

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER– VI (New) EXAMINATION – WINTER 2019****Subject Code: 2162109****Date: 12/12/2019****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) Give Definition of welding as per IS and AWS.	03
	(b) Classify welding processes and its allied processes.	04
	(c) Explain with schematic different mode of metal transfer in arc welding processes.	07
Q.2	(a) What are the welding codes for weld positions?	03
	(b) Illustrate with figure Frictional Stir welding process.	04
	(c) Explain with reason which arc characteristics should be used for the following welding Process.(CC, CV, Self-regulating Arc):- a. MMA & TIG b. MIG, SAW & PAW	07
	OR	
	(c) By cyclic diagram, how arc is to be initiated in arc welding? Explain	07
Q.3	(a) What is the formula for welding heat input?	03
	(b) What is duty cycle? Current rating for a welding power source is 400 A at 60% duty cycle. Determine the welding current for automatic continuous welding i.e. 100% duty cycle.	04
	(c) Explain the Coding Method of SMAW Electrode with suitable example.	07
	OR	
Q.3	(a) What are OCV and SSC in arc welding processes?	03
	(b) Differentiate Soldering and Brazing.	04
	(c) Explain the zones in arc gap of a welding arc with schematic figure.	07
Q.4	(a) State types of polarity used in welding with its significance.	03
	(b) Write short note on Flux cored electrode wire.	04
	(c) Write a short note on SAW.	07
	OR	
Q.4	(a) What do you mean by dilution in welding?	03
	(b) Explain in brief about weldability of Al-alloy & Ti-alloys.	04
	(c) Briefly explain about Electro slag welding process.	07
Q.5	(a) What is brazing process? Give different brazing materials	03
	(b) How does hydrogen embrittlement occur?	04
	(c) With schematic diagram explain in detail GTAW process.	07
	OR	
Q.5	(a) What is carbon equivalent? Discuss briefly how it is used in Welding industry.	03
	(b) What is the significance of WPS & PQR in welding Industries?	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
