Evening

Date: 03/12/2014. Student Exam No. _____

GANPAT UNIVERSITY
B.TECH SEM.V (ME/MC)
CBCS REGULAR EXAMINATION –NOV. 2014
2MC502/2ME501 MATERIAL TECHNOLOGY

TIME:-3 HOURS **TOTAL MARKS-70**

INSTRUCTION: - (1) Attempt all questions.
(2) Assume suitable data if necessary.
(3) Figures to the right indicate full marks.
(4) Draw the figure whenever it is required.

Section-I

Que.-1	(a)	Explain importance of phase diagram. Define and explain Gibbs phase rule.	03
	(b)	What is solid solution? Differentiate between substitutional and interstitial solid solution. Also explain hume rothery rule.	04
	(c)	Draw phase diagram of two metals completely soluble in liquid state but partially soluble in solid state.	04

OR

Que.-1	(a)	Explain importance of iron-iron carbide equilibrium diagram in heat treatment of steel.	04
	(b)	Define following terms: (i) Austenite (ii) Bainite (iii) Martensite	03
	(c)	Differentiate between Austempering and martempering processes.	04
Que.-2	(a)	Differentiate between annealing and normalizing process.	04
	(b)	Explain Jominy end quench test in detail.	04
	(c)	Define nitriding process. Differentiate between nitriding and cyaniding process.	04

OR

Que.-2	(a)	Differentiate between white and malleable cast iron.	04
	(b)	What is steel? Calculate percentage of ferrite and Cementite for 1.2, 1.6 % C steel.	04
	(c)	Explain effects of following on properties of cast iron: (i) Sulphur (ii) Phosphorous (iii) Manganese (iv) Silicon	04
Que.-3		**Write short note on any three of following:**	12
	(1)	Eutectic, Eutectoid and Peritectic reaction of iron-iron carbide equilibrium diagram.	
	(2)	Aluminium and its alloys	

13

(3) Objectives of heat treatment process.

(4) Allotropic transformation of pure iron.

(5) Flame hardening

Section-II

Que.-4	(a)	Explain the filament winding manufacturing process of composite. Also discuss the advantages, disadvantages and applications of filament winding process.	06
	(b)	State important characteristics of composite material.	02
	(c)	Define APF. Calculate the APF value of BCC structure.	04

OR

Que.-4	(a)	Differentiate between hand layup and spry layup manufacturing processes of composite material.	04
	(b)	Explain various structural composites as produced by combination of reinforcement and matrix materials.	04
	(c)	Descibe various silicate structures of ceramic materials.	04
Que.-5	(a)	State and explain design modification applied to control corrosion. State practical cases where design modifications are effective.	04
	(b)	Explain the Oxygen absorption mechanism occurs in corrosion.	04
	(c)	Enumerate main characteristics of metal powder.	03

OR

Que.-5	(a)	What is powder metallurgy? Explain with a neat sketch of powder metallurgy process.	04
	(b)	Enlist the design consideration required for die pressing in P.M. process.	04
	(c)	Define corrosion and State the factors governing corrosion.	03
Que.-6		**Write short note on any three of following:**	12
	(a)	Glass	
	(b)	Refractory material	
	(c)	Differentiate between mechanical properties : Toughness and Resilience	
	(d)	Explain synthetic rubber manufacturing process.	
	(e)	Differentiate between PMCs and MMCs.	

END OF PAPER