Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

DIPLOMA ENGINEERING - SEMESTER–V • EXAMINATION – SUMMER • 2014

Subject Code: 355501 **Date: 23-05-2014**

Subject Name: Fabrication Design

Time: 02:30 pm - 05:00 pm **Total Marks: 70**

Instructions:

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

Q.1	(a)	Explain the general design procedure with neat sketch	07
	(b)	Give the classification of engineering material as per ASME Sec.-II.	07
Q.2	(a)	What is stress concentration? Explain stress concentration factors.	07
	(b)	Explain the following : 1. poison's ratio 2. volumetric strain 3. bulk modulus	07
		OR	
	(b)	The piston rod of a steam engine 50mm in dia. & 600 mm long. The dia. Of piston is 400mm & the max. steam pressure is 0.9 N/mm2. Find the compression of the piston rod. If the Young's modulus for the material of the piston rod is 210 kN/mm2.	07
Q.3	(a)	Explain failure of riveted joint with neat sketch.	07
	(b)	A plate 100 mm wide and 10 mm thick is to be welded to another plate by means of double parallel fillets. The plate are subjected to static load of 80 KN find the length `of weld if the permissible shear stress in the weld does not exceed 55 N/mm2.	07
		OR	
Q.3	(a)	Explain strength of welded joint in the following cases 1. Circular filler weld subjected to torsion 2. Circular filler weld subjected to bending moment	07
	(b)	A double riveted double cover butt joint in plates 20 mm thick is made with 25mm diameter rivets at 100 mm pitch. Take ft=120N/mm2; fs= 100 N/mm2; fc= 150N/mm2. Find efficiency of the joint taking the stress the riveting double shear as twice than that of single shear.	07
Q.4	(a)	Explain the classification of pressure vessels as per codes.	07
	(b)	Explain the design consideration in design of pressure vessels with internal pressure.	07
		OR	
Q. 4	(a)	Explain the design preliminaries of pressure vessels as per ASME Sec.-VIII Div. 1	07
	(b)	Write a brief note on ASME Sec.-VIII Div.1	07
Q.5	(a)	Explain in details the design of various types of supports used in pressure vessels and draw neat sketches of each.	07
	(b)	Explain in details the various types of loads act on a structure.	07
		OR	
Q.5	(a)	What is the minimum required thickness of a cylindrical shell with the following parameters? 1. Inside diameter = 3000 mm 2. Corrosion allowance = 6 mm 3. Weld joints = Type 1,100% RT 4. Design pressure = 2.25 mpa 5. Material = SA-516, GR 70; 6. Strength as per ASME SEC II A = 128 MPa 7. Design Temperature = 350 ˚C	07
	(b)	Explain SF & BM diagram with neat sketch for cantilever with a point load at the free end.	07

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