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**[5152]-112****SE. (Mech. & Autom.) (First Semester)****EXAMINATION, 2017****MANUFACTURING PROCESS-I****(2012 PATTERN)****Time : Three Hours****Maximum Marks : 50****N.B. :—** (i) Neat diagrams must be drawn wherever necessary.

(ii) Figures to the right indicate full marks.

(iii) Assume suitable data, if necessary.

(iv) All questions are compulsory.

1. (a) What are different allowances applied in pattern making?  
Explain. [6]

(b) With neat sketch explain gating system used in sand casting. [6]

*Or*

2. (a) A cylindrical riser must be designed for a sand casting mould. The size of steel casting is 40 mm × 100 mm × 10 mm. The previous observations have indicated that the total solidification time for casting is 80 sec. The cylindrical riser has  $(d/n) = 1$ , find the size of riser so that its total solidification time is 120 sec. [6]

(b) What is the difference between hot working and cold working? [6]

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3. (a) With proper sketch explain Injections Moulding Process. [6]  
(b) Explain Arc welding with merits and demerits. [6]

Or

4. (a) What are different types of flames in gas welding ? Explain with proper sketch. [6]  
(b) Classify the welding process. What are its advantages ? [6]

5. (a) A 120 mm diameter hole is to be punched in a sheet of 6 mm thick. The material of the sheet is cold rolled steel with a shear strength of 560 MPa. With normal clearance cutting is completed at 30 percent penetration of the punch. Find:  
(i) Diameter of the punch and die.  
(ii) Maximum force on the punch,  
(iii) Stripping force  
(iv) Total work done in punching. Also estimate the amount of shear on the punch if punching force is 250 kN. [7]  
(b) What is center of pressure ? How is it calculated ? [6]

Or

6. (a) What is Compound die ? Explain with proper sketch. [6]  
(b) Explain any *two* operations performed on sheet metal in detail with proper sketches. [7]

7. (a) With neat sketch explain steady rest and follower rest in lathe machine. [7]  
(b) Explain threading operation on lathe machine with neat sketch. [6]

Or

8. (a) Calculate machining time for a workpiece of 80 mm diameter and 120 mm length turned in 2 passes if the approach length is 14 mm and over travel is 6 mm. Given cutting speed = 4 m/min. and feed is 0.4 mm/rev. [6]
- (b) Explain Taper turning attachment with neat sketch. [7]