure.