

SEAT No. \_\_\_\_\_

No. of Printed Pages: 02

[43]

SARDAR PATEL UNIVERSITY  
EXTERNAL EXAMINATION  
B.Sc. INDUSTRIAL CHEMISTRY (SEMESTER- VI)  
Course No. : US06CICH24  
(Process Control for Heat and Mass Transfer Operations)

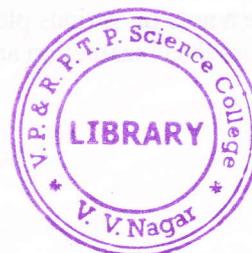
Date & Day :- 19/07/2021, Monday

Time: 10:00 am to 12:00 pm

Total Marks: 70

Q.1 Answer the given multiple choice questions. (All are compulsory) [10]

1. Flexible circular disc used in pressure measurement are \_\_\_\_\_.  
(a) Bellow (b) Spring (c) Diaphragm (d) None of these
2. Solid expansion takes place in \_\_\_\_\_ thermometer.  
(a) Resistance (b) Mercury  
(c) Thermocouple (d) Bimetallic
3. Instruments which require external power supply is known as \_\_\_\_\_ operated instruments.  
(a) Manually (b) Power (c) Automatic (d) None of these
4. Circular plate with a hole in it is \_\_\_\_\_.  
(a) Venturimeter (b) Orificemeter (c) Pitote tube (d) Rota meter
5. The instruments which indicates result as numeric value is \_\_\_\_\_.  
(a) Analog (b) Digital (c) Bot a & b (d) None of these
6. Heat transfer in a body which are not in contact with each other is known as \_\_\_\_\_.  
(a) Conduction (b) Convection (c) Radiation (d) None of these
7. Unit of heat transfer coefficient (h) is \_\_\_\_\_.  
(a)  $W/(m^2.K)$  (b)  $W/(m.K)$  (c)  $W/m$  (d) None of these
8. The portion of the continuous distillation column above feed plate portion is termed as \_\_\_\_\_.  
(a) Rectifying section (b) Stripping section (c) Extract section (d) None of these
9. The boiling point of liquid increases with \_\_\_\_\_ in pressure.  
(a) Increases (b) Decreases  
(c) Constant (d) None of these
10. \_\_\_\_\_ Operation is frequently practiced as last operation in manufacturing process.  
(a) Filtration (b) Distillation  
(c) Drying (d) Evaporation

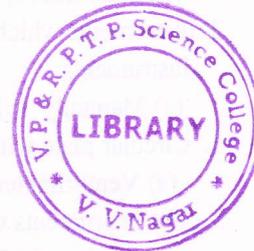


**Q.2 Are the following statements TRUE or FALSE? (All are compulsory) [08]**

1. At high- expansion metal, Brass is use at lower temperatures.
2. In Liquid expansion thermometer having a thin-walled glass bulb at the lower end.
3. Amount of fluid that flows past a given point at definite time period is called as total flow.
4. With integral control the valve is only at rest when the controlled variable is at the set Point.
5. The shorter distance between two tube center to center is called as tube sheet.
6. The materials having high thermal conductivity are referred as good insulators.
7. Dew point is the temperature at which a liquid mixture of given composition start to Vaporize as temperature increases.
8. Drum dryer is useful for drying sheets.

**Q.3 Answer the following short questions (Attempt any TEN) [20]**

1. Write a principle of burden pressure gauge.
2. Define : (i) Accuracy (ii) Dead zone
3. List the different units of pressure.
4. Write advantages of pitot tube.
5. Enlist the classification of orifice plate.
6. List different types of control action.
7. Define : (i) Conduction (ii) Thermal conductivity.
8. Write classification of shell and tube heat exchanger.
9. Explain natural convection and forced convection.
10. Define distillation with examples.
11. State Raoult's law and Dalton's law.
12. Give classification of dryer.



**Q.4 Answer the following Long questions (Attempt any FOUR) [32]**

1. What is temperature scale? write classification of temperature sensors.
2. Write a note on Bellow pressure gauge and Resistant temperature detector.
3. Write the principle, construction and working of Venturimeter with merits and demerits.
4. Explain feed-back and feed forward control system in detail.
5. Write Fourier's law and derive an equation for heat flow through cylinder.
6. Write a note on plate type heat exchanger.
7. Write a note on various plate used for phase contacting in distillation.
8. Discuss the construction and working of Spray dryer with neat diagram in detail.