

Q1.	Choose the correct option for following questions. All the Questions are compulsory and carry equal marks
1.	In case of an edge dislocation the relation between burger vector and dislocation line is
Option A:	Parallel
Option B:	Inclined at 45 degree
Option C:	Inclined at 45 degree
Option D:	Perpendicular
2.	The increase in strength and hardness due to cold working is called as
Option A:	Creep
Option B:	Work Hardening
Option C:	Fatigue
Option D:	Recrystallization
3.	Which of the following can be categorised as an open moulding composite manufacturing process
Option A:	Hand Layup Process
Option B:	Resin Transfer Moulding
Option C:	Vacuum Bagging
Option D:	Sheet Moulding Compounds
4.	The following is not a phase transformation occurring on Fe-Fe ₃ C equilibrium diagram
Option A:	Eutectoid
Option B:	Eutectic
Option C:	Peritectic
Option D:	Peritectoid
5.	The test to determine hardenability of steel is
Option A:	Jominy End Quench Test
Option B:	Fatigue Test
Option C:	Creep Test
Option D:	Tension Test
6.	Which of the following nondestructive test can't be applied to a non-conducting material
Option A:	Die penetrant test
Option B:	Radiographic test
Option C:	Ultrasonic test
Option D:	Magnetic particle test
7.	The heat treatment carried out to reduce brittleness caused by hardening heat treatment is called as
Option A:	Annealing
Option B:	Normalizing
Option C:	Tempering
Option D:	Hardening

8.	Which of the following surface hardening methods is best suited for symmetrical parts
Option A:	Induction Hardening
Option B:	Carburising
Option C:	Nitriding
Option D:	Cyniding
9.	The stress at which the material will not fail for an infinite number of cycles of fatigue load is called as
Option A:	Endurance limit
Option B:	Fatigue strength
Option C:	Fatigue life
Option D:	Tensile fatigue
10.	The creep rate remains almost constant during
Option A:	Primary Creep
Option B:	Secondary creep
Option C:	Tertiary creep
Option D:	It never remains constant

Q2 (20 Marks)	
A	Solve any Two 5 marks each
i.	Classify defects in materials and explain point defects in detail.
ii.	Classify nondestructive testing of materials. Explain Magnetic particle test in detail.
iii.	What are the stages of creep in material? Explain with the help of a neat sketch.
B	Solve any One 10 marks each
i.	Derive an expression for Griffiths Theory of Brittle fracture.
ii.	Explain slow cooling of steel of hypo eutectoid composition.
Q3 (20 Marks)	
A	Solve any Two 5 marks each
i.	What is the difference between slip and twinning? Explain the deformation of material by slip in detail.
ii.	Explain flame hardening process in details.
iii.	What are polymers? Explain their advantages over metallic materials.
B	Solve any One 10 marks each
i.	What is strain hardening? Explain the steps of recrystallization annealing clearly showing the changes that are observed in ductility and tensile strength of the material during each step.
ii.	State various processing methods of composite materials.
Q4 (20 Marks)	
A	Solve any Two 5 marks each
i.	State the process for synthesis of nano materials in detail.
ii.	Explain solid carburizing process with the help of a neat sketch.
iii.	What are alloy steels? Give their brief classification.
B	Solve any One 10 marks each
i.	Draw Fe-Fe ₃ C equilibrium diagram and locate all the important temperatures, compositions and phases on it.
ii.	What is Fatigue of material? Explain the procedure for plotting SN curve of a given material using fatigue test. State endurance limit, fatigue strength and fatigue life through SN curve.