

22313

23124

3 Hours / 70 Marks

Seat No.

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- Instructions* – (1) All Questions are *Compulsory*.
- (2) Answer each next main Question on a new page.
- (3) Illustrate your answer with neat sketches wherever necessary.
- (4) Figures to the right indicate full marks.
- (5) Assume suitable data, if necessary.
- (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) State Bond's law. Give its mathematical expression.
- b) State Rittinger's law. Give its mathematical expression.
- c) Describe cumulative screen analysis.
- d) List any four types of screening equipment.
- e) List any four advantages of cyclone separator.
- f) List any four types of agitators.
- g) Give any two importance of transportation in chemical industry.

P.T.O.

- 2. Attempt any THREE of the following:** **12**
- a) Discuss any four difference between open and closed circuit grinding.
 - b) Explain construction and working of vibrating screen with a neat labelled diagram.
 - c) Explain construction and working of sedimentation process with a neat labelled diagram.
 - d) Explain construction and working of fabric filter with a neat labelled diagram.
- 3. Attempt any THREE of the following:** **12**
- a) Derive an expression for critical speed of ball mill.
 - b) Calculate the operating speed of ball mill if operating speed is 60% of critical speed and critical speed is 40% more than operating speed.
 - c) Derive the equation for effectiveness of screen.
 - d) Explain construction and working of wet scrubber with a neat labelled diagram.
- 4. Attempt any THREE of the following:** **12**
- a) Derive an expression for angle of nip and give any two industrial application of roll crusher.
 - b) List any three factors, affecting the screen operation.
 - c) List any six factors, affecting the filtration operation.
 - d) Explain construction and working of basket centrifuge with a neat labelled diagram.
 - e) List types of setting and explain particle setting phenomenon.

- 5. Attempt any TWO of the following:** **12**
- a) With neat sketch, explain construction of electrostatic precipitator.
 - b) State any three industrial importance of each of the following –
 - i) Ribbon blender
 - ii) Sigma mixer.
 - c) Discuss any three role of pneumatic conveyer in cement industry.
- 6. Attempt any TWO of the following:** **12**
- a) Discuss working and construction of plate and frame roller press with a neat labelled diagram.
 - b) Explain the phenomenon of vortex formation in sigma mixer.
 - c) Write down industrial application of –
 - i) belt conveyer (any two)
 - ii) Screw conveyer (any two)
 - iii) Chain conveyer (any two).
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