GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-VII (NEW) - EXAMINATION - SUMMER 2017

Subject Code: 2172111Date: 02/05/2017Subject Name: Advances in Welding Metallurgy (Department Elective - I)Time: 02.30 PM to 05.00 PMTotal Marks: 70

Instructions:

- 1. Attempt all questions.
- 2. Make suitable assumptions wherever necessary.
- 3. Figures to the right indicate full marks.
- Q.1 (a) Discuss the effect of Heat Input and Inter pass temperature on Microstructure & 07 Mechanical properties of steel.
 - (b) Constant current (CC) and Constant voltage (CV) Power Sources are widely usedexplain with suitable examples. 07
- Q.2 (a) Discuss Deposition rate and Deposition efficiency in terms of quality welding. 07
 - (b) Which filler materials are used for SMAW & SAW Processes? Write their 07 specifications.

OR

- (b) For TIG and MIG welding processes write comparative points for Argon, Helium, Co₂ 07 gases.
- Q.3 (a) Why FCAW yields higher penetration compared to GMAW for same process 07 parameters? Explain.
 - (b) With reference to arc welding process discuss (a) Open Circuit Voltage (OCV)
 (b) Power factor Pf (c) Duty Cycle (d) Class of Insulation.

OR

- Q.3 (a) Discuss Friction Stir Welding with reference to its Principles, Operation, 07 advantages and limitations.
 - (b) For GTAW Process which types of electrodes are used? Write their Specifications. 07
- Q.4 (a) In GTAW process DCEP is suitable for which metals? Discuss the steps for taking 07 care of tungsten overheating.
 - (b) Discuss Friction Stir Welding in terms of its principle, operation, advantages and 07 disadvantages.

OR

What are the advantages of Hot-wire TIG Welding Machine? Discuss. 07 0.4 (a) Explain Plasma welding with reference to transferred and non-transferred arc. 07 **(b)** What is the importance of Plasma key hole welding? **Q.5** Write short note on Robotic welding and Welding Automation. 07 (a) Latest welding equipment is equipped with the Electronic Power Regulation Systems. 07 **(b)** Discuss their salient features.

OR

Q.5	(a)	Write Salient features of Fuzzy logic based intelligent Power Systems.	07
	(b)	Write a short note on Laser welding.	07
