

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 : **07**
SHELL AND TUBE TYPE H. E.
- (b) Find out chord length and radial distance by mathematically and compare with **07**
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.

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/cm ³

- Q.2** (a) Define the term ' Heat Exchanger ' State its function , Classify it on various **07**
basis / criteria
- (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 **07**
observation of shell dia. At various orientations are found as follow:

Sr no.	Description	Sym	Dim in mm
1)	Diameter at $\alpha = 30^\circ$	d1	2000
2)	Diameter at $\alpha = 60^\circ$	d2	2004
3)	Diameter at $\alpha = 90^\circ$	d3	1990
4)	Diameter at $\alpha = 120^\circ$	d4	1998
5)	Diameter at $\alpha = 150^\circ$	d5	2012
6)	Diameter at $\alpha = 180^\circ$	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/cm ³	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)	ϕ_i ϕ_o	60 ° 300°
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 L2	200 2500

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