

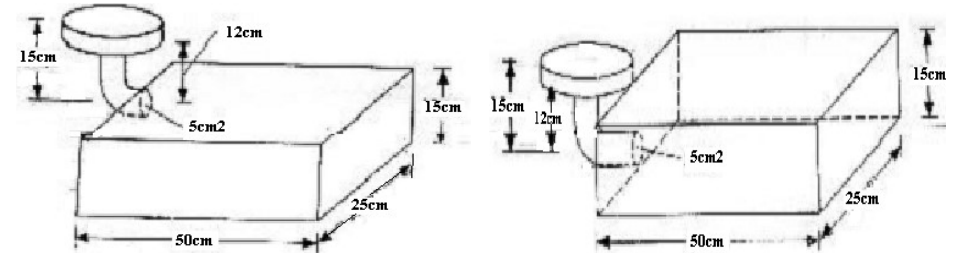
B.TECH/ME/4TH SEM /MECH 2203/2016

- (v) Cold rolling is preferred to hot rolling due to
(a) less rolling force
(b) less operating cost
(c) higher production rate
(d) better surface finish
- (vi) Hot operation is carried out at
(a) above recrystallization temperature
(b) below recrystallization temperature
(c) near plastic range temperature
(d) above room temperature
- (vii) TIG welding is best suited for welding
(a) silver (b) mild steel
(c) aluminium (d) stainless steel
- (viii) The function of welding electrode coating is to
(a) stabilize the arc
(b) reduce the spatter
(c) perform metallurgical refining operations
(d) all of these
- (ix) Which pattern can be used for symmetrical job only
(a) gated pattern (b) sweep pattern
(c) split pattern (d) cope and drag pattern
- (x) Chills are used in casting moulds to
(a) achieve directional solidification
(b) reduce blow hole
(c) reduce freezing time
(d) increase the smoothness of the casting surface

Group - B

2. (a) Distinguish between hot chamber die casting and cold chamber die-casting.
- (b) Two gating designs for a mould of 50cm × 25cm × 15cm are shown in figure given below. The cross sectional area of the gate is 5cm². Determine the filling time for both the designs.

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(a) top gating system

(b) bottom gating system

6 + 6 = 12

3. (a) A solid carbon steel block of final dimension of 100mm × 75mm × 60mm is to be prepared by green sand casting. Find the dimensions of the wooden pattern considering 3% shrinkage allowance and 5% machining allowance.
- (b) State the steps that are followed in sequence for making a cast product by green sand mould casting.

6 + 6 = 12

Group - C

4. (a) Calculate the melting efficiency in the case of arc welding of steel with a potential of 20 V and a current of 200 A. The travel speed is 5mm/s and the cross sectional area of the joint is 20 mm². Heat required to melt steel may be taken as 10 J/mm² and the heat transfer efficiency as 0.85.
- (b) Describe various welding defects and their remedies.

6 + 6 = 12

5. (a) Explain forehand or leftward welding technique.
- (b) Explain the purpose of using coating on electrode in MMAW. Define straight polarity.

6 + 6 = 12

Group - D

6. (a) Differentiate between hot working and cold working.
- (b) Describe forward extrusion process in short. Define wire drawing.

6 + 6 = 12

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7. (a) Compare drop forging & press forging process.
(b) Define & draw a schematic diagram of rolling process. Name two types of forging defects.
- 6 + 6 = 12**

Group - E

8. (a) Mention the uses of powder metallurgy technique.
(b) What are the characteristics of metal powders?
- 6 + 6 = 12**
9. (a) What are the different types of plastics & their properties?
(b) Mention the characteristics of various types of elastomers.
- 6 + 6 = 12**

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2016**

**PRIMARY MANUFACTURING PROCESSES
(MECH 2203)**

Time Allotted : 3 hrs

Full Marks : 70

Figures out of the right margin indicate full marks.

***Candidates are required to answer Group A and
any 5 (five) from Group B to E, taking at least one from each group.***

***Candidates are required to give answer in their own words as far as
practicable.***

**Group - A
(Multiple Choice Type Questions)**

1. Choose the correct alternatives for the following: **10 × 1 = 10**
- (i) Core prints are provided to
(a) form trade mark of company on casting
(b) produce casting with specific surface design
(c) form seat to support and hold the core
(d) direct the flow of molten metal during pouring
- (ii) Carburizing flame is used to weld
(a) copper, aluminium etc.
(b) brass and bronze
(c) hard surfacing materials such as High Carbon Steel, Cast Iron
(d) all of these
- (iii) The amount of heat generation in Arc Welding is
(a) directly proportional to resistance
(b) inversely proportional to resistance
(c) directly proportional to current
(d) inversely proportional to time
- (iv) In metal rolling, the metal is stronger
(a) in the direction of grain flow
(b) in the direction perpendicular to grain flow
(c) at 45° angle to grain flow
(d) equally in all direction