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Question Paper Code : 51618

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2014.

Third Semester

Mechanical Engineering

ME 2201/ME 32/PR 1204/080120005/10122 ME 302 — MANUFACTURING
TECHNOLOGY – I

(Common to Industrial Engineering, Industrial Engineering and Management and
Mechanical and Automation Engineering)

(Regulation 2008/2010)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define casting.
2. What is pattern?
3. What is the difference between soldering and brazing?
4. Sketch the different types of oxyacetylene flames.
5. Define "upsetting" and "drawing down" in forging operation.
6. Sketch the different types of rolling mills.
7. What is the difference between a cutoff operation and a parting operation?
8. What is meant springback effect in sheet metal bending?
9. What is polythene?
10. Name the common thermosetting plastics.

PART B — (5 × 16 = 80 marks)

11. (a) (i) Explain the hot chamber die casting with figure. (8)
(ii) Enumerate some common casting defects and explain the reasons which cause these defects. (8)

Or

- (b) Describe the stepwise procedure of making a mould with a two piece split pattern. (16)

12. (a) Explain the principle of arc welding. What are the different weld positions in arc welding? Enumerate some defects due to arc welding. (16)

Or

- (b) Explain the principle of resistance welding. What are the different types of resistance welding and explain any one of them with neat sketch. (16)
13. (a) Classify the extrusion process. Explain the backward extrusion and cold extrusion forging operations. Compare hot and cold extrusion. (16)

Or

- (b) Explain the mechanism of rolling process with clear sketch. Write about some defects associated with rolling. (16)
14. (a) An L-shaped part is to be bent in a V-bending operation on a press brake from a flat blank 101.6 mm by 38.1 mm that is 3.96 mm thick. The bend of 90° is to be made in the middle of the 101.6 length
- (i) Determine the dimensions of the two equal sides that will result after the bend, if the bend radius = 4.76 mm. For convenience, these sides should be measured to the beginning of the bend radius. (8)
- (ii) Also, determine the length of the part's neutral axis after the bend. (4)
- (iii) Should the machine operator set the stop on the press brake relative to the starting length of the part. (4)

Or

- (b) Explain single die and multiple operational die with neat sketch. State their advantages and limitations. (16)
15. (a) (i) Briefly explain the working principle and applications of injection moulding process with a neat sketch. (11)
- (ii) The nominal length (L) of a part made of polyethylene is to be 80 mm. Determine the corresponding dimension of mould cavity (L_c) that will compensate for shrinkage (consider the shrinkage of polyethylene $S = 0.025$). (5)

Or

- (b) Explain the structure of thermo plastic and thermosetting plastics. Compare the thermo and thermosetting plastics. (16)