

Total No of Questions: [8]		SEAT NO. :	
[Total No. of Pages : 2 ]			
M.E. 2012 (Mechanical and Automobile)			
(Manufacturing Processes - I) (202041)			
(Semester - I)			
Time: 2 Hours		Max. Marks : 50	
Instructions to the candidates:			
1) Answers to the question in one answer book.			
2) Neat diagrams must be drawn wherever necessary.			
3) Figures to the right side indicate full marks.			
4) Use of Calculator is allowed.			
5) Assume Suitable data if necessary.			
Q1)	a)	Explain the following defects in casting components with their causes and remedies. (i) Mismatch (ii) Blow holes	[6]
	b)	A 200 mm long down sprue has an area of cross section of $650\text{mm}^2$ where the pouring basin meets the down sprue. A constant head of molten metal is maintained by the pouring basin. The molten head flow rate is $6.5 \times 10^5 \text{ mm}^3/\text{s}$ . Considering the end of the down sprue to be open to atmosphere and acceleration due to gravity as $10^4 \text{ mm/s}^2$ at it ends , find the area of the sprue at the end.	[6]
		OR	
Q2)	a)	Mention the ingredients present in the moulding sand and its effect on the properties of moulding sand.	[6]
	b)	Explain in detail Lost-Wax casting process in details.	[6]
Q3)	a)	A solid material made of stainless steel is 50 mm in diameter and 76mm in height, It is reduced in height by 50% with the help of open-die forging. The work material has a flow curve defined by $K=350 \text{ Mpa}$ and $n=0.17$ . If coefficient of friction is 0.1, calculate the forging force at the end of stroke.	[6]
	b)	Explain (i) Wire Drawing (ii) Shot Peening.	[6]
		OR	
Q4)	a)	Explain working principles of forward and backward extrusion process.	[4]
	b)	Write down difference between Hot working and cold working.	[5]
	c)	Briefly explain the Rotary swaging.	[3]
Q5)	a)	With the aid of sketches, compare the principles of compression moulding, injection moulding and extrusion moulding. Describe where each would be used in terms of material and components.	[7]
	b)	Explain in detail vacuum process.	[6]
		OR	
Q6)	a)	Explain in detail Gas Tungsten Arc Welding	[6]
	b)	Compare with neat sketches leftward and rightward welding techniques. Specify the merits and limitations of both the techniques.	[7]

Q7)	a)	A hole 100mm diameter is to be punched in a steel plate of 6 mm thick. The material is cold rolled C30 steel for which the maximum shear strength can be taken as $370 \text{ N/mm}^2$ with normal clearance on the tools, cutting is completed at 40% penetration of the punch. Giving suitable diameter for the punch and die, and shear angle on the punch in order bring the work within the capacity of a 200KN press available in the shop.	[7]
	b)	Describe the following terms: i) Sheet utilization ratio. ii) Centre of pressure iii) Shear or punch and die.	[6]
		<b>OR</b>	
Q8)	a)	Explain taper turning attachment with a neat diagram. Give its merits and demerits.	[7]
	b)	A part of 25 cm in diameter and 50 cm length is to be turned down to 23.5 for the entire length. Assume feed as 1 mm/ rev. and cutting speed as 135 mpm. The maximum allowable depth of cut is 5 mm. what are the feed speed, spindle r.p.m and cutting time. Take over travel as 12.5 mm.	[6]