

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VI (NEW) EXAMINATION – WINTER 2018****Subject Code:2162109****Date:04/12/2018****Subject Name:Metal Joining Processes****Time: 02:30 PM TO 05:00 PM****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

		MARKS
Q.1	(a) Write the full forms of GTAW, SMAW and FCAW.	03
	(b) Explain the Factors affecting the Weldability for Carbon Steel.	04
	(c) Write a short note on Welding Symbols with suitable example.	07
Q.2	(a) Multiple Choice Questions:	03
	1) The distance between electrode tip and base metal is called	
	a. Arc Gap	
	b. Arc Length	
	c. Arc Distance	
	d. Arc Width	
	2) Due to thermal expansion coefficient mismatch during cooling of a welding joint, following defect takes place,	
	a. Under cut	
	b. Distortion	
	c. Porosities	
	d. Spatter	
	3) Which of the following ray is not produced during welding?	
	a. Infrared ray	
	b. Visible light rays	
	c. Gamma rays	
	d. Ultra violet rays	
	(b) Explain the following terms with respect to characteristics of Welding Power Sources.	04
	1) Open circuit voltage (OCV),	
	2) Power factor (pf),	
	3) Static characteristics,	
	4) Dynamic characteristics.	
	(c) Explain how gas-metal and slag-metal reactions takes place in welding.	07
	OR	
	(c) Explain with schematic different mode of metal transfer in arc welding processes.	07
Q.3	(a) Give classification of welding power source.	03
	(b) Explain the phenomena for the formation of porosity and inclusions in weld metal.	04
	(c) Discuss the role of preheating and post heating on metallurgy of weldments.	07

OR

- Q.3** (a) Enlist different brazing Techniques. **03**
(b) How does hydrogen embrittlement occur? **04**
(c) List various Mechanical Testings of welded joint. Explain any TWO in detail with neat schematic. Also mention their acceptance criteria as per ASME Sec IX. Code. **07**

- Q.4** (a) What is Electroslag welding? **03**
(b) Explain in brief about weldability of Al-alloy & Ti-alloys. **04**
(c) Write short note on Frictional Stir welding, its operation & process parameters. **07**

OR

- Q.4** (a) What is submerged arc process and give its advantages. **03**
(b) Write in brief about Soldering alloys and its applications. **04**
(c) Write a note on ultrasonic welding. **07**
- Q.5** (a) State types of polarity used in welding with its significance. **03**
(b) Write short note on Flux cored electrode wire. **04**
(c) Explain CCT diagram of weldment with neat sketch. **07**

OR

- Q.5** (a) What is carbon equivalent? Discuss briefly how it is used in welding industry. **03**
(b) Draw the neat sketch of welding positions (1G, 3G, 4G, 2F). **04**
(c) Explain the significance of WPS & PQR in welding Industries. **07**

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