Ganpat University
B.Tech. Sem. IV Mechanical Engineering
CBCS Regular Examination May- 2014
2ME 406 Manufacturing Technology

Time: 3 Hours

Total Marks: 70

Instructions:
- I) Attempt all questions.
- II) Figures to the right indicate full marks.
- III) Assume additional data if required.
- IV) Draw neat sketch whenever required.
- V) Answer each section in separate answer book.

Section I

Q-1	(a)	Define pattern. Explain following patterns with neat sketch:
		   i) Gatted pattern,
		   ii) Match plate pattern
		   iii) Skelton pattern
			4

	(b)	What are pattern allowances? Enlist and explain pattern allowances in detail.	4
	(c)	Enlist and explain properties of moulding sand.	4

OR

Q-1	(a)	Explain procedural steps of investment casting process along with advantages, limitations and applications of process.	4
	(b)	Explain CO_2 moulding process along with advantages and applications of process	4
	(c)	What is segregation? Differentiate between micro and macro segregation.	4

Q-2	(a)	What is gating system? Differentiate between top, bottom and parting line gating.	4
	(b)	What is riser? Enlist functions of riser. Differentiate between open riser and blind riser.	4
	(c)	Enlist and explain defects occurring due to improper design of gating system.	3

OR

Q-2	(a)	Differentiate between horizontal and vertical centrifugal casting process. Also differentiate between true and semi centrifugal casting process.	4
	(b)	Differentiate between hot and cold chamber die casting.	4
	(c)	Explain shell moulding process along with advantages and applications.	3

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Q-3	(a)	What is riser efficiency? Explain role of insulating materials, exothermic materials and chills to achieve directional solidification.	4
	(b)	What is gating ratio? Differentiate between pressurized and unpressurized gating system.	4
	(c)	Write short note: Cupola furnace	4

Section II

Q-4	(a)	Define following terms with respect to turning:
		    i) Cutting speed,
		    ii) Feed,
		    iii) Depth of cut
			4

	(b)	Explain with schematic diagram the principle of thread cutting on a lathe. Find out the relation between ratio of change gears to the work piece and lead screw. The pitch of a lead screw is 4 threads per inch and the pitch of the thread to be cut is 7 mm. Find the change gears.	4
	(c)	What is taper turning? Enlist methods of taper turning and explain any one with neat sketch.	3

OR

Q-4	(a)	What is broaching? Enlist advantages and limitations of broaching.	4
	(b)	What is centreless grinding? Describe centreless grinding operations.	4
	(c)	Describe grit, grade and structure of grinding wheel.	3
Q-5	(a)	Differentiate between shaper and planner machine.	4
	(b)	What is quick return mechanism? Enlist advantages of hydraulic shaper over crank and slotted lever mechanism.	4
	(c)	Find the time required for taking a complete cut on a plate of 800*800 mm, if the cutting speed is 10m/min. The return time to cutting time ratio is 1:5 and the feed is 2 mm. The clearance of each end is 50 mm.	4

OR

Q-5	(a)	Define elements of a plain milling cutter with a neat sketch.	4

	(b)	Define and explain importance of following angles of single point cutting tools:
		    i) Side cutting edge angle,
		    ii) End cutting edge angle
			4

	(c)	Define following drilling operations with neat sketch:
		    i) Counter boring
		    ii) Counter sinking
		    iii) Reaming
			4

Q-6		Write short notes on any three of the following:	12
	(i)	Peripheral milling	
	(ii)	Face milling	
	(iii)	Differentiate between Capstan and a Turret lathe	
	(iv)	Honing	
	(v)	Tool holding devices for drilling	

End of paper