Chapter Wise Questions:

Chapter 1: Size Reduction		Marks	CO	BTL
1	Write two objectives of size reduction?	2	C203.1	L1
2	Define Rittinger's law.	2	C203.1	L1
3	Define Kick's law.	2	C203.1	L1
4	Define Bond's law.	2	C203.1	L1
5	What is the need of crushing laws (laws of comminution)?	2	C203.1	L2
6	What are different methods of size reduction?	2	C203.1	L1
7	Define crushing efficiency.	2	C203.1	L1
8	Define work index.	2	C203.1	L1
9	Differentiate between blake jaw crusher and dodge jaw crusher.	2	C203.1	L1
10	Define angle of nip.	2	C203.1	L1
11	Define critical speed of ball mill.	2	C203.1	L1
12	What are the objectives of size reduction?	5	C203.1	L1
13	Compare the three crushing laws in detail.	5	C203.1	L4
14	Write the construction and working of jaw crusher with neat diagram.	5	C203.1	L2
15	Write the construction and working of gyratory crusher with neat diagram.	5	C203.1	L2
16	Write the construction and working of smooth roll crusher with neat diagram.	5	C203.1	L2
17	Write the construction and working of hammer mill with neat diagram.	5	C203.1	L2
18	Write the construction and working of ball mill with neat diagram.	5	C203.1	L2
19	Compare closed circuit grinding and open circuit grinding.	5	C203.1	L4
20	Differentiate dry grinding and wet grinding.	5	C203.1	L4
21	Compare free grinding and choke grinding.	5	C203.1	L4

22	A certain crusher accepts a feed material having a volume-surface mean diameter of 19 mm and gives a product of volume-surface mean diameter of 5 mm. The power required to crush 15 tonnes per hour is 7.5 kW. What will be the power consumption if the capacity is reduced to 12 tonnes per hour?	5	C203.1	L3
23	What will be the power required to crush 150 tonnes per hour of limestone if 80 percent of the feed passes 50 mm screen and 80 percent of the product a 3.125 mm screen? Work index of limestone = 12.74.	5	C203.1	L3
24	Find out the critical speed of the ball mill by using the following data: Diameter of ball mill = 450 mm Diameter of ball = 25 mm.	5	C203.1	L3
25	A pair of rolls is to take a feed equivalent to sphere 38 mm in diameter and crush them to sphere having a diameter of 12.7 mm. If the co-efficient of friction is 0.29, what should be the diameter of the rolls?	5	C203.1	L3
26	Calculate the operating speed of the ball mill from the following data: (i) Diameter of ball mill = 500 mm (ii) Diameter of ball = 40 mm (iii) Operating speed is 50% of the critical speed of the mill.	5	C203.1	L3
27	What rotational speed, in revolutions per minute, would you recommend for a ball mill 1200 mm in diameter charged with 75 mm balls?	5	C203.1	L3
28	A certain set of crushing rolls has rolls of 1000 mm diameter and 375 mm width face. They are set so that the crushing faces are 12.5 mm apart. The manufacturer recommends their speed to be 50 to 100 r.p.m. They are employed to crush a rock having specific gravity 2.35 and the angle of nip is 31o 30'. What is the maximum permissible size of the feed and maximum actual capacity of rolls in tonnes per hour if the actual capacity is 12% of the theoretical? Theoretical capacity in t/h, Q = 4.352 × 10–7 N.D.w.d.s where N in r.p.m., D (roll diameter) in mm, w (width) in mm, d (half the gap/width between roll surface) in mm and s (specific gravity). [	5	C203.1	L3
29	Calculate the operating speed of the ball mill from the data given below: Diameter of ball mill = 800 mm, diameter of ball = 60 mm If (I) operating speed is 55% less than the critical speed. (II) critical speed is 40% more than the operating speed.	5	C203.1	L3
30	A certain set of crushing rolls has rolls of 1000 mm diameter by 375 mm width of face. They are set so that the crushing surfaces are 12 mm apart at the narrowest point. The angle of nip is 30o. What is the maximum permissible size of feed?	5	C203.1	L3
31	What should be the diameter of a set of rolls to take feed of size equivalent to 38 mm spheres and crush to 12.7 mm? The co-efficient of friction is 0.35.	5	C203.1	L3

Chapter 2: Size Separation		Marks	CO	BTL
1	What do you mean by irregular particles?	2	C203.2	L1
2	Define sphericity.	2	C203.2	L1
3	Define ideal screen.	2	C203.2	L1
4	Define actual screen.	2	C203.2	L1
5	Define free settling.	2	C203.2	L1
6	Define hindered settling.	2	C203.2	L1
7	What is Stokes's law?	2	C203.2	L1
8	Give one example of frothing agent.	2	C203.2	L1
9	Define sedimentation.	2	C203.2	L1
10	Differentiate classification and clarification.	2	C203.2	L2
11	What do you mean by screen effectiveness?	2	C203.2	L1
12	What do you mean by capacity of a screen?	2	C203.2	L1
13	What is the relation between capacity and effectiveness of a screen?	2	C203.2	L2
14	What is a mesh number?	2	C203.2	L1
15	What are the objectives of size separation?	5	C203.2	L1
16	Derive the effectiveness of a screen.	5	C203.2	L3
17	Write the construction and working of a cyclone separator with neat diagram.	5	C203.2	L2
18	Write the construction and working of a magnetic separator with neat diagram.	5	C203.2	L2
19	Write the construction and working of a electromagnetic separator with neat diagram.	5	C203.2	L2
20	Write the construction and working of a hydraulic classifier with neat diagram.	5	C203.2	L2
21	Write the construction and working of a jig with neat diagram.	5	C203.2	L2
22	Write the construction and working of froth floatation with neat diagram.	5	C203.2	L2

23	Compare ideal screen and actual screen.	5	C203.2	L4
24	Write the construction and working of grizzlies with neat diagram.	5	C203.2	L2
25	Write the construction and working of a trommel with neat diagram.	5	C203.2	L2
26	Show various trommel arrangements with neat diagram.	5	C203.2	L2
27	Write the construction and working of a vibrating screen with neat diagram.	5	C203.2	L2
28	A quartz mixture having a certain screen analysis is screened through a standard 10 mesh screen. Calculate: (a) the mass ratio of overflow and underflow to feed and (b) the effectiveness of the screen. Due to blinding an appreciable fraction of the screen surface becomes inactive. The blinding tendency is more pronounced with fine screens than with coarse screens. Data: $D_p = D_{pc} = 1.651$ mm, $X_F = 0.47$, $X_D = 0.85$ and $X_B = 0.195$ (cumulative mass fractions)	5	C203.2	L3
Chapter 3: Filtration		**Marks**	**CO**	**BTL**
1	What is filtration?	2	C203.3	L1
2	What do you mean by cake resistance?	2	C203.3	L1
3	What do you mean by medium resistance?	2	C203.3	L1
4	What are filter aids? Give one example.	2	C203.3	L1
5	What is constant pressure cake filtration?	2	C203.3	L1
6	What do you mean by constant rate cake filtration?	2	C203.3	L1
7	What do you mean by flocculation?	2	C203.3	L1
8	What do you mean by coagulation? Name any one coagulant.	2	C203.3	L1
9	What is cake filtration?	2	C203.3	L1
10	What is deep bed filtration?	2	C203.3	L1
11	Write the construction and working of a plate and frame filter press with neat diagram.	5	C203.3	L1
12	Write the construction and working of a rotary drum filter with neat diagram.	5	C203.3	L1
13	Write the construction and working of a batch centrifuge with neat diagram.	5	C203.3	L1

14	Explain in detail the classification of filtration.	5	C203.3	L1
Chapter 4: Mixing		**Marks**	**CO**	**BTL**
1	Define mixing.	2	C203.4	L1
2	What do you mean by swirling?	2	C203.4	L1
3	What are different types of impellers based on flow pattern?	2	C203.4	L1
4	What do you mean by axial flow impeller?	2	C203.4	L1
5	What do you mean by radial flow impeller?	2	C203.4	L1
6	How can we prevent swirling and formation of vortex in a vessel?	2	C203.4	L2
7	What do you mean by baffling?	2	C203.4	L1
8	Write the objectives of mixing.	5	C203.4	L1
9	Explain with neat diagram the mixing of solid and liquid in a vessel.	5	C203.4	L2
10	Compare propellers, paddles and turbines.	5	C203.4	L4
Chapter 5: Transportation and Storage		**Marks**	**CO**	**BTL**
1	Differentiate between bins and silos.	2	C203.5	L2
2	Give two examples of horizontal conveyors.	2	C203.5	L1
3	Give two examples of vertical conveyors.	2	C203.5	L1
4	Write the difference between belt conveyor and apron conveyor.	2	C203.5	L2
5	What are the objectives of transportation?	5	C203.5	L1
6	What are the objectives of storage?	5	C203.5	L1
7	Write the construction and working of a belt conveyor with neat diagram.	5	C203.5	L2
8	Write the construction and working of an apron conveyor with neat diagram.	5	C203.5	L2
9	Write the construction and working of a screw conveyor with neat diagram.	5	C203.5	L2
10	Write the construction and working of a bucket elevator with neat diagram.	5	C203.5	L2

11	Explain in detail the construction and uses of bins and silos.	5	C203.5	L2