QPC: RJ19BTECH193 AR 19 Reg. No | | | | | | | | | | |

GIET UNIVERSITY, GUNUPUR – 765022

B. Tech (Fourth Semester – Regular) Examinations, June – 2021

BESCH4010 / BESPR4010 – MATERIAL SCIENCE

(Common to Chemical Engg. And PRE)

Time: 2 hrs Maximum: 50 Marks

Answer ALL Questions

The figures in the right hand margin indicate marks.

PART – A: (Multiple Choice Questions) **(1 x 10 = 10 Marks)**

Q.1. Answer ***ALL*** questions			[CO#]	[PO#]
a.	The elastic stress strain behaviour of rubber is		CO1	PO1
	(i) Linear	(ii) Non Linear		
	(iii)Plastic	(iv)No fixed relations		
b.	The percentage of carbon in low carbon steel is		CO1	PO1
	(i)0.05%	(ii)0.15%		
	(iii)0.3%	(iv)0.5%		
c.	Closed packed hexagonal space lattice is found in		CO1	PO1
	(i)Zinc	(ii)Copper		
	(iii)Tungsten	(iv)None of the above		
d.	Slow plastic deformation of metals under a constant stress is known as		CO2	PO1
	(i)creep	(ii)fatigue		
	(iii)endurance	(iv)plastic deformation		
e.	In process annealing, the hypo eutectoid steel is		CO3	PO1
	(i)heated from upper critical temperature and then cooled in still air	(ii)heated from upper critical temperature and then cooled suddenly in a cooling medium.		
	(iii)heated from upper critical temperature and then cooled slowly in furnace	(iv)heated below upper critical temperature and then cooled slowly		
f.	Which of the following impurity in cast iron promotes graphite nodule formation		CO3	PO1
	(i)silicon	(ii)sulphur		
	(iii)Manganese	(iv)Phosphorus		
g.	Which is the false statement about wrought iron		CO3	PO1
	(i)high resistance to corrosion	(ii)high ductility		
	(iii)ability to hold protective coatings	(iv)uniform strength in all directions		
h.	In compression a prism of brittle material will break		CO4	PO1
	(i) by forming a bulge	(ii)by shearing along oblique plane		
	(iii)in direction perpendicular to application of load	(iv) by crushing into pieces		
i.	Composites can be classified based on		CO4	PO1
	(i) matrix type	(ii) reinforcement constituent		
	(iii) matrix type & Reinforcement constituent	(iv) neither on matrix type nor on reinforcement constituent type		
j.	Which of the following is not a laminar composite?		CO4	PO1
	(i) Bimetallic	(ii) Cladding		
	(iii) Paints	(iv) Wood		

PART – B: (Short Answer Questions) **(2 x 5 = 10 Marks)**

Q.2. Answer ***ALL*** questions	[CO#]	[PO#]
a. Explain ionic bond.	CO1	PO1
b. Define phase rule.	CO2	PO1
c. What are intermetallics?	CO2	PO1
d. State the application of high strength low alloy steel.	CO3	PO1
e. What is the purpose of optic fibres?	CO4	PO1

PART – C: (Long Answer Questions) **(6 x 5 = 30 Marks)**

Answer ***ANY FIVE*** questions	Marks	[CO#]	[PO#]
3. Discuss about the crystallographic planes and directions.	(6)	CO1	PO1
4. Explain the crystal structure in detail.	(6)	CO1	PO1
5. Explain binary phase diagram with suitable illustrations.	(6)	CO2	PO1
6. Discuss the metallurgical and mechanical properties of ferrous alloys	(6)	CO2	PO1
7. Give the applications of non ferrous alloys	(6)	CO3	PO1
8. Explain the classification of cast irons with suitable examples.	(6)	CO3	PO1
9. Differentiate between thermo and thermo setting plastic?	(6)	CO4	PO1
10. Explain with suitable examples the applications of glass fibre reinforced composites.	(6)	CO4	PO2

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