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5th Sem / Mechanical Engineering
Subject : Heat Treatment

Time : 3 Hrs. **M.M. : 100**

SECTION-A

Note : Multiple choice questions. All questions are compulsory. (10x1=10)

Q.1 While hardening of steel, the component is cooled in (CO-1)

a) Still Air b) Water or Oil
c) Furnace d) All of the above

Q.2 Fatigue crack normally start at (CO-1)

a) Centre of specimen b) Core of specimen
c) Surface of specimen d) All of the above

Q.3 The ability of the material to resist fracture due to high impact loads is. (CO-2)

a) Toughness b) Hardness
c) Brittleness d) None of these

Q.4 Eutectic mixture of austenite and cementite is called. (CO-2)

a) Troostile b) Leadburite
c) Martensite d) None of these

Q.5 Sorbite is obtained when. (CO-2)

a) Steel is quenched b) Steel is annealed
c) Steel is hardened d) None of these

SECTION-D

Note : Long Answer type question. Attempt any two questions. (2x10=20)

Q.36 What do you mean by heat treatment furnace? What are its different types? Explain any two. (CO-1)

Q.37 Explain the electric furnace with neat sketch.(CO-4)

Q.38 Explain T.T.T. Diagrams. (CO-5)

Note : Course Outcome (CO) mentioned in the question paper is for official purpose only.

Q.6 Fatigue results in (CO-3)

a) Brittle fracture b) Ductile fracture

c) Elongation d) None of these

Q.7 Nitriding is a process for. (CO-3)

a) Annealing b) Normalizing

c) Case hardening d) None of these

Q.8 A thermal equilibrium diagram is also known as. (CO-4)

a) Phase diagram

b) Constitutional diagram

c) Both A & B

d) None of these

Q.9 Corrosion resistance of steel is increased by the addition of. (CO-4)

a) Sulpher b) Tungsten

c) Chromium d) None of these

Q.10 If steel is quenched in oil, the structure obtained will be. (CO-5)

a) Pearlite b) Troostite

c) Sorbite d) Bauxite

SECTION-B

Note : Objective type questions. All questions are compulsory. (10x1=10)

Q.11 The object of annealing is _____ (CO-1)

Q.12 Nitriding is a process for _____ (CO-1)

Q.13 Name any two semi-conductors. (CO-1)

Q.14 Define heat treatment. (CO-2)

Q.15 Define tempering. (CO-2)

Q.16 Name two types of annealing. (CO-2)

Q.17 Pearlite is a combination of _____. (CO-3)

Q.18 Name the purest form of iron. (CO-3)

Q.19 Give the full form of T.T.T. (CO-5)

Q.20 Define hardening. (CO-6)

SECTION-C

Note : Short answer type questions. Attempt any twelve questions out of fifteen questions. (12x5=60)

Q.21 Define Ferrous metals with one example. (CO-1)

Q.22 Define creep. (CO-1)

Q.23 Define ductility of a material. (CO-1)

Q.24 Name four types of annealing. (CO-2)

Q.25 Define process of annealing. (CO-2)

Q.26 Differentiate between annealing and hardening. (CO-1)

Q.27 Write the advantages of heat treatment. (CO-1)

Q.28 Differentiate between slip and twinning. (CO-2)

Q.29 Explain lead bath furnace. (CO-2)

Q.30 What austenite? (CO-2)

Q.31 Write the characteristics of carburizing. (CO-3)

Q.32 Write the uses of nitriding. (Any five) (CO-3)

Q.33 Write purpose of tempering. (CO-4)

Q.34 What is martensite? (CO-5)

Q.35 Write any five application of heat treatment. (CO-6)