17313

11718

3 Hours / 100 Marks Seat No. | | | | | | | | |

Instructions : (1) All Questions are *compulsory.*

(2) Answer each next main Question on a new page.

(3) Illustrate your answers 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. (A) Attempt any SIX of the following : **12**

(a) Describe importance of size reduction in chemical industries. (2 points)

(b) Define Rittinger's Law.

(c) Describe importance of screening in chemical industries. (any two)

(d) Describe cumulative screen analysis.

(e) Describe importance of mixing and agitation. (2 points)

(f) State the concept of homogenous and heterogeneous mixtures.

(g) List the equipment uses for separation of product based on magnetic properties. (any two)

(h) Define classification, name any two types classifier used in process industry.

(B) Attempt any TWO of the following : **8**

(a) Explain open circuit and closed circuit grinding.

(b) Describe principle, construction, working of Ball mill.

(c) Explain in detail factor affecting on the performance of screen. (any four)

2. Answer any FOUR of the following : **16**

(a) Define crushing efficiency and Kick's law.

(b) Compare ideal screen and actual screen. (4 points)

(c) Describe the working of Gyratary screen.

(d) Draw neat sketch of any one type of classifier.

(e) Define constant rate and constant pressure filtration.

(f) Draw neat labelled sketch of cyclone separator.

3. Answer any FOUR of the following : **16**

(a) Explain principle, construction & working of Jaw crusher.

(b) Derive the formula to calculate the effectiveness of screen.

(c) Explain with neat sketch magnetic drum separator.

(d) Define cake filtration and deep bed filtration.

(e) Draw neat sketch of plate and frame filters.

(f) List the factors affecting the rate of filtration.

4. Answer any FOUR of the following : **16**

(a) Explain with neat sketch vibrating screen.

(b) Explain the working of electrostatic separator.

(c) Define vacuum filtration and pressure filtration.

(d) Explain the role of filter aids in filtration.

(e) Distinguish between sedimentation and filtration. (4 points)

(f) List the type of settling. Explain the concept of terminal settling velocity.

5. Attempt any TWO of the following : **16**

(a) Derive the equation for critical speed of Ball mill.

(b) With a neat diagram, explain the principle, construction and working of froth floatation cell.

(c) Explain laboratory batch sedimentation test with neat sketches.

6. Answer any FOUR of the following : **16**

(a) Explain the working of sand filter with sketch.

(b) Describe the concept of swirling and vortex. Write method of prevention of swirling and vortex formation.

(c) Give the classification of impellers. Draw the diagram of each type.

(d) Explain construction and working of sigma mixer.

(e) Draw neat sketch of Ribbon blender.

(f) Give any two industrial applications of mulur mixer and sigma mixer.
