Total No. of Questions : 4]

SEAT No. :

PF258

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APR-26/SE/Insem-317

S.E. (Automobile & Mechanical)/(Automation & Robotics) (Insem)

MANUFACTURING PROCESSES

(2019 Pattern) (Semester - IV) (202050)

Time : 1 Hour] *[Max. Marks : 30*

Instructions to the candidates:

1) ***Solve Q.1 or Q.2 and Q.3 or Q.4.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right indicate full marks.***
4) ***Assume suitable data if necessary.***

Q1) a) Explain different pattern allowances used in pattern making. Explain characteristics of good molding sand. **[7]**

b) A cylindrical riser for which diameter of the riser is equal to the height of the riser is to be designed for a sand casting mould for the size of steel casting as 35 mm × 60 mm × 25 mm. The previous observations indicated the total solidification time for the said casting is 72 second. However, find the size of the riser to obtain total solidification time of 112 seconds. **[8]**

OR

Q2) a) Illustrate schematic diagram Gating system. Explain components of Gating system used in sand casting. **[7]**

b) Explain investment casting process in detail. **[8]**

Q3) a) Explain Planetary Rolling Mill with it's schematic diagram, construction, working & advantages & limitations. **[7]**

b) A 300mm wide strip of 25mm thick is reduced to 22mm in a single pass through rolling process. The redious of each roller is 250mm and it's speed is 150rpm, the strength of the work material is 275N/mm^2 & n = 0.15. The coefficient of friction between workpiece and roll is 0.12. Find-

i) Roll Force

ii) Torque required per Roll

iii) Power required per Roll. **[8]**

OR

P.T.O.

Q4) a) Explain with a neat sketch rotary swaging process. Is this process useful for forming parts of both symmetrical and unsymmetrical cross-sections ? **[7]**

b) Differentiate between Direct extrusion and Indirect extrusion. What common types of defects occurred in extrusion process? **[8]**