

17455

**21718**

**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 answers with neat sketches wherever necessary.
  - (4) Assume suitable data, if necessary.
  - (5) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

**Marks**

**1. Attempt any FIVE of the following :**

**20**

- (a) Explain following welding symbol with neat sketch :
  - (i) Fillet
  - (ii) Single 'V' Butt
- (b) Compare A.C. arc welding and D.C. arc welding source.
- (c) Explain the following terms :
  - (i) Straight polarity
  - (ii) Reverse polarity
- (d) Explain the term 'Weldability'. Also compare weldability of iron & steel.
- (e) What do you mean by Heat Affected Zone (H-A-Z) ? Also write characteristics of H-A-Z.
- (f) Explain the procedure for controlling heat affected zone for M.S.
- (g) Explain principle of brazing.

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

- (a) Explain briefly carburising and oxidising flame with neat sketch.
- (b) Explain the term 'Arc stability'. Also state the effect of stable arc on welding quality.
- (c) Explain, short circuit type metal transfer in arc welding.
- (d) Explain, working principle and set-up of metal arc welding with neat sketch.
- (e) Explain in brief any four factors affecting the solidification rate in welding.
- (f) State applications of Brazing.

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

- (a) Explain the purpose of following equipments in gas welding (i) welding torch, (ii) pressure regulator.
- (b) What are the factors to be consider for selection of power source of arc welding ?
- (c) Explain, working principle of TIG welding.
- (d) Explain following welding defects :
  - (i) Slag inclusions
  - (ii) Incomplete fusion
  - (iii) Inadequate penetration
  - (iv) Porosity
- (e) Differentiate between cold cracking and hot cracking in welding.
- (f) Write limitations and applications of soldering.

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

- (a) Explain right ward gas welding technique with neat sketch.
- (b) Compare flat and horizontal positions of arc welding with suitable diagram.
- (c) Explain the detail procedure for welding the cast iron by oxy-acetylene gas welding.
- (d) Describe any two welding processes for non-ferrous metal.
- (e) Explain the reasons for following welding defects :
  - (i) insufficient fusion
  - (ii) spatter
- (f) Differentiate between brazing & soldering.

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

- (a) Write the filler metal for following base metal during gas welding :
  - (i) ferrous metal, (ii) alloy steel, (iii) Copper, (iv) Aluminium.
- (b) Following letters and numbers are printed on welding electrode box, state the meaning of each letter and number, E307411.
- (c) Explain any two methods of welding alloy steels.
- (d) Explain heat treatment to reduce the welding stresses.
- (e) State the effect of welding on properties of metal.
- (f) Differentiate between soft soldering and hard soldering.

**P.T.O.**

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

- (a) Write limitations and applications of gas welding.
  - (b) Explain coating of electrode, purpose of coating and few coating ingredients for arc welding electrode.
  - (c) State the disadvantages of poor handling and improper transportation and storages of electrodes.
  - (d) How weldability can be improved ? Explain in short.
  - (e) Describe various remedial actions to control the welding defects with suitable examples.
  - (f) State and explain factors to be consider for soldering joint.
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