Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

Diploma Engineering - SEMESTER–IV • EXAMINATION – SUMMER • 2014

Subject Code: 3345505 Date: 03-06-2014

Subject Name: Fabrication Technology - II

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 Authentic.***
5. ***Write your seat no. and enrolment no. in the above given space.***
6. ***Answer with neat sketch and to the point.***

Q.1 (a) Draw a neat sketch , label its elements and state its functions : SHELL AND TUBE TYPE H. E. **07**

(b) Find out chord length and radial distance by mathematically and compare with drawing dimension (i.e. distances between two consecutive holes) of Flange having following information / data. Find out weight of flange. High light all flange marking procedure construction lines on the drawing. **07**

Sr no	Description	Sym	Dim in mm
1)	O.D. of flange	Do	500
2)	P.C.D. of flange	Dpcd	300
3)	Inside dia of flange	Di	100
4)	No. of bolts holes	N	8
5)	Dia of bolts holes	d_b	20
6)	Thickness of flange	T	20
7)	Sp. Weight of flange	δ	7.85 gm/cm³

Q.2 (a) Define the term ‘ Heat Exchanger ‘ State its function , Classify it on various basis / criteria **07**

(b) State the meaning of TEMA and give brief description about TEMA code? **07**

OR

(b) During manufacturing of shell in RMS fabrication industries the observation of shell dia. At various orientations are found as follow: **07**

Sr no.	Description	Sym	Dim in mm
1)	Diameter at $\alpha = 30^o$	d1	2000
2)	Diameter at $\alpha = 60^o$	d2	2004
3)	Diameter at $\alpha = 90^o$	d3	1990
4)	Diameter at $\alpha = 120^o$	d4	1998
5)	Diameter at $\alpha = 150^o$	d5	2012
6)	Diameter at $\alpha = 180^o$	d6	2008
7	Thickness of shell	t	20

Find out ,

1. Nominal dia. Of shell plate = D nom
2. Ovality & % of ovality.
3. Comment for long seam (L / seam) set up weather Is it permissible or not as per code ?
4. To remove/prevent the ovality Suggest your measures / remedies

Q.3 (a) List out the name of third party inspection agencies with their abbreviation. Explain its' function/ area of service in Fabrication industries. **07**

(b) Calculate blank dia. prepare a drawing for template gauge Toro-spherical D/End for following data also calculate :- **07**

Sr no.	Descriptions OF element of d/end	Dimension Required	
	Out/Side Diameter Do	**?**	mm
1.	I/S Diameter	**600**	mm
2.	Crown radius Cr	**540**	mm
3.	Inside Depth h	**200**	mm
4	D/end thickness t	**1**	cm
5	Straight face SF	**4**	cm
6	Knuckle radius Kr	**105**	mm
	Also Calculate the C.G. of above D/end	**?**	

OR

Q.3 (a) Classify the Vessel support in chart form : Explain in brief leg supports **07**

(b) List out the different marking and measuring instruments in fab shops. Draw a neat sketch of three marking tools /equipment used in fabrication and state its application **07**

Q.4 (a) Explain in brief with neat sketch **07**

1) Lifting lug 2) Bubble tube /sprit level

3) Turn buckle 4) hydraulic jack

(b) Explain in brief with neat sketch :- Nozzle schedule **07**

OR

Q.4 (a) List out the various types fabrication aid use for fabrication work .Explain in brief with neat sketch : - Tank Rotator **07**

(b) Prepare a inspection report of (L/S) & (C/S) shell of H.E. **07**

Q.5 (a) Describe the steps followed for the Long seam (L/S) of shell fit-up and set-up with neat sketch **07**

(b) From the given shell raw material data of xyz ind. Calculate remaining given blank cells in table. **07**

Sr. no.	Description	Sym	Dim in mm
1)	Length of shell plate	L	8000
2)	width(length) of shell	H	1500
3)	Thickness of shell plate	T	15
4)	Sp. Weight of flange	δ gm/cm³	7.85
5)	Rate of finished material.	Rs. / kg	150
*	Calculate:-		
1)	Plate diagonal length	L_d	
2)	Max. outside & inside dia. of shell Mean dia of shell to be made.	D_o D_i, D_{mean}	
3)	Weight of shell plate	Ws	
4)	TOTAL Cost of shell plate	Cs	
5)	Inside volume of shell	V_i	

OR

Q.5 (a) Explain the typical limpet coil marking with the help of following data : **07**

Sr no.	Description	Sym	Dim in mm / deg.
1)	Shell OD/ O.D. of vessel	Do	500
2)	Pitch of Limpet coil	P	200
3)	Dia of limpet coil	dc	20
4)	Angle of orientation Inlet nozzle and Outlet nozzle (approx)	 $ø_i$ $ø_o$	 60 ° 300^0
5)	Length of shell from T.L. TO T.L.	L	3000
6)	Distance from top tan line Inlet nozzle and Outlet nozzle (approx)	 L1 L_2	 200 2500

(b) Explain in brief with neat sketch pyramid type Three Roller plate Bending machine for forming shells.

****