

Con. 5957-09.

SP-8012

(3 Hours)

[ Total Marks : 100

- N.B.** (1) Question No.1 is **compulsory**.  
 (2) Attempt any **four** questions out of the remaining **six** questions.  
 (3) **Figures** to the **right** indicate **full marks**.  
 (4) Draw the **sketches** wherever **necessary**.

1. Answer the following questions :— 20
  - (a) Describe the gas-welding torch and its handening for various gas welding operations. How gas-cutting torch is different from gas-welding torch ?
  - (b) What are pre-weld operations ? Describe the weld positioner and its advantages.
  - (c) What are the resistance welding parameters ? What are the problems associated with thickness and material variations in spot welding of plate pairs ?
  - (d) How bad welding is differentiated from good welding ? What are the heat effects of welding on parent material ?
2. (a) Briefly explain the characteristics of :— 10
  - (i) Welding electrodes (ii) Flux constituents.
- (b) State the weldability features of :— 10
  - (i) Carbon steel (ii) Aluminium.
3. (a) Define weldability. Explain any two weldability tests in details. 15
- (b) Explain the V. J. characteristics in welding. 5
4. Explain the principles, scheme, operation and usage of the following welding processes :— 20
  - (a) Thermit welding
  - (b) Electro-slog welding.
5. (a) Describe the following equipments used in welding operations :— 10
  - (i) Plasma torch (ii) Electron beam gun.
- (b) Compare the following :— 10
  - (i) Flash butt welding and Friction welding
  - (ii) TIG and MIG welding.
6. (a). What are the reasons for carrying out various destructive testing procedures ? Expalin 10  
 how radiography reveals various welding defects.
- (b) Explain in details the precautions needed pertaining to :— 10
  - (i) Aluminium welding (ii) Stainless steel welding.
7. Write short notes on any **four** of the following :— 20
  - (a) Identification and Relieving Residual Stresses
  - (b) Welding Joint Design
  - (c) Oxygen and Acetylene Cylinder
  - (d) Laser Welding
  - (e) Brazing.