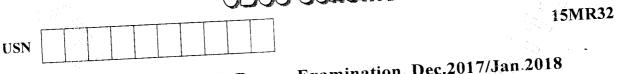
GRCS Scheme



Third Semester B.E. Degree Examination, Dec.2017/Jan.2018

		Material Science and Metallurgy Max. Ma	u ks. 60
Time	; 3 h	rs. Note: Answer any FIVE full questions, choosing ONE full question from each module.	
		Module-1	12
•	a. I i b. I	Define the following lattice:) unit cell ii) space lattice iii) automic packing factor iv) co-ordination number. Derive an expression for atomic packing factor of FCC.	(08 Marks) (08 Marks)
		OR	(08 Marks)
-	h	State and explain Fick's law of diffusion. With the help of conventional stress strain diagram, explain the behavior of mild static load till fracture.	steel under (08 Marks)
		Module-2	(08 Marks)
3		Differentiate slip and twinning with neat sketches. Explain with neat figure, ductile fracture and brittle fracture.	(08 Marks)
	b.	OR stores of	ficreen.
4	a.	What is meant by creep? With the help of creep curve explain different stages of	(08 Marks) (08 Marks)
	b.	Draw typical S – N curve diagrams for mild steel and aluminium and explain.	
	υ.	Module-3 South of formation of solid solutions.	(08 Marks) (08 Marks)
5	a.	Explain Hume Rothery rules for the formation of State the Gibb's phase rule and explain with a simple example.	`
	b.	OR Give the invariant reaction.	(10 Marks
6		Draw the eutectic and eutectoid phase diagrams. Give the invariant reaction. Explain lever rule with an example.	(06 Marks
	b.	Module-4	(06 Marks
7	a	Explain with a sketch induction hardening. Draw and explain Iron – carbide equilibrium diagram and label all the points a	nd fields. (10 Mark

Draw and explain Iron – carbide equilibrium diagram and label all the points and fields.

- Draw a neat sketch of a TTT diagram and label all the fields for an eutectoid steel. (10 Marks) 8
 - Explain the following: i) Normalizing ii) Hardening. b.
- Module-5 Briefly explain the composition, properties and application of grey cast Iron. (08 Marks) (08 Marks 9
 - Write a note on the following: i) Al-Si alloy ii) Copper alloys. a. b.

OR

- Explain the following with neat sketches: 10

 - i) Spray lay-up process ii) MMCS by stir casting. (06 Marks) What are the applications of composite materials?

(10 Marks)

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Important Note - 1. On revealing of iden:
2. Any revealing of iden: