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ME 181801

Roll No. of candidate

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BINA CHOWDHURY CENTRAL LIBRARY
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Azara, Matkhowspara,
Guwahati-781017

2022

B.Tech. 8th Semester End-Term Examination

Mechanical Engineering

MANUFACTURING METHODS

(New Regulation (w.e.f. 2017-18) &

(New Syllabus w.e.f. 2018-19)

Full Marks – 70

Time – Three hours

The figures in the margin indicate full marks for the questions.

Answer question No. 1 and any *four* from the rest.

1. Answer the following : (10 × 1 = 10)
- (i) In centrifugal casting, cores are made of _____.
- (a) Steel (b) Cast iron
(c) Hard sand (d) None of the above
- (ii) Which of the following process would produce strongest components _____.
- (a) Die casting (b) Hot rolling
(c) Forging (d) Cold rolling
- (iii) Sprue in casting refers to _____.
- (a) Gate (b) Runner
(c) Vertical passage (d) Riser
- (iv) In rolling operation, the roll rotates with surface velocity _____.
- (a) Exceeding the speed of incoming metal
(b) Lower than the speed of incoming metal
(c) Equal to speed of the incoming metal
(d) Very higher than the speed of incoming metal
- (v) In which type of extrusion, the die moves toward the unextruded billet?
- (a) Forward (b) Indirect
(c) Hydrostatic (d) Impact

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- (vi) The size of press is expressed in terms of
- (a) Its stroke length
 - (b) The maximum force its ram can exert
 - (c) Die space
 - (d) Ram speed
- (vii) Which of the following is a surface finishing operation?
- (a) Drilling
 - (b) Turning
 - (c) Milling
 - (d) Lapping
- (viii) Which of the following is a step of powder metallurgy?
- (a) The production of metal powder
 - (b) The consolidation and fusing of the powder into a solid metal
 - (c) The compaction and shaping of the powder
 - (d) All of the mentioned
- (ix) Which of the following additive is added to improve the tool life of steel parts?
- (a) Lead
 - (b) Copper
 - (c) Sulphur
 - (d) Bismuth
- (x) Which of the following factors reduce strength of casted components?
- (a) Blow holes
 - (b) Gas cavities
 - (c) Non-metallic inclusions
 - (d) All of the above
2. (a) Describe the working principle of cupola. (5)
- (b) Design a bottom gating system considering sand casting with a neat sketch. (10)
3. (a) How do you classify the casting defects? State different causes of casting defects. (2+3=5)
- (b) With the help of necessary figure, explain the true-centrifugal casting method. List also the application of this method. (10)
4. (a) Define angle of bite in rolling. On what factors does its value depend? (5)
- (b) What do you mean by forgeability of metal and alloys as applied to forging process? Briefly explain a test to determine the forgeability. (2+5=7)
- (c) How do you classify extrusion processes with respect to the ram and extruded product movements? (3)

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5. (a) How does stand off distance affect the explosive forming operation? How is the optimum value of SOD determined? (2+2 = 4)
- (b) Draw a schematic diagram for a press used for blanking and punching and label the important parts in it. (5)
- (c) Define Lapping and Honing. Describe the principle of anyone of them. (2+4=6)
6. (a) Explain the manufacturing of a gear blank by proper alignment of flow lines for achieving optimum mechanical properties by forging. (8)
- (b) What is sintering? Explain how sintering of metal powder is carried out. (7)
7. Write short notes on (*any three*) (3 × 5 = 15)
- (a) Solidification of pure metal
- (b) Hydrostatic extrusion
- (c) Drop forging
- (d) Deep drawing
- (e) Advantages and Disadvantages of powder metallurgy

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