

- Q.26 Differentiate between normalizing and annealing process.
- Q.27 Explain case hardening .
- Q.28 What is the purpose of alloying ?
- Q.29 What is the purpose of Heat treatment ?
- Q.30 Write some uses of White cast iron
- Q.31 Why cupola is used as an iron melting furnace over other furnaces ?
- Q.32 Classify various types of steel .
- Q.33 What is the effect of grain size on mechanical properties of metals ?
- Q.34 Explain quenching process in detail .
- Q.35 Explain sensitization defect in stainless steel.

#### SECTION-D

- Note:** Long answer type questions. Attempt any two questions out of three questions. (2x10=20)
- Q.36 Explain T-T-T Diagrams with proper interpretation .
- Q.37 What is Heat Treatment ? Explain various heat treatment processes . Explain any four in detail.
- Q.38 What is heat treatment furnace ? What are its different types ? Explain any two .

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Roll No. ....

**5<sup>th</sup> Sem / T&D, Found. & Forg.**

**Subject:- Heat Treatment**

Time : 3Hrs.

M.M. : 100

#### SECTION-A

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

- Q.1 Which of the following is hardest steel constituent ?
- a) Austenite                      b) Ledeburite
- c) Martensite                      d) Bainite
- Q.2 Iron exists at what temperature in degree Celsius.
- a) At 1539                      b) 910
- c) 786                      d) Above 1410
- Q.3 In Normalizing process, cooling media is
- a) Water                      b) Oil
- c) Air                      d) Furnace
- Q.4 After Hardening process, metal become harder and
- a) Ductile                      b) Brittle
- c) Malleable                      d) Tough
- Q.5 Nitriding is a process for
- a) Annealing                      b) Normalizing
- c) Case hardening                      d) None of the above

- Q.6 The objective of annealing is
- To soften the metal .
  - To relieve internal stresses
  - To refine grain structure
  - All of the above
- Q.7 The heat treatment used for casting is
- Carburizing
  - Normalizing
  - Annealing
  - None of the above
- Q.8 Steel with carbon .....is called hypo eutectoid steel
- 0.8%
  - Above 0.8%
  - Below 0.8%
  - None of the above
- Q.9 Pearlite is a combination of
- Ferrite and iron graphite
  - Ferrite and austenite
  - Ferrite and cementite
  - None of the above
- Q.10 Ferrite contains .....Carbon .
- 0%
  - 0.8%
  - 2%
  - 6.67%

### SECTION-B

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

- Q.11 Ledeburite is iron carbide ( $\text{Fe}_3\text{C}$ ) that contains 6.67% carbon by weight (True/False)

- Q.12 Nitriding involves changing the surface composition by diffusion of nitrogen . (True/False )
- Q.13 Electric furnace method is used to produce high grade steel. (True/False )
- Q.14 Scale free hard surface can be achieved by using .....
- Q.15 Cementite is the carbide of .....
- Q.16 Furnace temperature can be measured by using ....
- Q.17  $\text{BaCO}_3$  is used for..... hardening .
- Q.18 Stainless steel is an alloy of .....
- Q.19 How many components are present in binary phase system ?
- Q.20 The temperature at which the change starts on heating is called.....

### SECTION-C

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

- Q.21 What is a pig iron ? Give its composition.
- Q.22 Draw the flow diagram of manufacturing of cast iron.
- Q.23 Describe the Bessemer process of steel production . Give its advantages and disadvantages.
- Q.24 Write the difference between stainless steel and carbon steel
- Q.25 Write a short note on cyaniding .