

QUESTIONS BANK

UNIT NO-1

- Q1) what is coring? Which alloys show coring?
- Q2) State the Hume Rothery's rules of solid solubility?
- Q3) what is the "isomorphous" system? Explain with the one Example of the same.
- Q4) Draw a self-explanatory cooling curves for binary eutectic.
- Q5) Draw a neat well-labeled schematic eutectic system phase Diagram.
- Q6) what is nucleation? What are the types of nucleation Mechanism?
- Q7) Explain following
- (a) Polymorphism
 - (b) Impurity
 - (c) Solid solution
 - (d) Coring
- Q8) Explain following
- (a) Phase
 - (b) Variable
 - (c) System
 - (d) Alloy
- Q9) Explain Gibbs Phase Rule.
- Q10) Draw a self-explanatory cooling curves for off eutectic alloy
- Q11) what is Pyrometry? Explain steps involved in it and state its advantages.
- Q12) Write short note on electrometallurgy.
- Q13) Differentiate between Cast Products and Wrought Products.
- Q14) Write short note on hydrometallurgy.

UNIT NO-2

Q1) with a neat diagram explain working of metallurgical Microscope.

Q2) Write short note on sulphurprinting.

Q3) Explain the following term

(a) Flow line in forged components.

(b) Microscope.

Q4) Give difference between TEM&SEM.

Q5) what are different methods to determine the grain size? Explain any one in detail.

Q6) Draw the microstructure of the following:

(a) Cast iron. (b) Mild steel. (c) Brass.

Q7) Explain Electrolytic etching with neat sketch.

Q8) Write short note on: Spark test.

Q9) Give comparison between micro & macro examination.

Q10) Explain how etching reveals the microstructure of a Metallographic specimen which is polished to mirror finish.

UNIT NO-3

- Q1) what is critical temperature? What do you understand by $A_1, A_2, & A_{cm}$?
- Q2) Distinguish between rimmed & killed steel.
- Q3) Draw a neat labeled Fe-Fe₃C equilibrium diagram .calculate Amount of phases in AISI1020c steel at room temperature assuming equilibrium cooling.
- Q4) Define the following:
- (a)Ledeburite
 - (b) Pearlite
 - (c)Cementite
- Q5) Howsteels are are classified on the basis of their carbon Percentage? Give one application of each class.
- Q6) Explain hardening heat treatment.
- Q7) Draw& label micro structure of :
- (a)White cast iron.
 - (b)Gray cast iron.
- Q8) compare&contrast between ferritic austenitic &martensitic Stainless steel.
- Q9) Explain the following: chilled cast iron with suitable example
- Q10) Write short note nodular cast iron.

UNIT NO-4

Q1) Explain the following

- (a) Normalizing
- (b) Isoforming
- (c) Isothermal annealing.

Q2) Draw & show the following heat treatment on TTT curve &

State the transformed product:

- (a) Martempering
- (b) Austempering

Q3) What are critical cooling rate? Explain the CCT diagram.

Q4) Write short note on :

- (a) Martempering
- (b) Ausforming

Q5) Write short on :

- (a) Quench cracks
- (b) Secondary hardness

Q6) Compare the difference between Hardness & Hardenability.

Q7) Draw the microstructure of following steel & state their

Tensile strength, hardness, ductility:

- (a) Annealed 0.1% C steel.
- (b) Normalized 0.4% C steel
- (c) Hardened steel

Q8) Differentiate between Carburizing & nitriding.

Q9) Explain principle of induction hardening.

Q10) Write short on carbonitriding.

UNIT NO-5

- Q1) Write short note on: High speed tool steel.
- Q2) Write short on super alloys.
- Q3) Explain classification of tool steel.
- Q4) what do you mean by weld decay?
- Q5) Write short note on: High temperature alloy.
- Q6) What do you understand AISI 1090 & Fe-230.
- Q7) Write short note on: Stainless steel.
- Q8) State composition, properties & application of maraging steel.
- Q9) what is sensitization.
- Q10) compare & contrast between ferritic, austenitic, martensitic Stainless steel.

UNIT NO-6

- Q1) Write short note on bearing material.
- Q2) Aluminum alloy are widely used in aeronautic automobile Application.
- Q3) Explain why 1% tin is added in admiralty brass.
- Q4) Give typical composition, important properties & application Of the following.
 - (a) Admiralty brass.
 - (b) Gun metal
 - (c) Elinvar
- Q5) What is Zinc equivalence in brass?
- Q6) Give typical composition, important properties & application Of the following.
 - (a) cap Brass
 - (b) Statuary bronze
 - (c) Muntz metal

(d) Leaded brass

Q7) what is “Naval Brass”? What are its applications?

Q8) List type of brasses. Explain any one in detail.

Q9) what is LM series? What do you mean by LM6&LM11?

Q10) Give the composition of “Duralumin”. What are their applications?