

B.Tech II Year II Semester (R13) Supplementary Examinations December/January 2015/2016

MANUFACTURING TECHNOLOGY

(Mechanical Engineering)

Time: 3 hours

Max. Marks: 70

PART – A

(Compulsory Question)

1 Answer the following: (10 X 02 = 20 Marks)

- (a) What are the steps involved in making a casting?
- (b) Distinguish between directional solidification and progressive solidification.
- (c) Sketch and explain the Centrifuging process.
- (d) How Rat tails differ from Cold shuts?
- (e) What are the different butt joint edge preparations?
- (f) Illustrate the three types of flames in oxy-acetylene gas welding with neat sketches.
- (g) Explain the advantages of inert gas medium compared to that of flux materials.
- (h) Describe briefly any two non-destructive testing methods of welding.
- (i) What are the characteristics of surface treatment process?
- (j) Give a brief note on mechanical modifications of work piece surface during surfaces treatment.

PART – B

(Answer all five units, 5 X 10 = 50 Marks)

UNIT – I

- 2 (a) Define pattern allowance. Explain various allowances usually considered on patterns and core boxes.
- (b) Explain the factors to be considered in the selection of pattern materials.

OR

- 3 (a) What are various moulding materials and their properties? Explain.
- (b) Classify the different types of cores. Explain their making methods. Give applications.

UNIT – II

- 4 (a) Sketch and explain the Investment casting method in detail. Give its applications.
- (b) What are the casting defects? Explain the reasons for such defects and suggest suitable remedies.

OR

- 5 (a) Define gating ratio. Explain pressurized and unpressurised gating systems.
- (b) Briefly describe the latest developments in cupola melting.

UNIT – III

- 6 (a) Briefly describe the Oxy-Acetylene gas cutting technique with a neat sketch.
- (b) Sketch and explain the Manual Metal Arc Welding process in detail.

OR

- 7 (a) Explain how an arc is obtained in arc welding process.
- (b) With the help of a neat sketch explain the working of:
 - (i) Thermit welding process. (ii) Resistance spot welding process.

UNIT – IV

- 8 (a) Give the advantages and limitations of TIG welding over MIG welding.
- (b) Explain the terms: (i) Soldering. (ii) Adhesive bonding. (iii) Induction welding.

OR

- 9 (a) Briefly describe the shielded metal arc welding process? Give its advantages and limitations over gas welding.
- (b) Classify the different heat affected zones in welding. Discuss the heat flow and its consequences in case of an arc welded joint.

UNIT – V

- 10 Highlight the different types of surface treatment process used for welding jobs. Give their advantages and limitations.

OR

- 11 Explain the working principle of the following with suitable sketches:

- (a) Overlay coating.
- (b) Diffusion coating.