

PARUL UNIVERSITY
FACULTY OF ENGINEERING & TECHNOLOGY
M. Tech. Summer 2018 - 19 Examination

Semester: 2
Subject Code: 203208152
Subject Name: Advance Welding Technology

Date: 06/05/2019
Time: 10:30am to 1:00pm
Total Marks: 60

Instructions:

1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

- Q.1 A) Name atleast two stick electrodes, which are commonly used. What do AWS stick electrode classifications mean? What function does the flux surrounding a stick electrode serve? (05)
- B) Explain Schaeffler diagram in brief, with suitable sketch. What details does it provide? How it can be used for the selection of electrodes. (05)
- C) What's the principle of "Thermit Welding". Express the composition of "Thermit" using reaction equation. Mention how this process is advantageous in terms of "power source, size and complexity of welded part and location accessibility". Also enlist it's various applications. (05)
- Q.2 **Answer the following questions. (Attempt any three) (Each five mark) (15)**
- (A) Define the terms: WPS & PQR. What information should be included in WPS? What is the purpose of PQR?
- (B) Compare and contrast soldering and brazing processes.
- (C) Enlist various weld defects. Describe Distortion and Porosity as weld defects.
- (D) Two plates 200 mm wide and 10 mm thick are to be welded by means of transverse welds at the ends. If the plates are subjected to a load of 70 KN, find the size of the weld assuming, the allowable tensile stress 70 MPa.
- Q.3 A) Completely explain how, Butt joint and Fillet Joint can be designed based on strength aspect. (07)
- B) Describe Principle of operation for Electron beam welding. What are the possible difficulties and how it can be dealt with? Mention the benefits and limitation. (08)

OR

- B) Explain how different process parameters influence "Laser Beam Welding". (08)
- Q.4 A) Explain Robotic welding system, and key features of automation. (07)
- OR**
- (A) List various non destructive testing methods. Identify and explain in detail, the Non-destructive test, used to detect the surface crack. (07)
- (B) Explain the term "Heat affected Zone (HAZ) using diagram. Describe the reasons that fatigue failure generally occur in HAZ of welds instead of "through the weld bead" itself. (08)