

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER-VI(NEW) – EXAMINATION – SUMMER 2019
Subject Code:2162109
Date:21/05/2019
Subject Name: Metal Joining Processes
Time:10:30 AM TO 01:00 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) What are the reasons behind welding being largely used in the field of engineering?	03
	(b) Classify and explain the flames of oxy-acetylene.	04
	(c) Explain how gas-metal and slag-metal reactions take place in welding.	07
Q.2	(a) What is weld decay?	03
	(b) Write detailed classification of welding joint.	04
	(c) Draw and explain CCT diagram of weldment with neat sketch.	07
OR		
	(c) Briefly explain Shielded Metal Arc Welding (SMAW) with a neat sketch.	07
Q.3	(a) What is flux? Why is it essential to use it in some welding situations?	03
	(b) Explain direct current straight polarity (DCSP) and direct current reverse polarity (DCRP)	04
	(c) Explain about Atomic Hydrogen Welding with a neat sketch.	07
OR		
Q.3	(a) Explain the role of inert gas in welding processes.	03
	(b) Why is TIG welding preferred for welding aluminum plates? Give reasons.	04
	(c) Explain Wet Underwater Welding with a neat sketch. Give its advantages and disadvantages.	07
Q.4	(a) Write down various steps in FSW.	03
	(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 and 4) Dynamic characteristics.	
	(c) In a given welding operation, the power source is at 20 V and 300 amp. If the welding speed is 6 mm/s and transfer and melting efficiency are 0.8 and 0.3, calculate the heat input.	07
OR		
Q.4	(a) What is carbon equivalent? Discuss briefly how it is used in welding industry.	03
	(b) Discuss two examples of non destructive testing used in inspection of welding defects.	04
	(c) Differentiate between Gas Metal Arc Welding (GMAW) and Gas Tungsten Arc Welding (GTAW) processes.	07
Q.5	(a) Describe the difference between Brazing and Soldering.	03
	(b) Discuss the weldability and general guidelines to weld stainless steel.	04

- (e) List various mechanical testing methods of welded joint. Explain any two in detail with neat schematic. Also mention their acceptance criteria as per ASME Sec IX. Code. **07**

OR

- Q.5** (a) Enlist different types of electrodes used in welding processes. **03**
(b) Explain the significance of WPS & PQR in welding Industries. **04**
(c) When is cold cracking observed? What are the causes behind cold cracking? Explain the remedies for the same. **07**

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