

# 22313

**21222**

**3 Hours / 70 Marks**

Seat No. 

--	--	--	--	--	--	--	--

15 minutes extra for each hour

---

- Instructions* – (1) All Questions are *Compulsory*.
- (2) Illustrate your answers with neat sketches wherever necessary.
- (3) Figures to the right indicate full marks.
- (4) Assume suitable data, if necessary.
- (5) Use of Non-programmable Electronic Pocket Calculator is permissible.
- (6) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

**Marks**

- 1. Attempt any FIVE of the following. **10****
- a) Give any four factors to be considered while selecting a size reduction equipment.
- b) Differentiate between Blake Jaw crusher and Dodge Jaw crusher (Any 2 Differences)
- c) Give the names of different screening equipments.
- d) Define -
- i) Free Settling.
- ii) Hindered Settling.
- e) Give the principle of Electrostatic precipitator.
- f) List the transportation equipments used in chemical industry. (Any four)
- g) Name the three flow patterns generated in an agitated vessel.

P.T.O.

- 2. Attempt any THREE of the following. 12**
- a) Draw a neat and labelled diagram of Blake Jaw crusher.
  - b) Explain any one method of screen Analysis.
  - c) Describe Gravity Settling tank with a neat sketch.
  - d) Explain the principle of cyclone separator with a neat diagram.
- 3. Attempt any THREE of the following. 12**
- a) Explain the working of Hammer mill with neat sketch.
  - b) Calculate the critical speed of the ball mill by using following data:
    - i)  $g = 9.81 \text{ m/s}^2$
    - ii) Diameter of ball mill = 450 mm
    - iii) Diameter of ball = 25 mm
  - c) Explain the working of vibrating screen with neat and labelled diagram.
  - d) Describe the working of wet scrubber with a neat diagram.
- 4. Attempt any THREE of the following. 12**
- a) Derive an expression to calculate the critical speed of a ball mill.
  - b) Explain the working of Froth flotation cell with neat sketch.
  - c) Explain the principle of filtration and factors which affect rate of filtration.
  - d) Explain the principle involved in sedimentation laboratory settling test and draw its diagram.
  - e) Describe the working of sigma mixer with a neat sketch.

**5. Attempt any TWO of the following.****12**

- a) Explain the construction and working of Fabric filter with a neat sketch.
- b) Give any two industrial applications of the following mixers -
  - i) Sigma mixer.
  - ii) Ribbon blender
  - iii) Muller mixer.
- c) Explain the importance of transportation in industry and give any two industrial applications of conveyor.

**6. Attempt any TWO of the following.****12**

- a) Draw the diagram of Bucket elevator and explain in brief.
  - b) Describe the working of Basket centrifuge with a neat diagram used in industry.
  - c) Explain any two methods for the prevention of swirling and vortex formation in mixer.
-