

Seat No.: \_\_\_\_\_

Enrolment No. \_\_\_\_\_

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**DIPLOMA ENGINEERING – SEMESTER – IV • EXAMINATION – SUMMER 2016**

**Subject Code: 3345505**

**Date: 24/05/2016**

**Subject Name: Fabrication Technology II**

**Time: 10:30 AM to 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. Use of programmable & Communication aids are strictly prohibited.
5. Use of only simple calculator is permitted in Mathematics.
6. English version is authentic.

- Q.1 (a) Draw a neat sketch Electrical Autoclave state its' functions & label its' elements ? 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	$D_o$	500
2)	P.C.D. of flange	$D_{pcd}$	400
3)	Inside dia. of flange	$D_i$	200
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	$\delta$	7.85 gms/cm <sup>3</sup>

- Q.2 (a) Define the term a Heat Exchanger ? 07  
State functions of a Heat Exchanger and mode of heat transfer ?  
Classifies on various basis / criteria the H.E ?
- (b) Describe the steps followed for the shell Long seam (L/S) fit-up and set-up with neat sketch 07

**OR**

- (b) prepare a drawing for template gauge for Toro-spherical D/End by the given data. also calculate :- 07

Sr no	Descriptions OF element of D /end	Dimension Required	
1.	I/S Diameter $D_i$	1600	mm
2.	Crown radius $C_r$	1300	mm
3.	Inside Depth $h$	460	mm
4	D/end thickness $t$	25	cm
5	Straight face $SF$	65	cm
6	Knuckle radius $K_r$	260	mm
	Also Calculate		
1	Out/Side Diameter $D_o$	?	mm
2	Blank dia of D / end	?	mm
3	The C.G. of above D/end	?	

- Q.3 (a) From the given shell plate raw material data of ABC ind. Calculate remaining given blank cells in table. 07

Sr.no.	Description	Sym	Dim in mm
1)	Length of shell plate	L	9600
2)	width(length) of shell	H	1500
3)	Thickness of shell plate	T	10
4)	Sp. Weight of plate	$\delta$	7.85 gm/cm <sup>3</sup>
5)	Rate of finished material.	R	90 Rs. / kg
*	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	$W_s$	
4)	TOTAL Cost of shell plate	$C_s$	
5)	Inside volume of shell	$V_i$	

- (b) List out the various name of third party inspection agencies with their abbreviation. Describe its' function/ area of service in Fabrication industries. 07

- Q.3 (a) Describe in brief with neat sketch :- Forming of shell by Three Roller pyramid type plate Bending machine ? 07

- (b) Describe in brief : classification of D/end 07

- Q.4 (a) Describe the following terms in brief with neat sketch :  
1 ) PTC , Run-in and run-out plate 2) R.F. PAD & TT HOLE 07

- (b) During manufacturing of shell in PMS 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 $\alpha = 30^\circ$	d1	3000
2)	Diameter at $\alpha = 60^\circ$	d2	3004
3)	Diameter at $\alpha = 90^\circ$	d3	2990
4)	Diameter at $\alpha = 120^\circ$	d4	2998
5)	Diameter at $\alpha = 150^\circ$	d5	3014
6)	Diameter at $\alpha = 180^\circ$	d6	3008
7	Thickness of shell	t	20

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

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

(b) Define the term “nozzle ” ? 07  
Draw neat sketches of nozzle fit-up & set-up ?  
Classify the nozzle on the various bases ?

Q.5 (a) Describe in brief with neat sketch : Nozzle orientation markings? 07

(b) Define the term “Support” ? Classify the different types of supports, state its’ applications & advantages ? 07

Q.5 (a) Described the ASME various SEC with sub section of 1 to 12 . 07  
State the meaning of ASME, TEMA , ASTM & JIS.

(b) Describe the typical limpet coil marking sketch with the help of given data : 07  
State the function / application of limpet coil.

Sr no.	Description	Sym	Dim in mm / deg.
1)	Shell OD/ O.D. of vessel	Do	1000
2)	Pitch of Limpet coil	P	200
3)	Dia. of limpet coil	dc	30
4)	Angle of orientation Inlet nozzle and Outlet nozzle (approx)	Ni No	30 <sup>0</sup> 90 <sup>0</sup>
5)	Length of shell from T.L. TO T.L.	L	2200
6)	Distance from top tan line Inlet nozzle and Outlet nozzle (approx)	L1 L2	100 1800

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