

GUJARAT TECHNOLOGICAL UNIVERSITY
DIPLOMA ENGINEERING - SEMESTER-V • EXAMINATION – SUMMER 2013

Subject Code: 355503**Date: 16-05-2013****Subject Name: Welding Metallurgy****Time: 10:30 am - 01:00 pm****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. English version is considered to be Authentic.

- Q.1** (a) Define the term welding metallurgy and explain different zones of weld joint with neat sketch 07
 (b) State characteristic of good welding engineer for welding metallurgy department. 07
- Q.2** (a) Draw IC diagram and explain eutectoid, eutectic and peritectic reactions 07
 (b) Write limitation of IC diagram and explain how this limitation is overcome by TTT diagram with neat sketch 07
- OR
- Q.3** (b) Explain effect of Gas-Metal reaction in welding 07
 (a) Explain effect of electrode polarity and magnetic field in welding with neat sketch 07
 (b) Explain Hot cracking and Cold cracking with neat sketch 07
- OR
- Q.3** (a) Explain weldability of Microalloyed or HSLA steels 07
 (b) Make WPS from following data 07
1. Design code : ASME section VIII Div.1
 2. Specification standard : ASME section IX
 3. Base metal : 25 mm thick SA515 GR 70
 4. Welding process : SMAW
 5. Joint Design : Double “V”
 6. Filler metal : AWS SFA 5.1 E-7018
 7. PWHT : NIL
- Q.4** (a) Explain weld ability related problems in Austenitic Stainless Steel 07
 (b) Explain Schaeffler Diagram with neat sketch 07
- OR
- Q.4** (a) Explain welding metallurgy of Ferritic Stainless Steel 07
 (b) Explain welding characteristics of gray cast iron. List different welding processes used for welding of grey cast iron. 07
- Q.5** (a) Explain welding metallurgy of aluminium alloys and list different processes used for it. 07
 (b) Explain different factors influencing joint integrity in dissimilar welding 07
- OR
- Q.5** (a) List different procedures for Stainless steel weld cladding and 07

- explain any one
- (b) Explain different factors influencing residual stresses in welding 07
