PAPER ID :7117022

TME-014/TME-022

Paper ID and Roll No. to be filled in your Answer Book

Roll No.

B. Tech.

(SEM. VIII) (ODD SEM.) (REG.) EXAMINATION 2012-13

ADVANCED WELDING TECHNOLOGY

Time : 3 Hours] [Total Marks : 100

Note : Attempt all questions

1 Answer any four parts of the following 5×4=20

(a) Justify the importance of welding process

(b) Explain friction welding and its applications

(c) Explain the welding process of stainless steel

(d) What is Brazing ? What are its applications ?

(e) List the factor which affects the selection of electrodes ?

(f) Discuss soft and hard soldering ?

2 Answer any four parts of the following 5×4=20

(a) What are Advance Welding Techniques ?

(b) Discuss the principle and application of underwater welding

(c) Discuss the applications of Plasma Arc Welding

(d) State the effect of current and voltage on quality of weld

(e) Discuss the effect of preheating on microstructure of the weld area in high carbon steel.

(f) Explain the welding of pipe lines.

3 Answer any two parts of the following : 10×2=20

(a) During werlding parent metal in HAZ undergoes certain changes discuss these changes.

(b) Write on coding of electric arc welding electrodes.

(c) The arc-length characteristics of a DC are given by V = 24+4L, where V is voltage and L is arc length. The static volt-ampere characteristic of power source is approximated by a straight line with a no voltage of 80 V and a short circuit current of 600 A. Determine optimum arc length for maximum power.

4 Answer any two parts of the following : 10×2=20

(a) Explain thermal and metallurgical considerations for welding.

(b) Explain the micro and macro structures of HAZ and parent metal after welding.

(c) Explain the effect of solidification process of weld on its properties.

5 Answer any two parts of the following : 10×2=20

(a) Discuss weld defects and distortions and their remedies in detail.

(b) In a given arc welding operation, the power source is at 20V and current at 300 A. If the electrode travel speed is 6 mm/s, calculate the cross-sectional area of the joint. The heat transfer efficiency may be taken as 0.80 and melting efficiency as 0.30, heat required to melt the steel is 10 J/mm^3.

(c) Write short note on :

(i) Spray Welding

(ii) Cladding

(iii) Ultrasonic welding

(iv) Electron beam welding
