

BACHELOR OF TECHNOLOGY (C.B.C.S.) (2020 COURSE)
B.Tech.Sem - III CHEMICAL : : SUMMER - 2022
SUBJECT : PARTICULATE TECHNOLOGY

Day : Thursday
Date : 2/6/2022

S-24435-2022

Time : 02:30 PM-05:30 PM
Max. Marks : 60

N.B.

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Assume suitable data if necessary.
- 4) Use of non-programmable calculator is **ALLOWED**.

- Q.1** Calculate the surface volume mean diameter for the following particulate material. Show the detailed calculations: (10)

Size Range (μ m)	Mass of Particles in the Range (gm)
- 704 +352	25
- 352 +176	37.5
- 176 +88	62.5
- 88+44	75
PAN	50

OR

Calculate the sphericity of a cuboid with dimensions 1 x 2 x 3 cm

- i) Use as the equivalent diameter of sphere with the same volume.
- ii) Equivalent diameter based on surface area.
- iii) Equivalent diameter based on the ratio of surface area to volume.

- Q.2** Discuss Kynch theory of sedimentation with parameters useful for design of thickeners. (10)

OR

Derive expression for terminal settling velocity for spherical particle.

- Q.3** Describe cyclone separator in detail. (10)

OR

What is the principle of flotation? Discuss in detail with applications.

- Q.4** Discuss the different methods for storage of solids. (10)

OR

Describe the construction and working of the Belt Conveyor.

- Q.5** What are different flow patterns in mixing, how are they obtained? (10)

OR

Give brief discussion on Mixer Extruder.

- Q.6** Derive expression for constant pressure filtration. (10)

OR

Discuss filtration theory in detail.

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