Paper Code - 3618

B.Sc.B.Ed. Semester-III

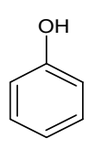
July - Sept -2021

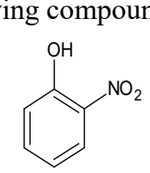
Chemistry (Theory)

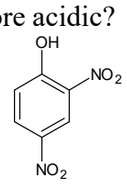
કુલ સમય :– ૬૦ મીનીટ કુલ પ્રશ્નો : ૫૦ વિદ્યાર્થીએ ટીક કરવાના પ્રશ્નો : ૩૫

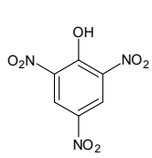
નોંધ : વિદ્યાર્થીએ માત્ર ૩૫ પ્રશ્નો જ ટીક કરવાના રહેશે. જો વધારે ટીક કરેલ હશે તો પ્રથમ ૩૫ પ્રશ્નો જ ગણતરીમાં લેવામાં આવશે.

1. What theoretical concepts are introduced in wave mechanics?
   A. Of absorption and emission **B.** Accelerated motion
   C. Of Lewis **D.** Of Newton
2. What radiation is emitted from human body?
   A. UV **B.** IR **C.** Thermal IR **D.** X-Ray
3. Radiation emitted from black matter does not depend on .....
   A. Surface area **B.** Given energy
   C. The nature of matter **D.** Vibrations of particles in the system
4. In which photo-electric effect does the energy of light not depend?
   A. It's intensity **B.** It's frequency **C.** It's origin **D.** Wave theory
5. Which formula is correct for the refractive energy of an electron?
   A. $\sqrt{p^2c^2} + \sqrt{m_0^2c^4}$ **B.** $\sqrt{pc^2} + \sqrt{m_0^2c^4}$
   C. $\sqrt{p^2c^2 + (m_0c^2)^2}$ **D.** $pc + \sqrt{m_0^2c^4}$
6. If Aˆ= f (x), Bˆ= 3x ^ 3, f (x) = sinx, then what is the commuter operator of Aˆand B?
   A. $6x\ [f(x)]$ **B.** $9x^2\ Sinx$ **C.** $6x^2\ [f(x)]$ **D.** $6x^2\ [f(x)]$
7. What are the conditions for acceptable wave theory?
   A. Should be constant **B.** Its value should be limited
   C. Any one value should have its value one **D.** All given here
8. What is the cause of linear velocity?
   A. $\frac{h}{2\pi\, i} \cdot \frac{d}{dx}$ **B.** $\frac{h}{2\pi\, i}$ r ∇ **C.** $\frac{i\, h}{2\pi\, r}\nabla$ **D.** $\frac{-h^2}{8\pi^2 a^2}\nabla^2$
9. Contains radiation emitted from a solid at low temperature.....
   A. Low wavelength **B.** Higher version **C.** High wavelength **D.** High vibrations
10. Newoton's law of motion lay the foundation for the basic principle of which mechanics?
    A. Modern **B.** Classical **C.** Both **D.** None of these
11. On which microscopic particle(s) classical mechanics cannot be applied?
    A. Modern Electron **B.** Classical Proton **C.** Both Neutron **D.** All of these
12. Which scientist introduced the mathematical concept of wave mechanics in 1926?
    A. Erwin Schrondinger **B.** Max Plank **C.** Werner Heisenberg **D.** Isac Neuton
13. Which metal has the lowest ionisation potential?
    A. Sodium(Na) **B.** Cesium(Cs) **C.** Francium(Fr) **D.** Cobalt (Co)
14. Compton effect is explained by the scattering of which radiation?
    A. X-rays **B.** Rays in the game
    C. Cross-blood rays
    D. Over-the-top rays Compton effect is explained by the scattering of which radiation?
15. What is the factor for angular velocity?
    A. h / 2πiΔ **B.** h / 2πi rΔ **C.** ih / 2πrΔ **D.** h2 / 8π2a2.Δ2
16. Which noun is used to denote a factor?
    A. _ (desh) size **B.** ^ (overhead) **C.** Both of these **D.** None of this
17. What is the most common motion of a particle?
    A. Linear **B.** Rotational **C.** Vibrtional **D.** None of this
18. Which of the following compounds is Lewis acid?
    A. CH_3COOH **B.** H_3PO_4 **C.** HCl **D.** BF_3
19. Which of the following compounds is more acidic?

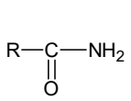
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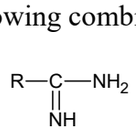
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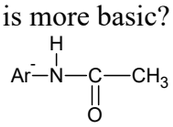
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(4) 

20. Which of the following combination is more basic?

(1) 

(2) 

(3) 

(4) : NH_3

21. Give the ascending correct order of acidity based on hybridization.
    A. $sp^2 > sp > sp^3$ **B.** $sp^3 > sp > sp^2$ **C.** $sp^3 > sp^2 < sp$ **D.** $sp > sp^2 > sp^3$
22. Why is phenol more acidic than methanol?
    A. The stability of phenoxide ions is higher. **B.** Vibration is found in phenoxide ions.
    C. O-H closure is dissociated in phenols. **D.** All given
23. Why is N, N-dimethyl aniline weaker bases than N, N-dimethyl ortho toluidine?
    A. Hydrogen H-Bond **B.** Inductive effect **C.** Steric hindrance **D.** Mesomeric effect

24. Why is the acidity of malic acid less than that of fumaric acid?
A. Intramolecular H-Bond **B.** Vanderwaal attractions
C. Intermolecular hydrogen shutdown **D.** All given

25. Give conjugate acid of NH_3 bases.
A. ^{-}OH **B.** $^{+}NH_4$ **C.** $^{-}NH_2$ **D.** ^{-}NH

26. The pKa values of HF, HCl, HBr and HI are 3.5, -7, -8, -9 respectively. What is the strongest acid key?
A. HF **B.** HCl **C.** HI **D.** HBr

27. The lower the pH of the solution, the more _____.
A. Acidic **B.** Basic **C.** Neutral **D.** None of this

28. Which of the following compounds is more acidic?
A. CH_3COOH **B.** CF_3COOH **C.** CHF_2COOH **D.** CH_2FCOOH

29. Which of the following combination is more basic?
A. : NH_3 **B.** CH_3NH_2 **C.** $CH_3CH_2NH_2$ **D.** $(CH_3)_3N$:

30. CH_3 -, - NH_2, -OH, -F Which of the negative ions has the highest stability?
A. NH_2- **B.** OH- **C.** F- **D.** -CH_3

31. The relative strength of organic acids and bases can be compared on the basis of _____?
A. pH **B.** pOH **C.** pKa **D.** None of this

32. Tri-methyl amine, pyridine, methyl cyanide in ascending order of acidity.
A. Tri methyl amine < Pyridine < methyl cyanide
B. Tri methyl amine < Methyl cyanide < pyridine
C. Pyridine < Tri methyl amine < methyl cyanide
D. None of this

33. According to bronsted, what is the symmetrical base of strong acid?
A. Strong acid **B.** Strong Base **C.** Weak acid **D.** Weak Base

34. Alcohol, phenol, carboxylic acids arrange the ascending order of acidity.
A. Phenol > carboxylic acid > alcohol **B.** Alcohol > Phenol > carboxylic acid
C. Carboxylic acid > alcohol > phenol **D.** Carboxylic acid > phenol > alcohol

35. According to Trout's law, the value of ΔHv / Tb is ____ calories / mol. Degree?
A. 21 **B.** 42 **C.** 63 **D.** 84

36. When the system reaches to the equilibrium?
A. ΔG has a lower value **B.** ΔS has a lower value
C. ΔG has a zero value **D.** ΔE has a lower value

37. The melting point of a solid is 27 અને and its latent heat is 600 cal. mol^{-1}. So the entropy change for the melting of this 1 mol solid is ____ cal. / Will Kelvin be?
A. 180 **B.** 22.2 **C.** 2 **D.** 0.5

38. Which scientist introduced the concept of fugacity?
A. Davis **B.** Lewis **C.** Newton **D.** Planck

39. What is the value of C for a liquid with a low boiling point in the Kraft equation Δt = C × T_b × ΔP.
A. 0.00014 **B.** 0.00012 **C.** 00.0010 **D.** None of above

40. What is the value of dehumidification for water? Melting secret heat 80 calories / g.
A. 1.083 **B.** 1.903 **C.** 18.03 **D.** 1.803

41. Suitable for ice .....
A. $\frac{dT}{dp} = +ve$ **B.** $\frac{dT}{dp} = -ve$ **C.** $\frac{dV}{dp} < 0$ **D.** $\frac{dV}{dp} > 0$

42. According to the Kirchoff equation $\left[\frac{\partial G}{\partial T}\right]_{P,n_1,n_2} =$ _____
A. V **B.** A **C.** E **D.** S

43. One calorie is exactly how many liters of atmosphere?
A. 0.04128 **B.** 0.04129 **C.** 41.28 **D.** 41.29

44. When the liquid and solid form coexist, what is the temperature called liquid?
A. Boiling point **B.** Temperature **C.** Freezing point **D.** Pressure

45. By what symbol is partial molar entropy represented?
A. $\overline{H_l}$ **B.** $\overline{G_l}$ **C.** $\overline{E_l}$ **D.** $\overline{S_l}$

46. Which of the following is a craft equation?
A. $\frac{dP}{dT} = \frac{Lv}{RT^2}$ **B.** $\frac{dP}{dT} = \frac{Lv}{VT^2}$ **C.** $\frac{dP}{dT} = \frac{Lv}{RT}$ **D.** $\frac{dP}{dT} = \frac{Lv}{PT^2}$

47. Which of the following is a clopiron equation?
A. $\frac{dP}{dT} = \frac{\Delta H}{T\Delta V}$ **B.** $\frac{dP}{dT} = \frac{\Delta H}{T\Delta P}$ **C.** $\frac{dP}{dT} = \frac{\Delta H}{RT}$ **D.** $\frac{dP}{dT} = \frac{Lv}{PT^2}$

48. Clapiron equation is useful for which system?
A. For two phases in the equilibrium of the same substance
B. For two phases in the equilibrium of two different objects
C. For two phases not in equilibrium of the same substance
D. For two phases that are not in equilibrium of two different objects

49. What is the molar free power of both the phases when two phases of the same component are in equilibrium at a given temperature and pressure?
A. Different **B.** Busy **C.** Same **D.** None of this

50. 1 Kelvin = ... Celsius
A. -273.15^{0}C **B.** -272.15^{0}C **C.** 273.15^{0}C **D.** 272.15^{0}C