



M.Tech. II Semester Degree Examination, September/October - 2022

MINERAL PROCESSING

21MNP2S2L/COMPUTATIONAL TECHNIQUES IN MINERAL PROCESSING

Time : 1 Hour

Maximum Marks : 30

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1. Gizzly Screens are used for separating _____ solids.
(a) Coarse (b) Fine (c) Any size (d) None of these

 2. In closed circuit grinding as compared to open circuit grinding, the :
(a) Specific surface of product is more
(b) Product has lesser size uniformity
(c) Production rate at a given limiting size is lower
(d) Operation is economical

 3. Specific surface area is the surface area of a unit _____ of materials.
(a) Weight (b) Volume
(c) Either (a) or (b) (d) Neither (a) nor (b)

 4. Which of the following is not a wet classifier ?
(a) Sharpies supercentrifuge (b) Hydrocyclones
(c) Dorr Oliver rake classifier (d) None of these

 5. Separation of solid particles based on their densities is called _____.
(a) Sizing (b) Sorting (c) Clarification (d) Gravity separation

 6. Energy consumption in a crusher decreases with increase in the _____.
(a) Size of the product (at constant feed size)
(b) Capacity of the crushing machine
(c) Size of feed (at constant reduction ratio)
(d) All of the above

 7. Wet grinding in a revolving mill _____ as compared to dry grinding.
(a) Gives less wear on chamber walls
(b) Requires more energy
(c) Increases capacity
(d) Complicates handling of the product



8. Increasing the capacity of a screen _____ the screen effectiveness.
(a) Decreases (b) Increases
(c) Does not affect (d) None of these
9. A widely used size reduction equipment for _____ is Bradford breaker.
(a) Talc (b) Coal (c) Iron core (d) Gold ore
10. The operating speed of a ball mill should be _____ the critical speed.
(a) Less than (b) Much more than
(c) At least equal to (d) Slightly more than
11. A Pebble mill is :
(a) A ball mill
(b) Employs flints or ceramic pebbles as the grinding medium
(c) A tube mill lined with ceramic or other non-metallic liner
(d) Both (b) and (c)
12. The energy required per unit mass to grind limestone particles of very large size to 1 is 12.7 kWh/ton. An estimate (using Bond's law) of the energy to grind the particles from a very large size to 50 mm is _____.
(a) 6.35 kWh/ton (b) 9.0 kWh/ton
(c) 18 kWh/ton (d) 25.4 kWh/ton
13. In Classification, particles are said to be equal settling, if they have the same terminal velocities in the _____.
(a) Different fluids (b) Same fluid
(c) Same field of force (d) Both (b) and (c)
14. Length/diameter ratio of a ball mill is _____.
(a) 1.5 (b) 1 (c) <1 (d) >1
15. As particle size is reduced, _____.
(a) Screening becomes progressively more difficult
(b) Screening becomes progressively easier
(c) Capacity and effectiveness of the screen is increased
(d) None of these
16. In case of Grinding in a ball mill, _____.
(a) Wet grinding achieves a finer product size than dry grinding
(b) Its capacity decreases with increasing fineness of the products.
(c) Grinding cost and power requirement increases with increasing fineness of the products.
(d) All of the above



17. In coal washeries, three products namely the valuable product (i.e. clean/washed coal), discarded product (i.e. mineral matter) and an additional concentrated product called _____ is produced.
(a) Concentrate (b) Tailing (c) Middling (d) None of these
18. Chance process is used for the _____.
(a) Cleaning of coal (b) Concentration of iron ore
(c) Concentration of pyrites (d) Water treatment
19. What is the critical speed of a ball mill of 4.8 inch Internal diameter, charged with 3 inch diameter balls ?
(a) 39.58 rpm (b) 42.25 rpm (c) 38.00 rpm (d) 35.58 rpm
20. Float and sink test determines the possibility of cleaning of coal by a process based on the _____.
(a) Gravity separation (b) Wettability
(c) Particle Shape (d) None of these
21. Which of the following is not an industrial screening equipment ?
(a) Sharpies centrifuge (b) Vibrating screen
(c) Grizzly (d) Trommel
22. Ore Concentration by Jigging is based on the differences in the _____ of the particle.
(a) Specific gravities (b) Wettability
(c) Shape (d) None of these
23. Which of the following is a fine crusher ?
(a) Blake jaw crusher (b) Gyratory crusher
(c) Toothed roll crusher (d) Dodge jaw crusher
24. Pick out the correct statement.
(a) The capacity and the effectiveness of a screen are the same.
(b) The capacity and the effectiveness of a screen are opposing factors.
(c) The percent open area of a screen is proportional to screen capacity.
(d) Both (b) and (c)
25. A tube mill compared to a ball mill, _____.
(a) Has a higher length/diameter ratio
(b) Produces a coarser product
(c) Has a higher diameter/length ratio
(d) Uses much larger balls



26. In screen analysis, the notation 15 mm/210 mm means particles passing through _____.
- (a) 10 mm screen and retained on 5 mm screen
 - (b) 5 mm screen and retained on 10 mm screen
 - (c) Both 5 mm and 10 mm screens
 - (d) Neither 5 mm nor 10 mm screen
27. Out of the following size reduction equipments, the maximum feed size can be accepted by the _____.
- (a) Tube mill
 - (b) Ball mill
 - (c) Jaw crusher
 - (d) Roll crusher
28. Gold ore concentration is mostly done using _____.
- (a) Jigging
 - (b) Tabling
 - (c) Froth floatation
 - (d) Elutriation
29. A sand mixture was screened through a standard 10-mesh screen. The mass fraction of the oversize material in feed, overflow and underflow were found to be 0.38, 0.79 and 0.22 respectively. The screen effectiveness based on the oversize is _____.
- (a) 0.50
 - (b) 0.58
 - (c) 0.68
 - (d) 0.62
30. 200 mesh seive size corresponds to _____ microns.
- (a) 24
 - (b) 74
 - (c) 154
 - (d) 200

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