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**4th Sem./ Advanced diploma in tool & Die Making
Subject:- Heat Treatment**

Time : 2Hrs.

M.M. : 50

SECTION-A

Note: Multiple choice questions. All questions are compulsory (5x1=5)

- Q.1 Which surface hardening process gives maximum hardness to the surface (CO5)
a) Pack hardening b) Cyaniding
c) Nitriding d) Induction hardening
- Q.2 The Corrosion resistance property of stainless steel is due to presence of (CO6)
a) Manganese b) Chromium
c) Cobalt d) Silicon
- Q.3 Heat treatment of metal is necessary to (CO1)
a) To produce certain desired properties
b) To make good appearance of component
c) To decrease strength of metal
d) To make the metal rust proof

Q.4 The process which improves the machinability of steels but lower the hardness and tensile strength is (CO4)

- a) Normalising b) Full annealing
- c) Process annealing d) Spheroidising

Q.5 The hardness of steel increase if it contain (CO2)

- a) pearlite b) ferrite
- c) cementite d) Martensite

SECTION-B

Note: Objective/Completion type questions. All questions are compulsory. (5x1=5)

Q.6 Normalising of steel is done to _____ the grain structure (CO4)

Q.7 _____ is process of case hardening in which the outer layer is made hard by increasing amount of carbon. (Co5)

Q.8 The rapid cooling of component in water or oil or brine solution is called _____ (CO4)

Q.9 The chemical formula of cementite is _____ (CO2)

Q.10 Grey cast iron has carbon in the form of _____ (CO4)

SECTION-C

Note: Short answer type questions. Attempt any six questions out of eight questions. (6x5=30)

Q.11 Discuss about the heat treatment defects. (CO9)

Q.12 Explain pit furnace and muffle furnace. (CO8)

Q.13 Explain gas carburizing process. (CO5)

Q.14 Explain briefly about high speed steel? (CO6)

Q.15 Give the composition and properties of grey cast-iron? (CO7)

Q.16 Explain principle and objective of heat treatment processes. (CO1)

Q.17 Explain severity of quenching media? (CO4)

Q.18 Explain Jominy end quench test (CO4)

SECTION-D

Note: Long answer type questions. Attempt any one questions out of two questions. (1x10=10)

Q.19 Explain T.T.T curves with neat diagram (CO3)

Q.20 Write short note on followings

- a) Surface hardening
- b) Disposable of consumables in heat treatment

(Note: Course outcome/CO is for office use only)