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5th Sem. / Mech. Engg./ Mech. Engg. (T&D)
Sub : Stainless Steel Technology

Time : 3 Hrs. M.M. : 60

SECTION-A

Note: Multiple choice Questions. All Questions are compulsory. (6x1=6)

Q.1 Which elements is the primary alloying element responsible for stainless steel's corrosion resistance?

a) Nickel b) Molybdenum

c) Chromium d) Titanium

Q.2 Which of the following production methods is commonly used to manufacture stainless steel?

a) Open-hearth furnace

b) Bessemer converter

c) Electric art furnace (EAF)

d) Blast furnace

Q.3 Which heat treatment process is used to improve the mechanical properties of stainless steel?

a) Annealing b) Quenching

c) Tempering d) All of the above

Q.4 What is the primary phase present in austenitic stainless steel at high temperatures?

a) Ferrite b) Martensite

c) Austenite d) Cementite

Q.5 What is the primary mechanism for plastic deformation in stainless steel?

a) Slip b) Twinning

c) Both A & B d) None of the above

Q.6 Which non-destructive testing (NDT) method is commonly used to detect surface cracks in stainless steel?

a) Ultrasonic testing (UT)

b) Magnetic particle inspection (MPI)

c) Dye penetrant inspection (DPI)

d) Radiographic testing (RT)

Section-B

Note: Objective/Completion type questions. All questions are compulsory. (6x1=6)

Q.7 Name the three main categories of stainless steel based on microstructure.

Q.8 Explain pickling process in detail.

Q.9 What is the primary mode of failure in stainless steel under tensile loading?

Q.10 What is the primary cause of pitting corrosion?

Q.11 What is magnetic particle testing?

Q.12 At which temperature iron melts?

Section-C

Note: Short answer type Questions. Attempt any eight questions out of ten Questions. (8x4=32)

Q.13 Write the various method of productivity measurement. Explain any two methods.

Q.14 Write a short note on role of work study in improving productivity.

Q.15 Give the principle of motion analysis.

Q.16 Describe work sampling and give its use.

Q.17 Discuss various types of incentives.

Q.18 What do you understand by plant layout?

Q.19 Distinguish between job production and batch production.

Q.20 Differentiate between PERT and CPM.

Q.21 Derive the basis EOQ model and list the various assumptions on which it works.

Q.22 Explain problem recognition in value engineering.

Section-D

Note: Long answer questions. Attempt any two questions out of three Questions. (2x8=16)

Q.23 What do you understand by production, planning and control? What are the various objectives and components of PPC?

Q.24 Describe work study. Write basic procedure for work study.

Q25 a) What are the causes of low productivity?

b) Explain five internal factors affecting productivity in detail