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END SEMESTER EXAMINATION – 2021

Semester : 5th

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 :

1. *All* questions of PART – A are compulsory.
2. Answer any *three* questions from PART – B.

PART – A

Marks – 25

1. Fill in the blanks : 1×10=10
 - (i) Zero line represents _____ size.
 - (ii) For a hole basis system, different fits are obtained by varying the _____ diameter.

[Turn over

- (iii) Maximum allowance is the difference between the _____ hole size and the smallest shaft size.
- (iv) The repetitive jobs carried out in all maintenance activities in between two overhauling is termed as _____ cycle.
- (v) Break down maintenance is suitable only for _____ industries.
- (vi) The gap or clearance between the mating surfaces can be better checked by _____.
- (vii) The foundation bolt cavity may be made concrete _____ levelling.
- (viii) Piles are used for the installation in a _____ soil.
- (ix) The non-linearity across the guideways is called _____.
- (x) Pressure withstanding capacity of a boiler can be checked by _____ test.

2. Choose the correct answer :

1×10=10

- (i) Scrapping is done when the extent of wear is below/above 0.2 mm.
- (ii) Codification is generally limited to eight/seven digits.
- (iii) Predictive maintenance is a type of unplanned maintenance.
- (iv) Galvanising/Electroplating/Metalising is suitable for small items like screws, bolts etc.
- (v) Smearing technique is used to measure/identify wear on guideways.
- (vi) A suction pipe should always preferably be larger/equal/smaller to the pump nozzle.
- (vii) To regulate the flow of fluids in a pipe line safety valve/feed check valve/ gate valve is used.
- (viii) Gear drive/ Belt drive/ Chain drive is a positive drive.
- (ix) An anvil crack can best be repaired by welding/ metalizing/ hot clamping.

- (x) Derivatives of phosphorus are generally used as antifriction/ anti wear/ extreme pressure-additive.

3. Write true or false :

1×5=5

- (i) More standby equipments are needed in case of preventive maintenance.
- (ii) Generally a try square is used to measure the perpendicularity of two adjacent surfaces.
- (iii) Gaskets are used only to seal the static clearances.
- (iv) Dirt is not responsible for bearing failure.
- (v) Pitting corrosion is very common on metals like brass, copper etc.

PART – B

Marks – 45

4. (a) Define interchangeability and depreciation.
- (b) What is water hammering.
- (c) Mention the advantages of using a mechanical seal.

(d) Why levelling and alignment are required before grouting ?

(e) Write two major steps for fitting of keys.
 $3 \times 5 = 15$

5. (a) What is fit ? How fits are classified ?

(b) Why is the hole basis system adopted in all modern system of fits ?

(c) Explain the terms : tolerance, clearance and allowance with the help of suitable diagrams.
 $5 \times 3 = 15$

6. (a) Mention the causes of wear on guide surfaces. What are the different checkings to be made on the guide surfaces ? Explain with diagram.

(b) How do you repair key way on a shaft ?

(c) Explain how worn files are reconditioned ?
 $5 \times 3 = 15$

7. (a) Describe the method of restoration of a cracked CI machine bed.

(b) What are the differences among seal, packing and gasket ?

(c) What is lubricant ? State its desired properties. $5 \times 3 = 15$

8. (a) How fitting of keys are carried out ? Describe with figures.

(b) Write a note on template for foundation work.

(c) What is hydraulic test ? Why and how is it done ? $5 \times 3 = 15$