



SUMMER- 18 EXAMINATION

Model Answer

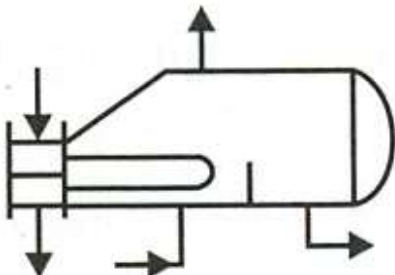
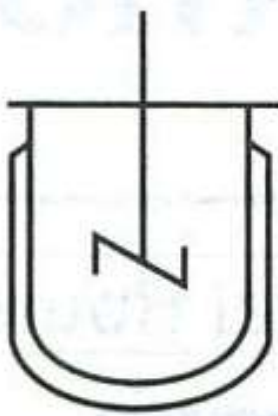
Subject Name: Chemical Engineering Drawing

Subject Code:

17647

Important Instructions to examiners:

- 1) The answers should be examined by key words and not as word-to-word as given in the model answer scheme.
- 2) The model answer and the answer written by candidate may vary but the examiner may try to assess the understanding level of the candidate.
- 3) The language errors such as grammatical, spelling errors should not be given more Importance (Not applicable for subject English and Communication Skills).
- 4) While assessing figures, examiner may give credit for principal components indicated in the figure. The figures drawn by candidate and model answer may vary. The examiner may give credit for any equivalent figure drawn.
- 5) Credits may be given step wise for numerical problems. In some cases, the assumed constant values may vary and there may be some difference in the candidate's answers and model answer.
- 6) In case of some questions credit may be given by judgement on part of examiner of relevant answer based on candidate's understanding.
- 7) For programming language papers, credit may be given to any other program based on equivalent concept.

Q. No.	Sub Q. N.	Answer	Marking Scheme
1	A	Attempt any three	12
	a	<div><div>Kettle type reboiler </div><div>Jacketed reactor </div></div>	2+2


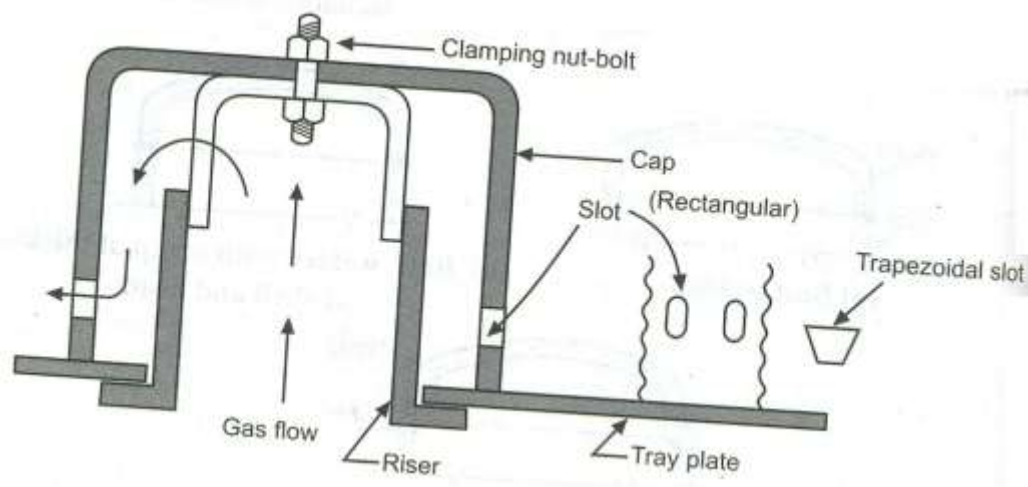
SUMMER- 18 EXAMINATION

Model Answer

Subject Name: Chemical Engineering Drawing

Subject Code:

17647

b	Instrument air	Main panel mounted Temp indicator	2+2
			
c	Bubble Cap Tray		4



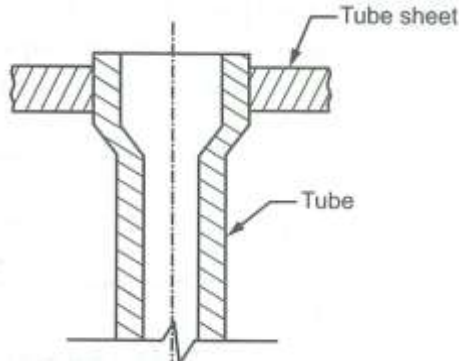
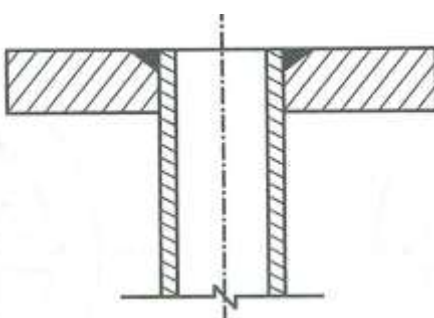
SUMMER- 18 EXAMINATION

Model Answer

Subject Name: Chemical Engineering Drawing

Subject Code:

17647

d	<div><div>Rolled tube</div><div></div></div> <div><div>Welded tube</div><div></div></div>	2+2	
e		Hot Fluid Temp controller	4



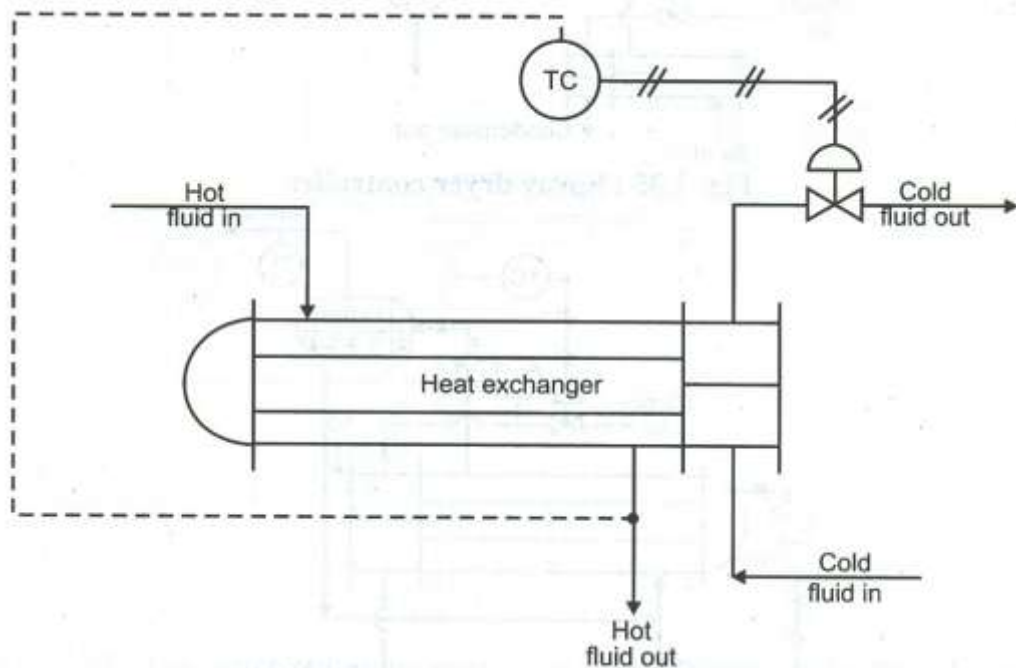
SUMMER- 18 EXAMINATION

Model Answer

Subject Name: Chemical Engineering Drawing

Subject Code:

17647



1	B	Attempt any one	8
	a	Specification sheet for heat exchanger	8



SUMMER- 18 EXAMINATION

Model Answer

Subject Name: Chemical Engineering Drawing

Subject Code:

17647

1.	Specification No.	Date
2.	Number required	Location
3.	Type	Duty as
4.	Operating data/conditions	
5.	Fluid description	Shell side Tube side
6.	Name	In ... out ... In ... out ...
7.	Composition	In ... out ... In ... out ...
8.	Flow rate, kg/h	In ... out ... In ... out ...
9.	Density, kg/m ³	In ... out ... In ... out ...
10.	Viscosity, cP	In ... out ... In ... out ...
11.	Specific heat,
12.	Latent heat, kcal/kg
13.	Thermal conductivity
14.	Temperature, °C	In ... out ... In ... out ...
15.	Operating pressure, kgf/cm ² .g	In ... out ... In ... out ...
16.	No. of passes
17.	Velocity, m/s
21.	Tube : OD mm, length m, wall thickness (BWG) pitch mm <input type="checkbox"/> Δ material	
22.	Shell : Nom. OD length mm thickness	
23.	Shell cover : Material	
24.	Channel Channel cover	
25.	Tube sheet type (stationary/floating)	
26.	Baffles : type No. Thickness	
27.	Shell side nozzles : Inlet outlet drain	
28.	Tube side nozzles : Inlet outlet	
29.	Corrosion allowance : shell side tube side	
30.	Gaskets	
31.	Design code	
32.	Design pressure and temperature ... kgf/cm ² .g, °C ... kgf/cm ² .g, °C	
33.	Test pressure and temperature,,	
34.	Weight : Dry, Tube bundle Unit full of water kg.	
35.	Remarks	
	Prepared by Checked by Approved by	
	Name and Address	

b Batch Reactor



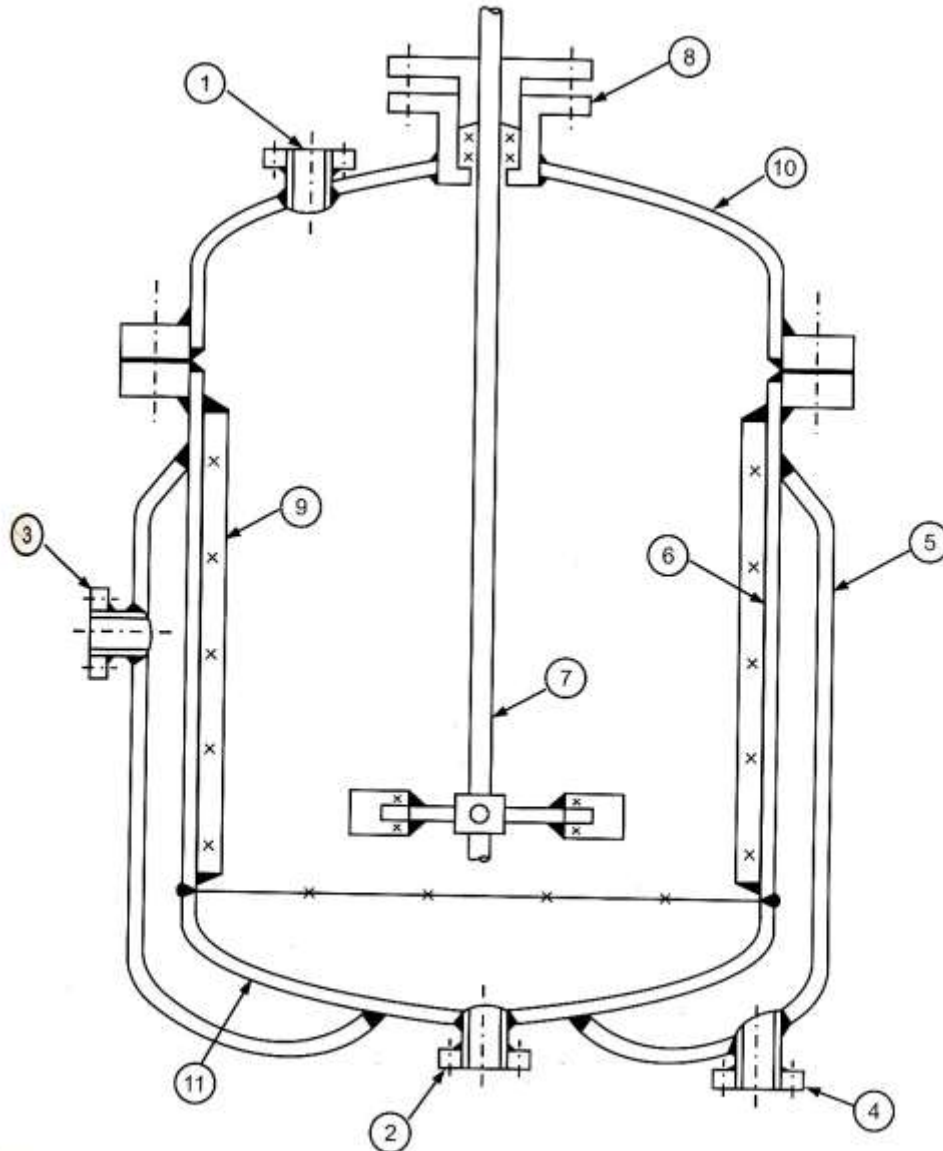
SUMMER- 18 EXAMINATION

Model Answer

Subject Name: Chemical Engineering Drawing

Subject Code:

17647



1. Inlet nozzle, 2. Outlet nozzle, 3. Steam nozzle, 4. Condensate nozzle, 5. Jacket, Shell, 7. Agitator, 8. Stuffing box, 9. Baffle, 10. Top dished head, 11. Bottom dish end

2

Attempt any four

16

a

Hemispherical Head

2 marks
each



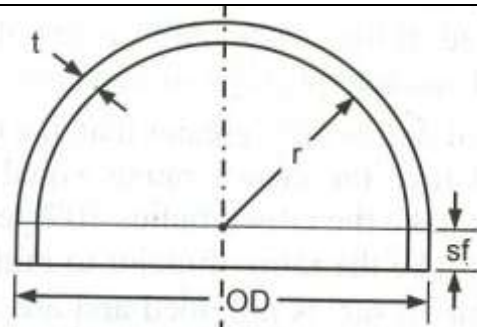
SUMMER- 18 EXAMINATION

Model Answer

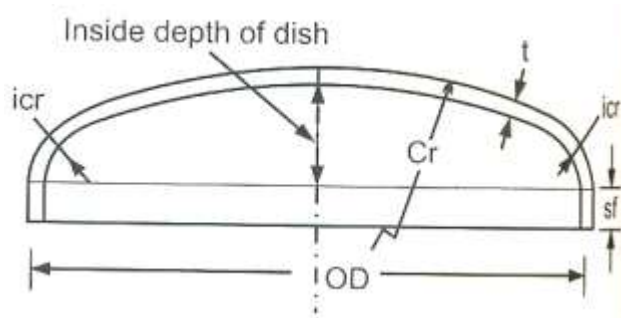
Subject Name: Chemical Engineering Drawing

Subject Code:

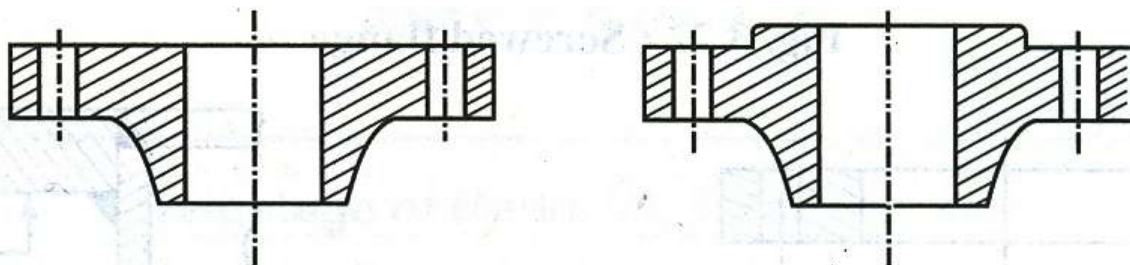
17647



Flanged and Standard dished head



b Welded neck flange



Lap type flange

2 mark for
any one



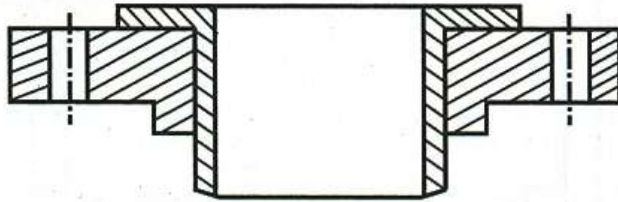
SUMMER- 18 EXAMINATION

Model Answer

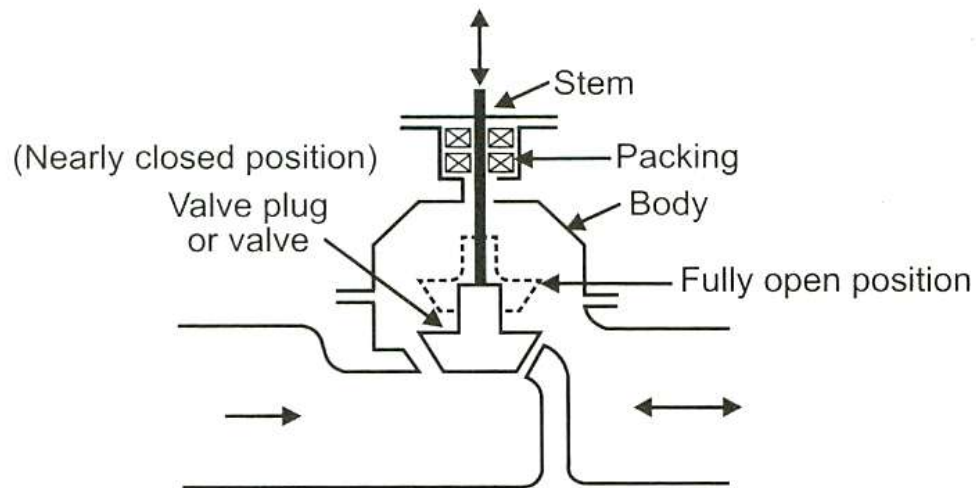
Subject Name: Chemical Engineering Drawing

Subject Code:

17647

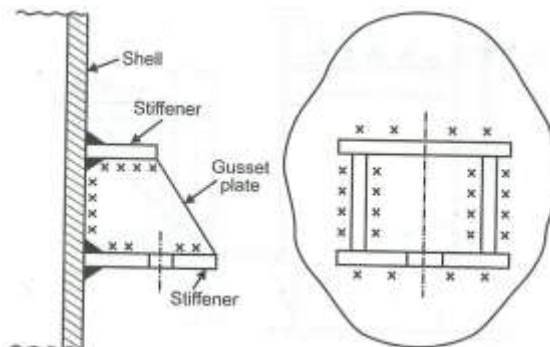


c **Globe Valve**



4

d **Bracket support**



4 marks
for any
one

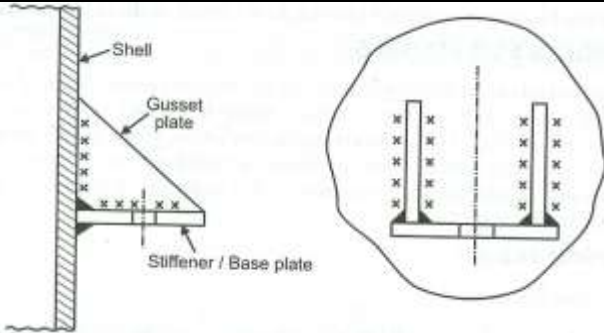
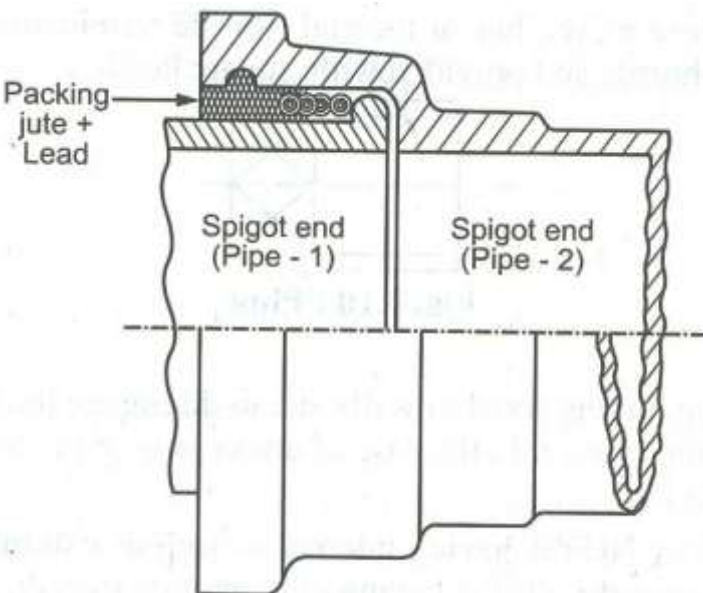
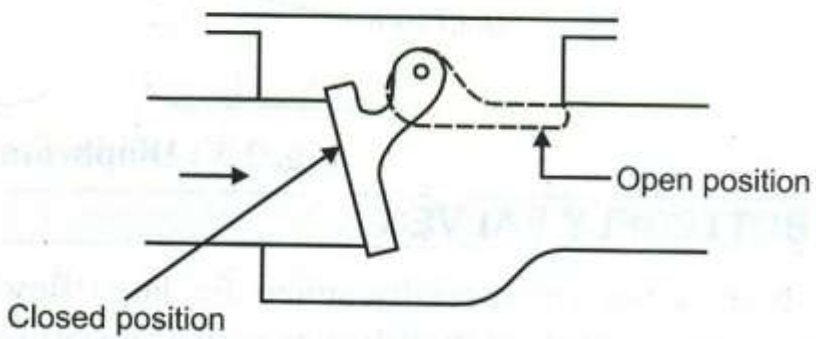
SUMMER- 18 EXAMINATION

Model Answer

Subject Name: Chemical Engineering Drawing

Subject Code:

17647

			
e	Socket and Spigot joint		4
f	Swing check valve (any one)		2 marks for any 1

SUMMER- 18 EXAMINATION

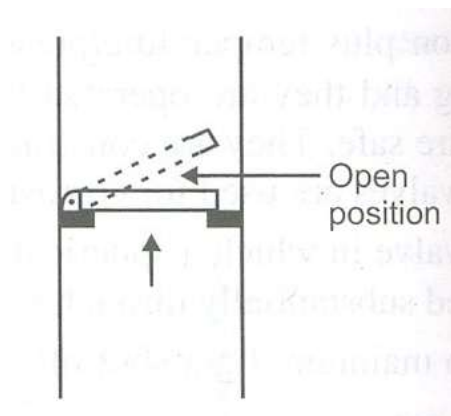
Model Answer

Subject Name: Chemical Engineering Drawing

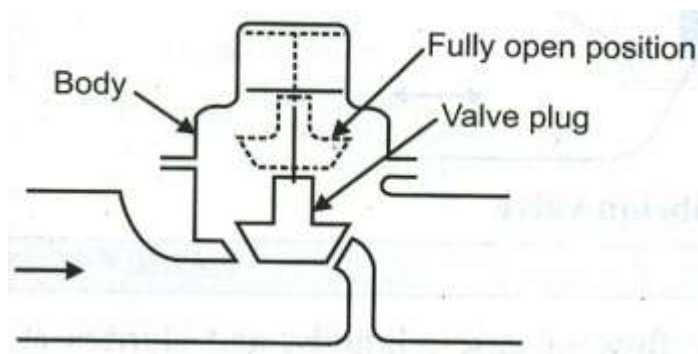
Subject Code:

17647

OR

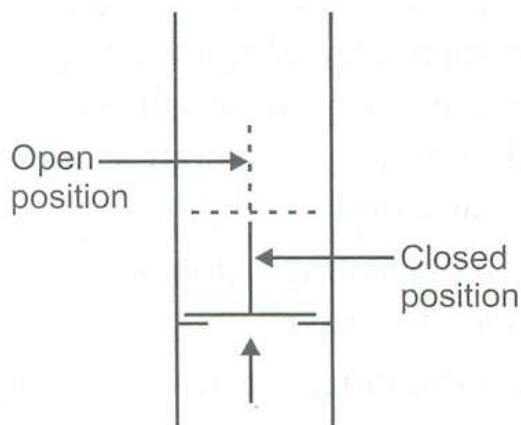


Lift Check Valve (any one)



2 marks
for any
one

OR



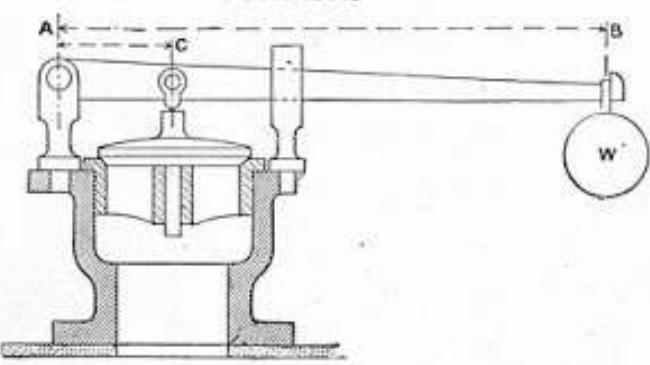
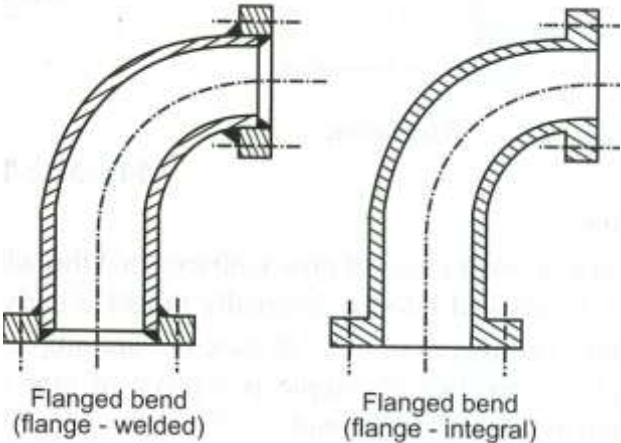

SUMMER- 18 EXAMINATION

Model Answer

Subject Name: Chemical Engineering Drawing

Subject Code:

17647

3		Attempt any four	16
	a	<p>Lever Safety valve</p> 	4
	b	<p>Bend (any one)</p>  <p>Threaded socket</p> 	<p>2</p> <p>2</p>

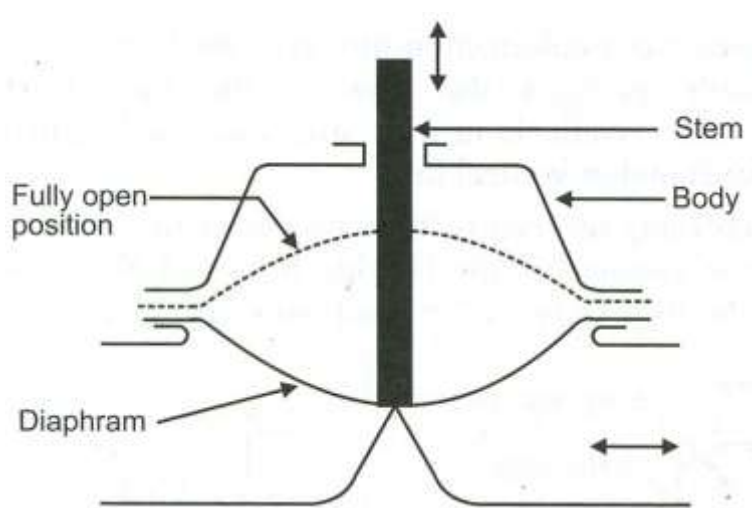
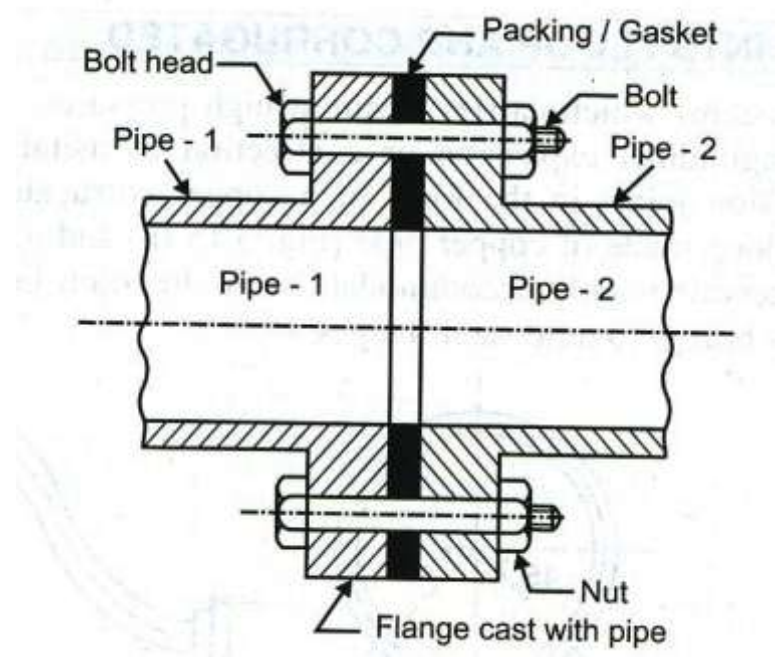
SUMMER- 18 EXAMINATION

Model Answer

Subject Name: Chemical Engineering Drawing

Subject Code:

17647

c	<p>Diaphragm valve</p> 	4
d	<p>CI Joint</p> 	4

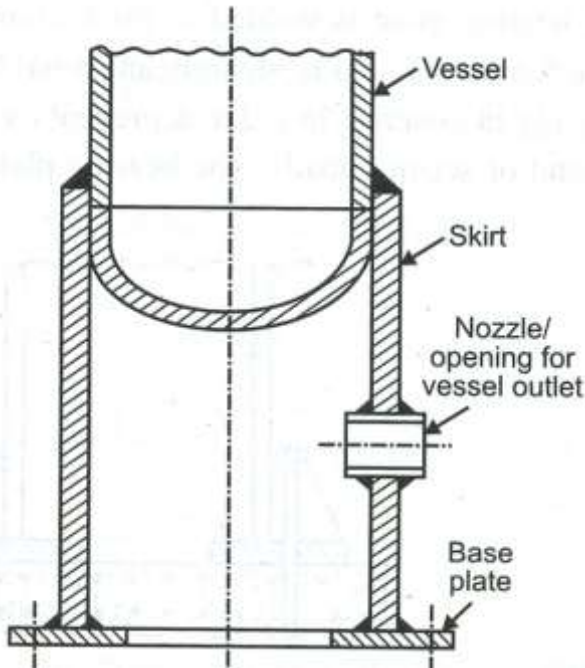
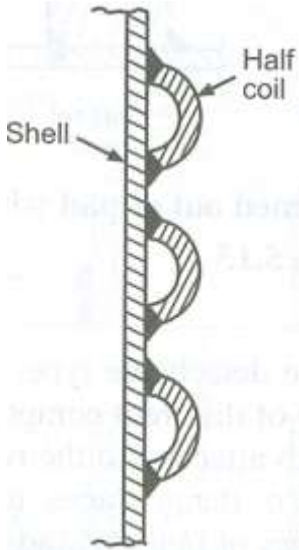
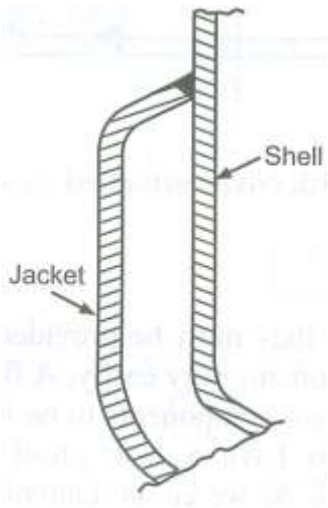
SUMMER- 18 EXAMINATION

Model Answer

Subject Name: Chemical Engineering Drawing

Subject Code:

17647

e	<p>Strait Skirt Support</p> 	4
f	<div style="display: flex; justify-content: space-around;"> <div> <p>Reactor jacket with half coil</p>  </div> <div> <p>Plain jacket</p>  </div> </div>	2+2

SUMMER- 18 EXAMINATION

Model Answer

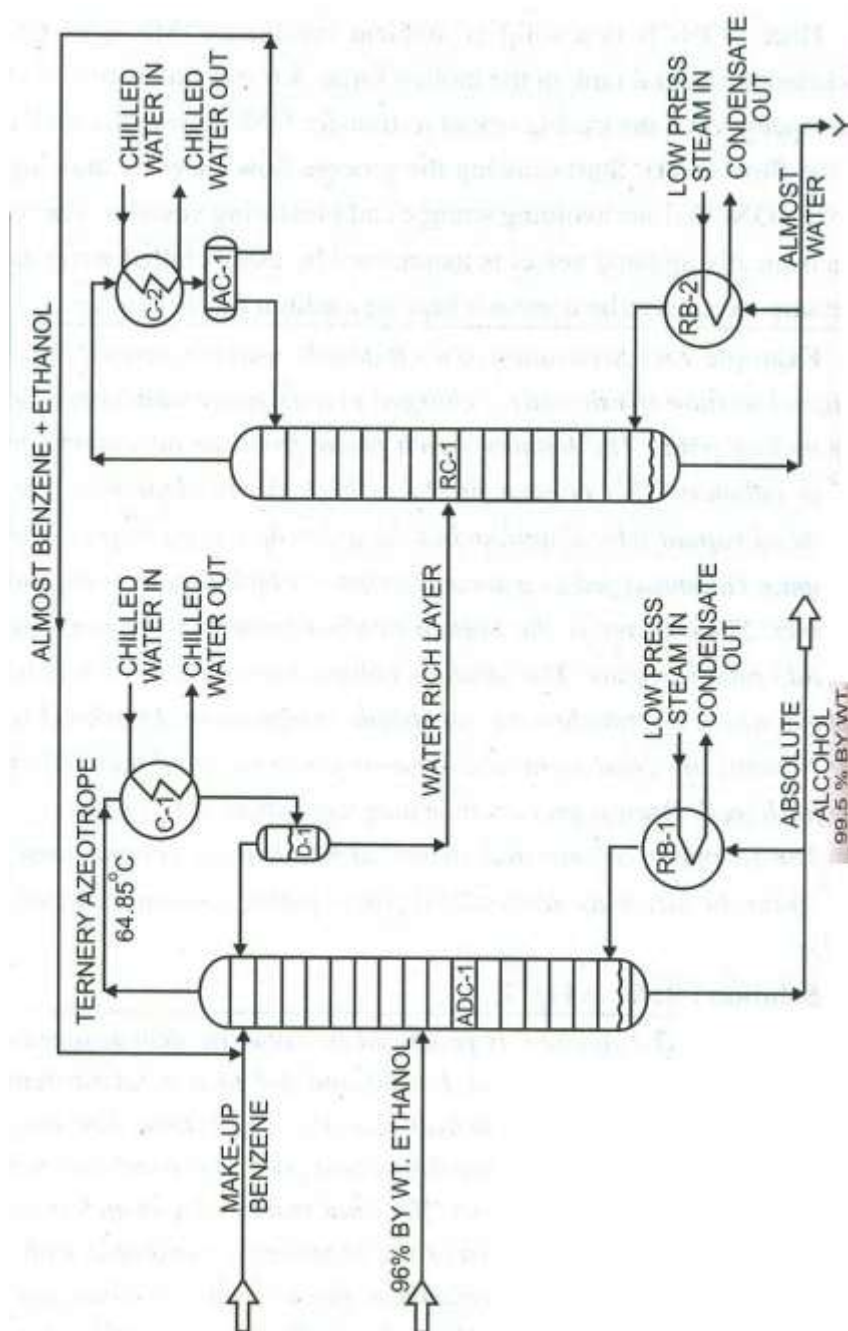
Subject Name: Chemical Engineering Drawing

Subject Code:

17647

4

Process Flow Diagram



16

(PFD 12
marks +
legend 4
marks)



SUMMER- 18 EXAMINATION

Model Answer

Subject Name: Chemical Engineering Drawing

Subject Code:

17647

		<table><tr><th>NO.</th><th>CODE</th><th>DESCRIPTION</th></tr><tr><td>1</td><td>ADC-1</td><td>AZEOTROPIC DISTILLATION COLUMN</td></tr><tr><td>2</td><td>RC-1</td><td>RECOVERY COLUMN</td></tr><tr><td>3</td><td>C-1, C-2</td><td>CONDENSERS</td></tr><tr><td>4</td><td>RB-1,2</td><td>REBOILERS (THERMOSYPHON) TYPE</td></tr><tr><td>5</td><td>D-1</td><td>DECANTER</td></tr><tr><td>6</td><td>AC-1</td><td>ACCUMULATOR</td></tr></table>	NO.	CODE	DESCRIPTION	1	ADC-1	AZEOTROPIC DISTILLATION COLUMN	2	RC-1	RECOVERY COLUMN	3	C-1, C-2	CONDENSERS	4	RB-1,2	REBOILERS (THERMOSYPHON) TYPE	5	D-1	DECANTER	6	AC-1	ACCUMULATOR	
NO.	CODE	DESCRIPTION																						
1	ADC-1	AZEOTROPIC DISTILLATION COLUMN																						
2	RC-1	RECOVERY COLUMN																						
3	C-1, C-2	CONDENSERS																						
4	RB-1,2	REBOILERS (THERMOSYPHON) TYPE																						
5	D-1	DECANTER																						
6	AC-1	ACCUMULATOR																						
5		Answer the following	16																					
	a	<p>Utility Line Diagram</p>	ULD 8 marks + legends 2 mark + UBD 6 marks																					



SUMMER- 18 EXAMINATION

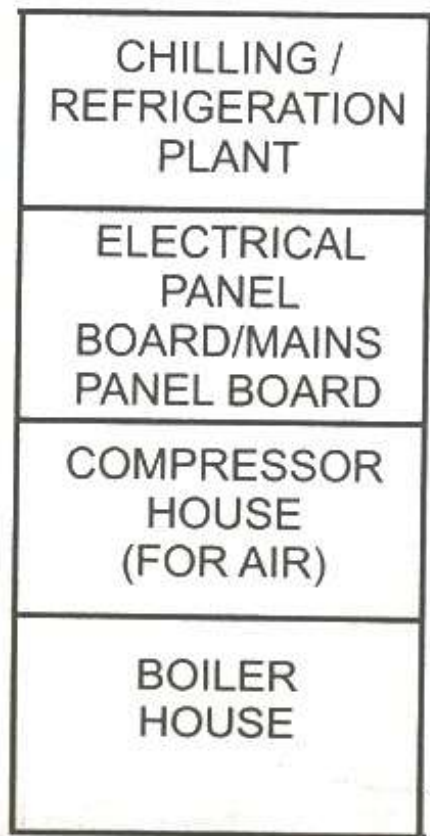
Model Answer

Subject Name: Chemical Engineering Drawing

Subject Code:

17647

Utility Block Diagram



6

Answer the following

8

6

A

Equipment Layout

NO.	CODE	DESCRIPTION
1	ADC-1	AZEOTROPIC DISTILLATION COLUMN
2	RC-1	RECOVERY COLUMN
3	C-1, C-2	CONDENSERS
4	RB-1,2	REBOILERS (THERMOSYPHON) TYPE
5	D-1	DECANTER
6	AC-1	ACCUMULATOR

Equipment layout 7 marks + legends 1 mark (Q.4)



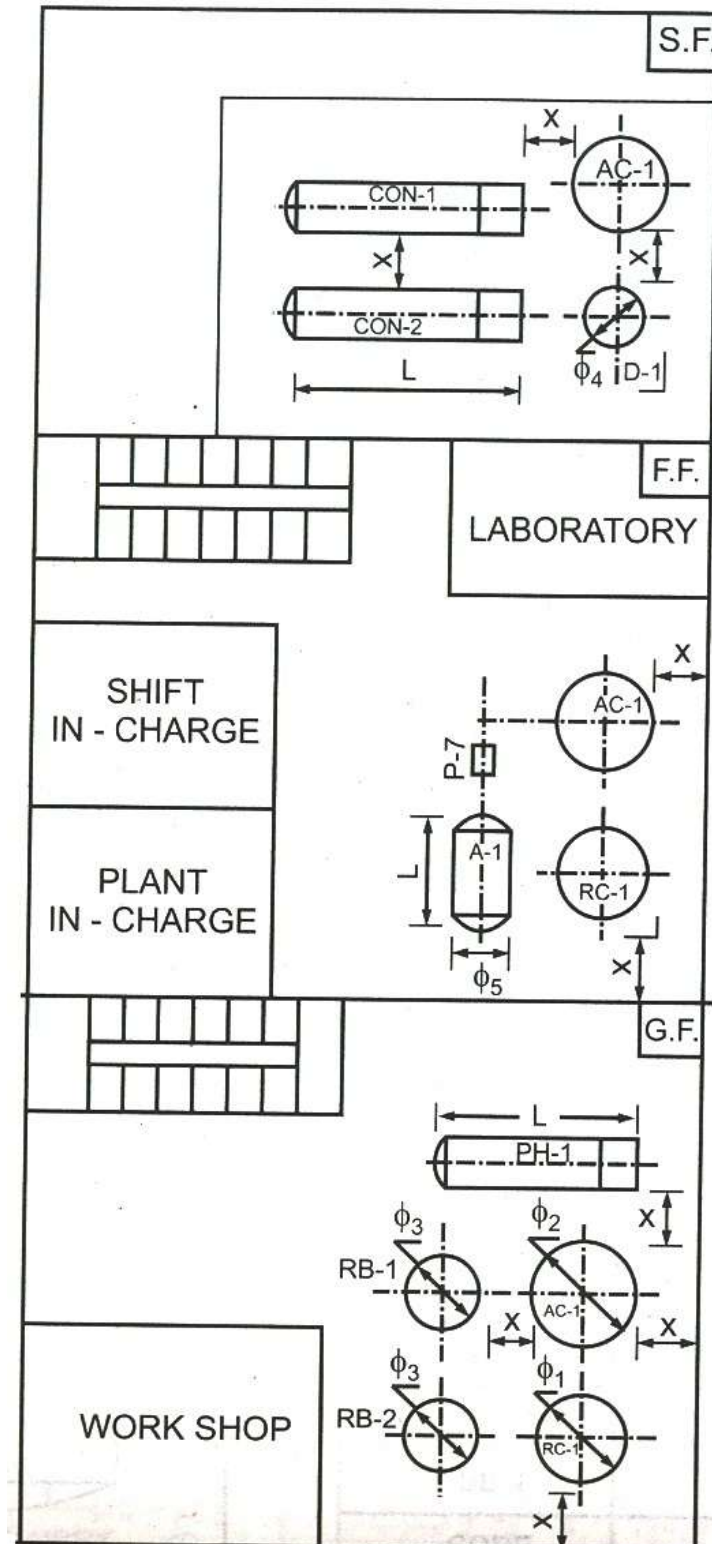
SUMMER- 18 EXAMINATION

Model Answer

Subject Name: Chemical Engineering Drawing

Subject Code:

17647





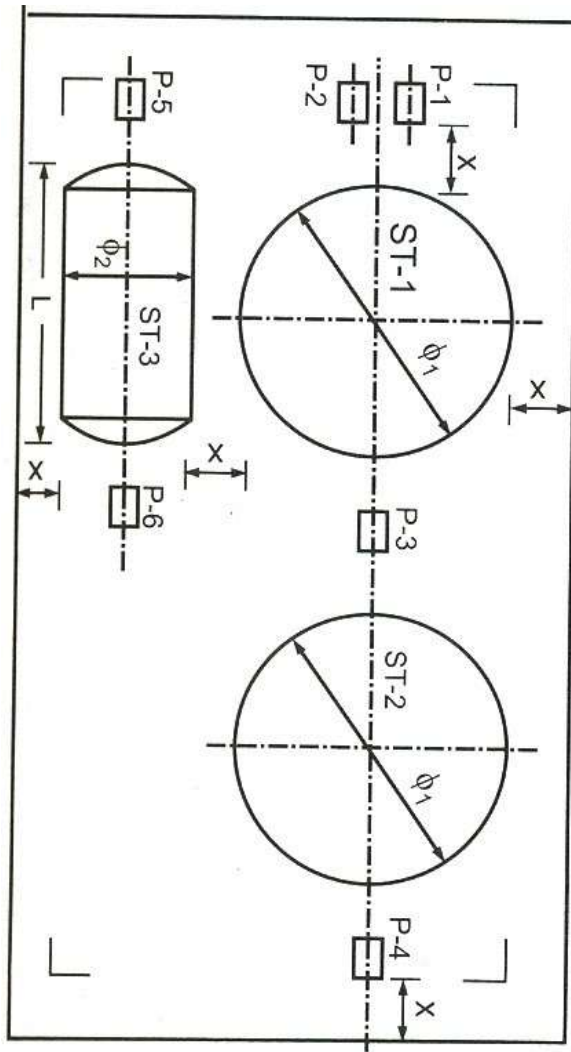
SUMMER- 18 EXAMINATION

Model Answer

Subject Name: Chemical Engineering Drawing

Subject Code:

17647

6	B	Attempt any one	8												
a	Tank Farm	<div></div> <table><tr><td>P-1,2,3</td><td>Pump for 96% alcohol</td></tr><tr><td>ST-1</td><td>96% alcohol storage tank</td></tr><tr><td>ST-2</td><td>Absolute alcohol storage tank</td></tr><tr><td>ST-3</td><td>Benzene tank</td></tr><tr><td>P-4</td><td>Pump for absolute alcohol tank</td></tr><tr><td>P-5,6</td><td>Pump for benzene tank</td></tr></table>	P-1,2,3	Pump for 96% alcohol	ST-1	96% alcohol storage tank	ST-2	Absolute alcohol storage tank	ST-3	Benzene tank	P-4	Pump for absolute alcohol tank	P-5,6	Pump for benzene tank	Tank farm 6+ legends 2
P-1,2,3	Pump for 96% alcohol														
ST-1	96% alcohol storage tank														
ST-2	Absolute alcohol storage tank														
ST-3	Benzene tank														
P-4	Pump for absolute alcohol tank														
P-5,6	Pump for benzene tank														



SUMMER- 18 EXAMINATION

Model Answer

Subject Name: Chemical Engineering Drawing

Subject Code:

17647

b Draw P&I diagram of distillation

8

