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Seat No.

[5152]-112

SE. (Mech. & Automo.) (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]

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]