15379

M. Tech 1st Semester Examination

Welding Technology (NS)

PE-104

Time : 3 Hours   Max. Marks : 100

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.

Note : Attempt Five questions at all. Marks are indicated against each question. Question No. 1 is compulsory.

1. (a)   How is an arc obtained in Arc-Welding?

    (b)   What is the purpose of coating on electrodes?

    (c)   What do you mean by weldability?

    (d)   What do you mean by leftward welding?

    (e)   Name parameters that control the weld quality.

    (f)   What do you mean by MIG welding process?

    (g)   What are the specific advantages of Thermit Welding?

    (h)   What is polarity? Define in case of AC equipment?

    (i)   What fluxes are generally used in Arc-Welding?

    (j)   How welding processes are classified?   (2×10=20)

2. (a)   What is welding? Describe the solidification mechanism occured in fusion weldments.

    (b)   Explain the effects of alloying of various elements on welding of carbon alloy steel.   (20)

[P.T.O.]

3. How electrodes are classified? Discuss various types of coatings with their-functions in detail.   (20)

4. Differentiate short circuit and globular metal transfer mechanism with respect to (i) Voltage (ii) Arc length (iii) Welding process.   (20)

5. Explain the principle, working and applications of Electron Beam Welding with a neat diagram. What are the possible problems/difficulties in it and how it can be dealt with?   (20)

6. Draw characteristic (current-voltage) curve of Arc and of Power source. Explain how are slability/maintenance can be understood/achieved?   (20)

7. Describe the principle, working and applications of submerged Arc welding. What is the importance of this process in industry?   (20)

8. Discuss the term Arc efficiency related to arc welding. Calculate the melting efficiency in case of arc welding of steel with a potential of 20V and current of 200A. The travel speed is 5mm/s and cross-sectional area of joint is 20mm^2. Heat required to melt steel may be taken as 10J/mm^3 and heat transfer efficiency as 0.85.   (20)