1. **..... is the mechanical process of reducing the particle size of solids.**
    a) Mixing
    b) Drying
    c) Milling.
    d) Filtration
    e) Sterilization
2. **Size of solid particles is conventionally expressed in terms of …….**
    a) Pound/hour
    b) Percent
    c) Nanometer
    d) Meter
    e) Mesh
3. **Milling equipment is classified according to the size of the final milled product into …….**
    a) Coarse for particles size larger than 840 microns.
    b) Intermediate for particles size range from 20 to 200 mesh.
    c) Fine for particles size smaller than 200-micron.
    d) Fine for particles size smaller than 200-mesh.
    e) All of the above except (C).
4. **Pharmaceutical Application of Size Reduction include all of the following, except:**
    a) Increase the dissolution and therapeutic efficacy.
    b) lengthens the extraction time.
    c) provides a smooth texture and elegant appearance of ointment and cream.
    d) facilitated the drying of wet masses.
    e) Make mixing is easier and more uniform.
5. **What of the following is true regarding the Theory of Comminution for Milling Based on a Stress- Diagram?**
    a) The initial linear portion of the curve is defined by Young's law.
    b) Hooke's law expresses the stiffness or softness of a solid in dyne/cm^2.
    c) The stress-strain curve is linear beyond the yield point.
    d) The area under the curve represents the material's impact strength.
    e) The material is reversibly deformed when the force of impact does not go beyond the range of Hooke's law.
6. **All of the following are Milling mechanisms, except……**
    a. Cutting:
    b. Compression
    c. Impact,
    d. Attrition
    e. molecular diffusion**.**

7. **The milling mechanism involves the contact of material with a fast-moving part, which imparts some of its kinetic energy to the material.**
    a) Cutting:
    b) Compression
    c) Impact
    d) Attrition
    e) molecular diffusion.
8. **The milling mechanism involves subjecting the material to pressure while the surfaces are moving relative to each other.**
    a) Cutting:
    b) Compression
    c) Impact
    d) Attrition
    e) molecular diffusion.
9. **Milling mechanism where the material is gripped between the two surfaces and crushed by applying pressure.**
    a) Cutting:
    b) Compression
    c) Impact
    d) Attrition
    e) molecular diffusion.
10. **Size reduction of solid fibrous materials is done by:**
    a) Cutting mechanism
    b) Compression mechanism
    c) Impact mechanism
    d) Attrition mechanism
    e) Combination of impact and attrition.
11. **Size reduction of dried filter cake is done by…….**
    a) Cutting mechanism
    b) Compression mechanism
    c) Impact mechanism
    d) Attrition mechanism
    e) All except (a).
12. **Size reduction of fibrous solid materials is done by:**
    a) Compression mechanism
    b) Impact mechanism
    c) Cutting mechanism
    d) Attrition mechanism
    e) (a & c).
13. **When specifications demand free-flowing spheroidal particles, an …… mill is best.**

a) Cutting
b) Compression
c) Impact
d) Attrition
e) All except (a).

14. An impact mill produces…….

a) Sharp, irregular particles
b) Spherical uniform particles
c) Free flowing particles
d) (a and c)
e) (b and c)

15. dry milling is recommended ……

a) to eliminate dust hazards.
b) to save power
c) to further reduce the size to approximately 10 μm
d) When a product undergoes physical or chemical change in water
e) All of the above

16. If the milling operation is carried out so that the material is reduced to the desired size by passing it once through the mill, the process is known as …….

a) Open-circuit milling.
b) Closed-circuit milling.
c) Continuous milling operation.
d) (a and b)
e) (b and c)

17. Which of the following statements about closed circuit mills is correct?

a) It is less valuable in particle size reduction to fine and ultrafine size.
b) Material is reduced to the desired size by running it through the mill once.
c) In a closed-circuit mill, oversize particles from the milling chamber are returned to the grinding chamber for further reduction.
d) A closed-circuit mill is not a relationship with milling, especially in the electrical field only.
e) C & d.

18. A ……. can be used for tough, fibrous materials.

a) Cutter Mill.
b) Ball mill.
c) Roller mill.
d) Fluid energy mill.
e) Hammer mill.

19. …… provide a successive shearing action rather than attrition or impact.

a) Cutter Mill.
b) Ball mill.
c) Roller mill.
d) Fluid energy mill.
e) Hammer mill.

20. All of the following about Cutter Mill are true, except

a. Provide a successive attrition action.
b. Used for comminution of Rauwolfia roots.
c. A horizontal rotor with 2–12 evenly spaced blades rotating 200–900 rpm.
d. Shear rate is the derivative of velocity with respect to distance.
e. Fluids may be generally classified depending on Shear rates and applied stress.

21. Which of the following machines has a mechanism that combines compression and shearing?

a) Cutter Mill.
b) Ball mill.
c) Roller mill.
d) Fluid energy mill.
e) Hammer mill.

22. The presence of water content in concentrations greater than 30 percent decreases the rate of the milling process.

a) True.
b) False.

23. Hammer mill is rapid in action and is capable of grinding many different type of thermolabile materials.

a) True.
b) False.

24. Cascading action inside ball mill occurs at one half of the critical angular velocity.

a) True.
b) False.

25. Ball mills usually contain balls of different diameters.

a) True.
b) False.

26. The only important factor for operation of ball mill is the speed of rotation.

c) True.
d) False.

27. All milling equipment have three basic components…….

a. Feed chute, Grinding mechanism and a collector.
b. Feed chute, Grinding mechanism and a classifier.
c. Feed chute, balls and a collector.

d. Feed chute, hammer, and A discharge chute.
e. Feed chute, Grinding mechanism and water jacket.

28. Which of the following is false about hammer milling?

a) The hammer mill uses a high-speed rotor up to 10,000 rpm.
b) Hammer tip speed and screen size are important processing variables.
c) It is a continuous operation and may be operated in a closed system to reduce dust and explosion hazards.
d) Hammer mills are compact, high-capacity machines that occupy a small space.
e) The machine of choice for abrasive material.

29. One of the following disadvantages of a hammer mill is false:

a) Heat build-up during milling.
b) Mill and screen wear with abrasive materials
c) The product is not easily controlled by varying the rotor speed and screen size.
d) occupies large space.
e) (c and d).

30. One of the following is not a benefit of using a ball mill:

a) Ball mills can be sterilized and sealed for sterile milling of ophthalmic products.
b) It used for batch or continuous operation.
c) It can grind explosive or unstable materials in an inert atmosphere.
d) Ball milling requires minimal installation, operation, and manpower.
e) Suitable for soft & sticky materials.

31. Which of the following is true regarding ball mill?

a) At low rotational speeds, the ball mill provides impact action.
b) At high rotational speeds, the ball mill provides attrition action.
c) The mass of balls will slide or roll over each other at the correct speed.
d) Speed of rotation is a factor of greatest importance in ball mill operation.
e) (a and d).

32. What is the best equipment for reducing the size of Calcitonin inhaled preparation?

a) Cutter Mill.
b) Ball mill.
c) Roller mill.
d) Fluid energy mill.
e) Hammer mill.

33. …… is used for size reduction of ultrafine thermolabile substance

a) Cutter Mill.
b) Ball mill.
c) Roller mill.

d) Micronizer.
e) Hammer mill.

34. What is the best equipment for size reduction of semisolid preparation to produce highly smooth product.

a) Cutter Mill.
b) Ball mill.
c) Roller mill.
d) Fluid energy mill.
e) Hammer mill.

35. A ……. is used for the Rapid production of sulfonamide powder with a particle size of ~ 15 microns.

a) Cutter Mill.
b) Ball mill.
c) Roller mill.
d) Fluid energy mill.
e) Hammer mill.

36. A …….is used for size reduction of calamine suspension of particle size ~ 20 mesh.

a) Cutter Mill.
b) Ball mill.
c) Roller mill.
d) Fluid energy mill.
e) Hammer mill.

37. ……..may be useful in producing a suspension that contains a metastable form of material causing crystal growth and caking

a. Wet milling
b. Dry milling
c. Cutting
d. (a and c)
e. (b and c)

38. The choice of a mill is based on……

a) capacity of the mill and production rate requirements
b) ease of cleaning and sterilization
c) versatility of operation
d) auxiliary equipment
e) all of the above