

Roll No.

Total Pages : 4

326102

December, 2019

M.Tech. (MT&A/ME/M&A) - I SEMESTER

Welding & Allied Process

(MMTA-102 /// MME103A1 /// MMA103A1)

Time : 3 Hours]

[Max. Marks : 75

Instructions :

1. *It is compulsory to answer all the questions (1.5 marks each) of Part-A in short.*
2. *Answer any four questions from Part-B in detail.*
3. *Different sub-parts of a question are to be attempted adjacent to each other.*

PART - A

1. (a) What is the function of water glass in flux coating?
Write its chemical name. (1.5)
- (b) Is cooling system necessary in all the resistance welding processes? (1.5)
- (c) Why OCV is kept more in case of drooping V-I Characteristics? (1.5)

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- (d) What is the meaning of RR followed by letter E in the BIS classification for mild steel electrodes? (e.g., ERR XXXXXHJ) (1.5)
- (e) In which process one requires to prepare the electrode and why? (1.5)
- (f) What is effect of excessive flux usage in submerged arc welding? (1.5)
- (g) Write any *three* methods for welding of plastics. (1.5)
- (h) Write the names of major alloying element in 2000, 4000 and 5000 series aluminum alloys. (1.5)
- (i) What do you mean by kerf and drag in thermal cutting? (1.5)
- (j) Differentiate between semiautomatic and automatic welding processes. (1.5)

PART - B

2. (a) Differentiate between the static and dynamic V-I characteristics of welding power sources. Classify different type of static external V-I characteristics with suitable examples and neat sketches. (10)
- (b) Classify and briefly discuss the flames used in gas welding along with their applications. (5)

3. (a) Why do the different shielding gases yield different weld bead shapes? Explain with valid reasons. (5)
- (b) Give details of working principle and the setup used for TIG welding. What are the advantages and limitations of this process? Why do we need to prepare electrodes in this process? (10)
4. Why is metal transfer in welding important? Classify the modes of metal transfer and describe the forces that affect the metal transfer with neat illustrations. (15)
5. (a) Write down the working principle and neatly illustrate the setup of explosion welding. What are the important welding variable in this process? (7.5)
- (b) How is welding of stainless steel different from low carbon steels? Discuss what kind of limitations arises while welding stainless steels. (7.5)
6. (a) Differentiate between metal surfacing and spraying. Classify them and explain any two metal spraying techniques. (10)
- (b) How is plastic welding different from metal alloy welding? Discuss any *one* popular method of welding the plastics. (5)

7. What is meant by robotic welding? Elucidate the advantages and limitations of robotic welding. Discuss the robot selection mechanism for welding. (15)
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