Student Exam No._____

GANPAT UNIVERSITY

B. Tech. Semester: V (Mechatronics Engineering)

Regular Examination: November – December 2013

2MC 501: Casting and Machining Processes

Time: 3 Hours **Total Marks: 70**

Instruction:
1 Attempt **all** questions.
2 Figure to the **right** indicate full marks.
3 Assume suitable data if **necessary**.
4 Draw neat **sketch** whenever essential.

Section - I

Que. – 1	**(a)**	List out the properties of moulding sand and their effects on casting product.	**4**
	(b)	Discuss in brief all the essential ingredients of a moulding sand.	**4**
	(c)	Explain any three allowances provided on the pattern for a sand-casting and state the reasons why they are provided.	**4**
		OR	
Que. – 1	**(a)**	Differentiate between a casting and a pattern? Explain various types of patterns.	**4**
	(b)	What is Allowance in casting? Explain all the different types of Allowances in details.	**4**
	(c)	Describe the test used for determining the permeability and moisture content of any moulding sand.	**4**
Que. – 2	**(a)**	Derive the formula for the time required for top and bottom gating system.	**5**
	(b)	What is Gating ratio? Differentiate between pressurized and systems with applications.	**6**
		OR	
Que. – 2	**(a)**	What is the importance of chills? Explain the function of chaplets in sand casing process.	**4**
	(b)	What is meant by core prints? Explain how they are to be provided.	**4**
	(c)	Show by means of sketches the bottom and top gating systems.	**3**
Que. – 3		Write short notes on the following: (Any three)	**12**
	(a)	Constructional features of Cupola Furnace.	
	(b)	Defects caused in sand casting.	
	(c)	Explain Investment casting and Shell casting with neat sketches.	
	(d)	True Centrifugal and Centrifugal casting process with neat sketches.	

Section – II

Que. – 4	(a)	Find the time required for one complete cut on a piece of work 350mm long and 50mm in diameter. The cutting speed is 35 meters per min. and the feed is 0.5 mm per revolution.	4
	(b)	Explain with sketch: (i) Knurling (ii) Undercutting (iii) Chamfering (iv) Grooving	4
	(c)	Sketch and brief out a radial drilling machine.	4
		OR	
Que. – 4	(a)	Differentiate between Capston and Turret lathe.	4
	(b)	Explain various types of milling operations with neat sketches.	4
	(c)	What is a tool signature? Explain all the angles of a single point cutting tool.	4
Que. – 5	(a)	Describe the process of lapping and horning in detail with neat sketch	4
	(b)	Describe the various types of milling cutters used in milling machine.	4
	(c)	Write short note on Superfinishing process.	3
		OR	
Que. – 5	(a)	How simple indexing is done in milling machine? Take some suitable example.	5
	(b)	Explain up milling and down milling in details and also write difference between them.	6
Que. – 6		Write shorts notes on: (Any three)	12
	(a)	Centre less grinding	
	(b)	Quick return mechanism	
	(c)	Broaching operation	
	(d)	Feed Gear Box of Engine lathe	

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