

BE Semester-IV (Mech./Auto.) Question Bank

Material Technology

All questions carry equal marks (10 marks)

Q.1	What is an alloy? Draw and explain cooling curves for pure metal, binary alloys and eutectic alloy.
Q.2	Define solid solution. Draw and explain substitutional and interstitial solid solutions. Explain Hume-Rothery rules.
Q.3	What is phase? Draw and explain phase diagram of two elements completely soluble in liquid and solid states (Isomorphous system).
Q.4	State lever rule and explain it.
Q.5	Draw completely labeled iron-carbon equilibrium diagram.
Q.6	Explain eutectic, eutectoid and peritectic reactions with references to iron-carbon equilibrium diagram.
Q.7	Define: Ferrite, Pearlite, Cementite, Austenite, and Martensite.
Q.8	Differentiate between steel and cast iron.
Q.9	Explain the difference between Hypo- and Hyper-eutectoid steels.
Q.10	Explain the steps of specimen preparation for microscopic examination.
Q.11	Draw the line diagram of metallurgical microscope and label its main parts.
Q.12	Draw labeled microstructures of Gray cast iron, White cast iron, Malleable cast iron and Nodular cast iron.
Q.13	Give classification of plain carbon steel and state one application of each.
Q.14	List the limitations of plain carbon steels.
Q.15	What is alloy steel? Explain the effect of alloying elements on the properties of steels.
Q.16	What is stainless steel? Explain ferritic, austenitic and martensitic stainless steels.
Q.17	What is tool steel? Discuss high speed steel.
Q.18	Discuss I. S. coding for steel.
Q.19	Write short note on Aluminium alloys.
Q.20	Write short note on Copper alloys.
Q.21	Write short note on bearing materials.
Q.22	Write short note on ceramic materials.
Q.23	Write short note on plastics.
Q.24	Write short note on refractory materials.
Q.25	Differentiate between destructive and non-destructive tests.
Q.26	List various non-destructive testing methods and explain in brief any one of them.
Q.27	Write short note on ultrasonic testing.
Q.28	Draw and explain TTT diagram for eutectoid steel.
Q.29	State purpose of annealing. Write difference between annealing and normalizing.
Q.30	Explain hardening and tempering of steel with neat sketch.
Q.31	What is case hardening? List case hardening methods and explain any one.
Q.32	What is corrosion? List types of corrosion and explain any two.
Q.33	State various methods of corrosion control.
Q.34	Briefly discuss any two methods used for prevention of corrosion.
Q.35	Define 'Property' of material. List mechanical properties. Explain: Elasticity, Plasticity, Tensile strength, Toughness, Hardness.
Q.36	What is powder metallurgy? List advantages and disadvantages of powder metallurgy.
Q.37	With flow diagram explain manufacturing of tungsten carbide tools by powder metallurgy method.
Q.38	Write short note on composite materials.
Q.39	Write short note on radiography testing.
Q.40	Write short note on LPT.