Reg. No. :

Question Paper Code: 45702

B.E. / B.Tech. DEGREE EXAMINATION, DEC 2020

Fifth Semester

Mechanical Engineering

14UME502 - ENGINEERING MATERIALS AND METALLURGY

(Regulation 2014)

Duration: One hour

Maximum: 30 Marks

PART A - $(6 \times 1 = 6 \text{ Marks})$

(Answer any six of the following questions)

1.	Increase of ferrite phas	ease of ferrite phase in steel increases				
	(a) Strength	(b) Hardness		(c) Ductility	(d) Brittleness	
2.	Eutectic reaction for iron carbon system occurs at					
	(a) 600° C	(b) 723 ⁰ C		(c) 1147^{0} C	(d) 1493 ⁰ C	
3.	Hardness of steel is greatly improved with					
	(a) Annealing	(b) Cyaniding		(c) Normalising	(d) Tempering	
4.	Which one of the following mediums is used for fastest cooling rate of steel quenching					
	(a) Air	(b) Oil		(c) Water	(d) Brin	
5.	The ability of a material to absorb energy in the plastic range is called					
	(a) resilience	(b) creep	(c)	fatigue strength	(d) toughness	
6.	Poisson's ratio is					
(a) linear stress/lateral s		eral stress	(b) Linear strain/lateral strain		strain	
	(c) lateral stress/lateral stress		(d)	(d) lateral strain/linear strain		

7. Cast iron is manufactured in

(a) blast furnace	(b) cupola
(c) open hearth furnace	(d) bessemer converter

8. Aero plane and certain automobile parts are usually made of

(a) Magnalium	(b) Aluminium bronze
(c) Duralumin	(d) German silver

9. Structure of a polymer is

(a) Long Chain	(b) Rhombic
(c) Cubic	(d) Closed pack hexagonal

10. Which one of the following materials is not a composite?

(a) Wood	(b) Concrete	(c) Plywood	(d) Sialon
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PART - B (3 x 8= 24 Marks)

(Answer any three of the following questions)

11.	What is meant Phase? and Differentiate Unary Phase Diagram and Binary Diagram with examples.	Phase (8)
12.	Explain Annealing, Process annealing, Stress relief and Normalizing in detail.	(8)
13.	What are slip and twinning? What are their characteristics.	(8)
14.	What is an alloy steel? How alloy steels are classified? Explain in detail.	(8)
15.	Explain ceramic composite and its any two types of fabrication processes.	(8)