



Printed Pages : 3

TMT-803

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

PAPER ID : 0464

Roll No.

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B. Tech.

(SEM. VIII) EXAMINATION, 2007-08 ADVANCED WELDING TECHNOLOGY

Time : 3 Hours]

[Total Marks : 100

- Note :**
- (1) Attempt **all** questions.
 - (2) All questions carry **equal** marks.
 - (3) In case of numerical problem, assume data wherever required.
 - (4) Answer briefly, neatly and draw wherever required.

1 Write short notes on any **four** of the following: **5×4=20**

- (a) Life prediction of welded structures.
- (b) Arc blow in welding
- (c) T.I.G versus M.I.G Welding.
- (d) Plasma Arc welding
- (e) Classification of welding process.
- (f) Hard-facing
- (g) Submerged Arc Welding

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

- (a) Explain the principle of electron beam welding with a neat diagram. What is the mechanism of high electron penetration? What do you understand by :



- (i) Work accelerated
- (ii) Self accelerated, electron gun? Explain.
- (b) What is meant by LASER ? What is the principle of a Laser generation? Explain with the help of a diagram the laser beam welding.
- (c) What is the principle behind Ultrasonic welding? Where is it suitable? Describe ultrasonic welding with a neat sketch.

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

- (a) Describe with sketches, the mechanism of explosive welding. Also briefly write about weld-interface and welding parameters. What are the applications of explosive welding?
- (b) What do you mean by underwater welding? Describe in brief. How Arc stability could be improved in it? What is difference between wet-underwater welding and dry-underwater welding.
- (c) What is meant by diffusion welding? What are the factors which affect diffusion? Enumerate the advantages and application of diffusion welding?

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

- (a) What are the similarities and differences between casting of metals and fusion welds.
- (b) What are the various defects and distortion in welding? List the rules that must be followed to avoid cracking in welded joints?
- (c) What are the characteristics of the HAZ?



5 Answer any **two** of the following:

10×2=20

- (a) Describe the reasons that fatigue failures generally occur in HAZ of welds instead of through the weld bead itself.
 - (b) During submerged Arc Welding of mild steel with an Arc voltage of 20 V and current of 200 A, a welding speed of 4 mm/s was used. The cross-sectional area of the joint is 25 mm². Heat required to melt steel may be taken as 12 J/mm² and heat transfer efficiency is 0.8. Calculate the volume of base metal melted in mm³/s and the melting efficiency.
 - (c) Define weldability. Discuss the weldability of carbon metals and explain why some metals are easier to weld than others. Cast iron is generally difficult to weld. Why?
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