Q.20 Explain the process cryogenic quenching and what are its applications.

Q.21 Explain the phenomenon of quenching cracks and how they can be prevented.

Q.22 Write any four advantages of Nitriding process.

SECTION-D

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

Q.23 Explain the different defects occur during. Heat Treatment also explain their causes and preventions.

Q.24 Explain all transformations that occurs in TTT diagram.

Q.25 Explain any two Heat Treatment Processes and their applications.

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5th Sem / Mechanical (Tool & Die Design)

Subject : Heat Treatment

Time : 3 Hrs. M.M. : 60

SECTION-A

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

Q.1 The purpose of Heat Treatment is

a) To change the mechanical properties of steel

b) To change the internal structure of steel

c) To change the appearance of steel

d) To change the chemical properties of steel

Q.2 As the percentage of carbon increases in steel its _____ decreases.

a) Corrosion resistance

b) Ultimate strength

c) Hardness

d) Ductility

Q.3 The maximum solubility of carbon in iron occurs in the

a) Ferrite phase b) Cementite phase

c) Austenite phase d) none of these

Q.4 Which of the following is common quenching medium for steel?

a) Water b) Oil

c) Air d) All of these

Q.5 In cyaniding, the steel is heated in a bath of

a) Molten salt b) Molten Metal

c) Liquid Nitrogen d) Liquid Carbon

Q.6 Salt bath funaces are commonly used for

a) Annealing b) Normalizing

c) Hardening d) All of these

SECTION-B

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

Q.7 What is the critical temperature in Heat Treatment?

Q.8 What is Peritectic reaction?

Q.9 What does the vertical axis on TTT diagram represent?

Q.10 What is the purpose of Normalizing?

Q.11 Explain Decarburization.

Q.12 What is the range of temperature in Medium temperature tempering?

SECTION-C

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

Q.13 Explain Eutectoid reaction.

Q.14 What is the effect of alloying addition on TTT diagram?

Q.15 What are the different allotropic forms of Iron? Explain each.

Q.16 What are the different types of Tempering? Explain each.

Q.17 How does the Annealing affects the Mechanical properties of a Metal?

Q.18 What is the difference between carburizing and nitriding?

Q.19 Explain the process precipitation hardening.