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P.E.S. College of Engineering, Mandya - 571 401
(An Autonomous Institution affiliated to VTU, Belagavi)
Third Semester, B.E. - Mechanical Engineering
Semester End Examination; March - 2021
Manufacturing Process - I

Time: 3 hrs   *Max. Marks: 100*

Course Outcomes

The Students will be able to:
CO1: Explain the steps involved in casting processes.
CO2: Distinguish between various casting processes.
CO3: Explain special types of welding processes.
CO4: Analyze shear angle using Merchants circle diagram. Explain various types of cutting tool materials.
CO5: Estimate Tool life and Describe Mechanism of machines.

Note: *I) PART - A is compulsory. Two marks for each question.*
II) PART - B: Answer any Two sub questions (from a, b, c) for Maximum of 18 marks from each unit.

Q. No.	Questions	Marks	BLs	COs	POs
	I : PART - A	**10**			
I a.	List any four Melting furnaces.	2	L1	CO1	
b.	State the functions of Riser.	2	L1	CO2	
c.	Define Welding and Brazing.	2	L1	CO3	
d.	Distinguish between Orthogonal and Oblique cutting.	2	L2	CO4	
e.	List the important factors considered for selecting a grinding wheel.	2	L2	CO5	
	II : PART - B	**90**			
	UNIT - I	**18**			
1 a.	Define Manufacturing Process. Briefly explain the different types of Manufacturing Process.	9	L1	CO1	
b.	Briefly explain the steps involved in making a sand casting.	9	L2	CO1	
c.	Explain the different types of pattern allowances with necessary sketches.	9	L2	CO1	
	UNIT - II	**18**			
2 a.	List the types of moulding sand. Briefly explain the properties of moulding sand.	9	L1	CO2	
b.	With suitable sketches, explain casting defects.	9	L2	CO2	
c.	With neat sketches, explain the steps involved in investment casting process.	9	L2	CO2	
	UNIT - III	**18**			
3 a.	With a neat sketch, explain Resistance welding process.	9	L2	CO3	
b.	What is Heat Affected Zone (HAZ)? Explain the parameters affecting Heat Affected Zone (HAZ).	9	L3	CO3	
c.	Write short notes on; i) Welding defects　　ii) Residual stresses	9	L2	CO3	

	UNIT - IV	**18**		
4 a.	With a neat sketch, discuss about single point cutting tool nomenclature.	9	L2	CO4
b.	A seamless turning 35 mm outside diameter is turned orthogonally on a lathe. The following data is available: Rake angle = 35°, Cutting speed = 15 m/min, Feed = 0.10 mm/rev, Length of continuous chip in one revaluation = 50.72 mm, Cutting force = 200 N, Feed force = 80 N, Calculate; i) The coefficient of friction ii) Shear plane angle iii) Chip thickness	9	L2	CO4
c.	Write a note on the following cutting tool materials: i) HSS ii) Carbides iii) Ceramics	9	L2	CO4
	UNIT - V	**18**		
5 a.	Sketch and explain the forms of tool wear. Also explain the parameter that affects tool life.	9	L2	CO5
b.	With a neat sketch, explain the constructional features of a Turret Lathe mechanism.	9	L2	CO5
c.	A 50 mm bar of steel was turned at 284 rpm and the tool failure occurred after 10 min. The speed was changed to 232 rpm and the tool failed in 60 min of cutting time. What cutting speed should be used to obtain 30 mins of tool life?	9	L3	CO5

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