

- Q.29 Give the classification of filtration.  
 Q.30 What are clarifying filters?  
 Q.31 Write a note on Sorting classifiers.  
 Q.32 What is nozzle discharge centrifuge?  
 Q.33 Define cyclone separator.  
 Q.34 What is the process of change can mixer?  
 Q.35 Define kneader and disperser blade.

### **SECTION-D**

**Note:** Long answer type questions. Attempt any two questions out of three questions. (2x10=20)

- Q.36 Explain in detail the characterization of solid particle.  
 Q.37 Explain separation based on the motion of particle through fluid.  
 Q.38 Write short notes on any 2 of the following :  
     a) Fluid Energy Mill  
     b) Material balances over screen capacity  
     c) Kick's law  
     d) Rotary drum vacuum filter

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**3rd Sem / Chem, P&P, Chem Engg. (Spl. Paint Tech.),  
 Chem Engg. (Spl. Polymer Engg.)  
 Subject:- Mechanical Operations**

Time : 3Hrs.                                  M.M. : 100

### **SECTION-A**

**Note:** Multiple choice questions. All questions are compulsory (10x1=10)

- Q.1 \_\_\_\_\_ are used at the bottom of the blades.  
     a) Spikes                                  b) Serrations  
     c) Doctor knife                            d) Both A & B  
 Q.2 What is the average particle size of ultra-fine grinders  
     a) 1-20 mm                                b) 4-10 mm  
     c) 5-200 mm                                d) 9-10 mm  
 Q.3 Which of the following gives total volume of the particles?  
     a)  $M_v/P_p$                                 b)  $M_v/D_p$   
     c)  $D_p/P_p$                                     d)  $M/P_p$   
 Q.4 Which circuit resides more energy?  
     a) Open                                     b) Closed  
     c) Bypass                                    d) Bilateral

- Q.5 Which mixer is used for cohesive solids?  
 a) Disperser      b) Tumbling mixer  
 c) Ribbon blender      d) Impact wheels
- Q.6 Which size reduction equipment is commonly used in industry?  
 a) Impact wheel      b) Roller mill  
 c) Kneader      d) None
- Q.7 Which mill is used for small sized particles?  
 a) Colloid      b) Roller  
 c) Ball      d) Hammer
- Q.8 Which of the following involves vibrations?  
 a) Hammer mill      b) Ball mill  
 c) Grizzly screen      d) Roll mill
- Q.9 \_\_\_\_\_ is used for rough & rubber type materials  
 a) Exhausting      b) Multi whipping  
 c) Seeking      d) Multi scraping
- Q.10 Which works on the principle of impact?  
 a) Ball mill      b) Jaw crusher  
 c) Roll mill      d) None

### **SECTION-B**

**Note:** Objective type questions. All questions are compulsory.  $(10 \times 1 = 10)$

- Q.11 Which mixture is called homogenous mixture?  
 Q.12 Which particle is irregular particle?

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- Q.13 Name any one crushing law.  
 Q.14 Write any one name of ultra-fine grinders.  
 Q.15 Write unit of pressure.  
 Q.16 How many jaw are there in jaw crusher and which jaw is fixed in jaw crusher?  
 Q.17 Screening is used for separation of which type of solution?  
 Q.18 Name any 2 filter aids.  
 Q.19 What is the formula for sphericity for non spherical particle?  
 Q.20 Which is best filter used for waste treatment?

### **SECTION-C**

- Note:** Short answer type questions. Attempt any twelve questions out of fifteen questions.  $(12 \times 5 = 60)$
- Q.21 Explain particle shape for characterization of solid particles.  
 Q.22 Write the formula for finding the number of particles in mixture.  
 Q.23 Draw neat sketch of ball mill.  
 Q.24 Define Rittinger's law.  
 Q.25 List various types of size reduction equipment.  
 Q.26 Make a flow sheet for closed circuit grinding.  
 Q.27 Define Tyler standard screen series.  
 Q.28 Describe Gyratory screen.

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