(B) (9)

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 $650mm^2$ 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 6.5×10^5 mm^3/s. Considering the end of the down sprue to be open to atmosphere and acceleration due to gravity as 10^4 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 mode 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 hs a flow curve defined by K=350 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 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]
		OR	
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]