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NAAC reaccredited A grade
Department of Chemistry
<u>Sample Multiple Choice Questions</u>

1. Homogenous nucleation is:

    a. The first step of any crystal growth.

    b. Always leads to crystal growth.

    c. A process that can lead to crystal growth

    d. A process that leads to crystal growth if paired with heterogeneous nucleation.

2. How many types of nucleation process are there and what are they?

    a) 2 and (fusion and fission)

    b) 2 and (Heterogeneous and Homogeneous)

    c) 2 and (Heterogeneous and fusion)

    d) 4 and (fusion, fission, Heterogeneous and Homogeneous)

3. In steady state diffusion which of the following remains constant?

    a) Concentration gradient

    b) Kinetic energy of particles

    c) Potential energy of particles

    d) Change of concentration with respect to temperature

4. Which of the following law is used for steady state diffusion?

    a) Fick's law

    b) Newton's law of diffusion

    c) Bragg's law

    d) Charles's law

4. Concentration gradient varies with time for which of the following processes?

    a) Non-steady state diffusion

    b) Osmosis

    c) Steady state diffusion

    d) Filter

5. Which type of defect are point defects?

    a) One dimensional defect

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b) Zero dimensional defect

c) Two dimensional defect

d) Three dimensional defect

6. What is the relative orientation of dislocation lines for edge dislocation?

   a) Parallel

   b) Perpendicular

   c) Circular

   d) Both parallel and perpendicular

7. Which type(s) of dislocation are included in mixed dislocation?

   a) Only Edge dislocation

   b) Only shear dislocation

   c) Only screw dislocation

   d) Both edge and screw dislocation

8. Velocity of diffusing particles does not depend on _____

   a) Temperature

   b) Viscosity of the fluid

   c) Pressure

   d) Enthalpy

9. The tendency of brittle fracture increases with:

   a) Decreasing temperature

   b) Increasing temperature

   c) Decrease in strain rate

   d) It doesn't depend on temperature or strain rate

10. Which of the theory is related to brittle fracture?

   a) Laundau theory

   b) Dirac hole theory

   c) Valence bond theory

   d) Griffith's theory

11. The graph for Griffith's crack is _____

   a) An ellipse

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b) A circle

c) A straight line

d) A hyperbola

12. Up to which point on the stress-strain curve is Hooke's law valid?

a) Elastic limit

b) Yield point

c) Proportionality limit

d) Fracture point

13. What is the unit for stress?

a) N/m^2

b) Nm^2

c) N/m

d) Nm

14. Which of the following can be the value of Poisson's ratio for an engineering structure?

a) 2

b) 0.4

c) 29

d) 100

15. Stress strain curve for cemented tungsten carbide is –

a) Hyperbola

b) Parabola

c) A curve

d) Straight line

16. Which of the following is found out by calculating the area under the stress strain graph?

a) Toughness

b) Hardness

c) Endurance

d) Strength

17. Which of the following is a three-level laser?

a) ND: YAG

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b) Ruby

c) He-Ne

d) Semiconductor laser

18. The lifetime of meta-stable state in a Ruby laser is _____

   a) 10^{-8}s

   b) 10^{-6}s

   c) 10^{-3}s

   d) 10^{-2}s

19. The pumping mechanism used in Ruby rod is _____

   a) Optical Pumping

   b) Electrical Excitation

   c) Chemical pumping

   d) Thermal pumping

20. Which material is used for cooling of the ruby rod for efficient continuous operation?

   a) CFC

   b) Liquid helium

   c) Liquid oxygen

   d) Liquid Nitrogen

21. The laser beam is emitted in the form of _____

   a) Fluctuating radiations

   b) Continuous spectrum

   c) Pulsed output

   d) Exponentially decreasing intensity

22. What is the wavelength of the emitted laser in a Ruby laser?

   a) 694 nm

   b) 650 nm

   c) 780 nm

   d) 754 nm

23. What is the wavelength of the emitted laser by a carbon dioxide?

   a) 9.4 μm

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b) 10.6 μm

c) 11.4 μm

d) 12.5 μm

24. Which of the following is a characteristic of semiconductor lasers?

   a) Output in Visible region

   b) High Efficiency

   c) Output in UV region

   d) Pulsed output

25. The transfer of heat between two bodies in direct contact is called

   a) radiation

   b) convection

   c) conduction

   d) no of these

26. Heat flow into a system is taken to be ____, and heat flow out of the system is taken as ____

   a) positive,positive

   b) negative,negative

   c) negative,positive

   d) positive, negative

27. In the equation, dQ=TdX

   a) dQ is an inexact differential

   b) dX is an exact differential

   c) X is an extensive property

   d) all of the mentione

28.The transfer of heat between a wall and a fluid system in motion is called –

   a) radiation

   b) convection

   c) conduction

   d) none of the mentioned

29. For solids and liquids, specific heat –

   a) depends on the process

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b) is independent of the process

c) may or may not depend on the process

d) none of the mentioned

30. Heat and work are –

a) path functions

b) inexact differentials

c) depend upon the path followed

d) all of the mentioned