

17455

15116

3 Hours / 100 Marks

Seat No.

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- Instructions* –
- (1) All Questions are *Compulsory*.
 - (2) Answer each next main Question on a new page.
 - (3) Illustrate your answer with neat sketches wherever necessary.
 - (4) Figures to the right indicate full marks.
 - (5) Assume suitable data, if necessary.
 - (6) Use of Non-programmable Electronic Pocket Calculator is permissible.
 - (7) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.
 - (8) Use of Steam tables, logarithmic, Mollier's chart is permitted.

Marks

- 1. Attempt any FIVE of the following :** **20**
- a) Explain in brief basic welding symbols for following
 - (i) Single V-Butt
 - (ii) Seam welding
 - b) What is arc stability ? Write down it's advantages.
 - c) Enlist any four factors affecting the arc blow in arc welding.
 - d) Write down any four factors that affects the weldability of metal.
 - e) Explain in brief the factors affecting the weld solidification rate.

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- f) What do you mean by Heat Affected Zone (HAZ), write down it's characteristics.
- g) Differentiate between brazing and welding.

2. Attempt any FOUR of the following : 16

- a) Explain briefly, neutral and oxidising flame with neat sketch.
- b) Explain, free-flight metal transfer in arc welding.
- c) Describe, pulsed type metal transfer in arc welding.
- d) Write down welding characteristics of gray cast iron.
- e) Describe the main metallurgical effects of welding on metals.
- f) Explain any four points on good brazing joint design.

3. Attempt any FOUR of the following : 16

- a) Write down advantages and limitations of gas welding.
- b) Explain briefly the relationship between the plate thickness and electrode diameter during electrode selection with neat graph.
- c) Why the following welding methods not suitable for casting material
 - (i) Spot welding
 - (ii) Forge welding
- d) List the various heat treatments to reduce the welding stresses. Explain any one in brief.
- e) Write down needs of heat treatment after welding.
- f) Describe torch type brazing method in brief.

4. Attempt any FOUR of the following : 16

- a) Compare leftward rightward gas welding techniques.
- b) Explain the disadvantages due to poor care and wrong storage place method of flux coated electrodes.
- c) Explain in brief, any one welding method for alloy steels.
- d) Describe the weldability of high strength alloy steel for welding.
- e) How soldering differs from brazing ?
- f) Explain in brief, vacuum type brazing method.

5. Attempt any FOUR of the following : 16

- a) Show complete equipment set up only for oxy-acetylene welding and label the equipments used.
- b) Following letters and numbers are printed on welding electrode box, state the meaning of each letter and number → E307411
- c) Describe the suitability of TIG welding for aluminium.
- d) Explain the following welding defects with their causes
 - (i) Cracks
 - (ii) Poor fusion
 - (iii) Undercutting and
 - (iv) Blow holes
- e) Differentiate between cold cracking and hot cracking.
- f) Write down the principles of good soldering process.

6. Attempt any FOUR of the following :**16**

- a) Describe the purpose of filler metal and fluxes used in gas welding process.
 - b) Compare flat and horizontal positions of arc welding.
 - c) List an eight factors for selection of power source in arc welding.
 - d) Describe any one welding method for non-ferrous metal.
 - e) Write down the remedial procedure for following welding defects –
 - (i) Spatter
 - (iii) Incomplete penetration
 - (iii) Distortion and
 - (iv) Overlapping
 - f) Write down the main factors to be considered while selecting the soldering joint design.
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