No. of Printed Pages : 4
Roll No. .....

202022

**2nd Year / Advanced Diploma in Tool and Die making**

**Subject : Heat treatment**

Time : 3 Hrs. M.M. : 50

## SECTION-A

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

Q.1 In annealing the cooling is done in the_____ (CO1)

a) Water b) Air

c) Brine Solution d) Furnace

Q.2 The hardest phase in iron-carbon system is (CO2)

a) Pearlite b) Bainite

c) Martensite d) None of these

Q.3 Which of the following has carbon percentage 2.1 to 4.3 (CO7)

a) Cast Iron b) Pig Iron



Q.18 Discuss the health hazards and precautions in the disposal of consumables of the heat treatment processes. (CO9)

## SECTION-D

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

Q.19 Explain iron-carbon diagram, with a neat sketch. (CO2)

Q.20 Write short note on the following:

a. Induction furnace

b. Furnace atmosphere and applications (CO8)

c) Dead Iron d) None of these

Q.4 Mild steel can be converted into high carbon steel by_____ (CO6)

a) Carburizing b) Annealing

c) Nitriding d) Normalizing

Q.5 The cooling rate which is tangent to the TTT diagram is known as (CO3)

a) Critical casting rate

b) Critical cooling rate

c) Both a and b

d) None

## SECTION-B

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

Q.6 Surface hardening is the process in which the core is tough and the surface is hard. (T/F) (CO5)

Q.7 _____is obtained by the austempering process of heat treatment. (CO3)

Q.8 In 18-4-1 tool steel 1 is related to_____ (CO4)



Q.9 _____Form of iron is the most magnetic in nature. (CO2)

Q.10 In mottled cast iron_____cooling rate is used to obtain Gray Cast Iron. (CO7)

## SECTION-C

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

Q.11 Enlist the different types of defects found in the heat treatment process. (CO9)

Q.12 Explain the principle of transformation at isothermal. (CO3)

Q.13 Differentiate between the case hardening and surface hardening. (CO5)

Q.14 What are the effects of nickle, chromium and vanadium on adding as an alloying element in steel? (CO6)

Q.15 Explain briefly Stainless steel and its type. (CO2)

Q.16 Explain annealing processes. (CO4)

Q.17 Discuss different types of cast iron and their applications in brief? (CO7)