Q.29 Discuss screening and its equipment.

Q.30 Explain EMI filters and their uses.

Q.31 Discuss in brief double pipe heat exchanger.

Q.32 Explain steam distillation process.

Q.33 5 $m^3$ of gas at 100KPa pressure extends a constant temperature to a final volume of 10$m^3$. Find final pressure of gas.

Q.34 Define quasi-static process.

Q.35 State first and second law of thermodynamics.

## SECTION-D

**Note :** Long Answer type question. Attempt any two questions. (2x10=20)

Q.36 Derive an expression for heat conduction through composite wall.

Q.37 Explain construction and working principle of Jaw crusher.

Q.38 Write short note on :

a) Raoult's Law b) Rotary dryer

b)





Roll No.....

**4th Sem, Branch : Plastic Engineering**

**Subject : Fundamental of Chemical Engineering/Unit operation**

**Time : 3 Hrs.** **M.M. : 100**

## SECTION-A

Note : Multiple choice questions. All questions are compulsory. (10x1=10)

Q.1 Which of the following occurs without a change in the internal energy?

a) Isochoric process b) Isenthalpic process

c) Steady-state process d) Isenthalpic process

Q.2 Which of the following is a method of heat transfer?

a) Convection b) Radiation

c) Conduction d) All of the mentioned

Q.3 In liquids and gases, heat transmission is primarily caused by

a) Convection

b) Radiation

c) Conduction

d) Conduction as well as convection

Q.4 Which one is having highest emissivity?

a) Red brick b) Concrete

c) Dull stainless steel d) Black paint

Q.5 Heat flow into a system is _____, and heat flow out of the system is _____.

a) Positive, positive b) Negative, negative
c) Negative, positive d) Positive, negative

Q.6 Which of the following is a type of Mechanical Operations generally used in industries?
a) Size reduction b) Clarification
c) Screening d) All of these

Q.7 Which of the following works on the principle of impact.
a) Gyratory Mill b) Jaw crusher
c) Ball mill d) Roll crusher

Q.8 Which of the following works principle of compression?
a) Rod mill b) Knife cutter
c) Black jaw crusher d) Gyratory Crusher

Q.9 The additional operation requires for drying gas and liquid is _____
a) Absorption b) Dehumidifier
c) Humidification d) None

Q.10 Emissivity of perfectly black body is
a) 1 b) 2
c) 3 d) 0

## SECTION-B

**Note :** Objective type questions. All questions are compulsory. (10x1=10)

Q.11 S.I. Unit of flow rate is _____.

Q.12 Heat flow mechanism through solids is known as _____.



Q.13 Driving force for heat flow is _____difference.

Q.14 When hot and cold fluid flow in opposite directions in heat exchanger then the flow is called as _____flow.

Q.15 The ratio of Cp. mto k is known as _____ number.

Q.16 Expand LMTD.

Q.17 Name two examples of diffusion.

Q.18 Stefan's block body radiation law can also be derived from _____law.

Q.19 A perfectly black body absorptivity is equal to _____.

Q.20 In most of the evaporation process_____ are condensed and discarded.

## SECTION-C

**Note :** Short answer type questions. Attempt any twelve questions out of fifteen questions. (12x5=60)

Q.21 Explain importance of diffusion process.

Q.22 What do you mean by thermal conductivity? How does variation in temperature affect thermal conductivity (explain in brief).

Q.23 Draw neat sketch of U-tube heat exchanger.

Q.24 Explain working of filter press.

Q.25 Give difference between isothermal and adiabatic process.

Q.26 Explain humidity and saturation.

Q.27 Explain size reduction law.

Q.28 Discuss working of cyclone separator.