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LAHORE

Roll No. of Candidate

Name of Candidate

STARS ENTRY TEST SYSTEM-2021
NMDCAT REPEATERS

Test Code: C2 (States of matter)

Time Allowed: 40mins

1. **Which of following is incorrect about Boyle's Law?**
   A) product of pressure & volumealways has a constant value
   B) A straight line is obtained when graph is platted b/w pressure & inverse of volume
   C) volume of given mass of gas is directly proportional to pressure at constant temperature
   D) Isotherm is obtained at constant temperature

2. **If we increase 1^0C of gas having volume 1092 cm^3 at 0^0C, the new volume of gas become:**
   A) double of 1092 cm^3
   B) 1094 cm^3
   C) $\frac{1}{273}$ of 546 cm^3
   D) 1096 cm^3

3. **Ideal gas resemble with non-ideal if:**
   A) a & b are small
   B) a large& b small
   C) both a&b large
   D)a small & b large

4. **At high temperature & low pressure gas become:**
   A) ideal due to presence of attraction
   B) ideal due to absence of attraction
   C) none ideal due to presence of attraction
   D) non ideal due to absence of attraction

5. **All of the following factors do not affect vapour pressure of a liquid EXCEPT:**
   A) Amount of liquid
   B) Volume of liquid
   C) **Size of liquid molecules**
   D) Surface area

6. **Correct order of boiling points of the given liquids is: 2012**
   A) $H_2O > HF > HCl > NH_3$
   B) $HF > H_2O > HCl > NH_3$
   C) **$H_2O > HF > NH_3 > HCl$**
   D) $HF > H_2O > NH_3 > HCl$

7. **The diffusion of gases at absolute zero will be:**
   A) unchanged
   B) slightly decreased
   C) slightly increased
   D) zero

8. **If 1/V is plotted on X-axis and pressure on Y-axis at constant temperature, what should appear?**
   A) hyperbola
   B) parabola
   C) straight line
   D) curve

9. **Which one is the correct value for R?**
   A) $0.0821 cm^3 atm k^{-1} mol^{-1}$
   B) $0.0821 dm^3 torr^{-1} mol^{-1}$
   C) $0.0821 dm^3 atm k^{-1} mol^{-1}$
   D) $0.0821 m^3 atm k^{-1} mol^{-1}$

10. **A straight line parallel to the pressure axis is obtained when a graph is plotted between:**
    A) pressure on x-axis and volume on the y-axis
    B) reciprocal of volume on x-axis and pressure on the y-axis
    C) volume on x-axis and pressure on the y-axis
    D) pressure on x-axis and product of P.V on y-axis

11. **Which one of the following do not correctly represent ideal gas equation?**
    A) $PV = nRT$
    B) $T = nR/PV$
    C) $\frac{P}{RT} = \frac{n}{V}$
    D) $n = PV/RT$

12. **What will be the numerical value of 'R' when its unit is $Nm\ mol^{-1}K^{-1}$?**
    A) 1.987
    B) 8.313
    C) 62400
    D) 0.0821

13. **Which one of the following statement is true about H_2 and O_2 at S.T.P. for their 1 dm^3?**
    A) both have same masses

B) both have same number of molecules and same masses
C) both have same masses but different number of molecules
D) both have same number of molecules but different masses

14. Consider the following statements for gases:
I. Gases do not have a definite volume
II. Gases can diffuse and effuse
III. Gases have the properties of contraction and expansion
IV. Gases do not have a definite shape
Which of the statements is/are correct?
A) I only
B) II only
C) II and III
D) I, II, III and IV

15. **Which one of the following correctly represent kinetic equation?**
A) $PV = \frac{1}{3} m \overline{C}^2$
B) $PV = \frac{1}{3} \overline{C}^2$
C) $PV = \frac{1}{3} mN \overline{C}$
D) $PV = \frac{1}{3} mN \overline{C}^2$

16. **Which one of the following gases show more deviation from ideal behaviour?**
A) CO_2
B) N_2
C) H_2
D) He

17. **If pressure remains constant as what temperature the volume of an ideal gas is double as compared to volume at 0°C:**
A) -273°C
B) 273K
C) 273°C
D) 546°C

18. **Which one is not true for evaporation?**
A) surface phenomenon
B) continuous process
C) exothermic process
D) cause cooling

19. **Which one of the following does not show hydrogen bonding?**
A) water & ethyl alcohol
B) phenol & water
C) chloroform molecules
D) acetone & chloroform

20. **The density of water at 4°C may be:**
A) equal to that of ice
B) less than that of ice
C) greater than that of ice
D) all are possible

21. **Steam causes more severe burn than the boiling water because it possesses:**
A) latent heat of fusion
B) latent heat of sublimation
C) latent heat of vaporization
D) latent heat of freezing

22. **Formation of vapours from the surface of a liquid is called:**
A) vapourization
B) condensation
C) evaporation
D) cracking

23. **When water freezes at 0°C its density decreases due to:**
A) change of bond angles
B) empty space present in the structure of ice
C) cubic structure of ice
D) change of bond length

24. **Vapour pressure is not affected by:**
A) surface area
B) intermolecular forces
C) temperature
D) effected by all parameters

25. **Which one of the following hydride has highest boiling point?**
A) H_2S
B) H_2O
C) H_2Se
D) H_2Te

26. **Which one of the following statement is not true?**
A) B.P of HBr is less than HI
B) B.P of HCl is lesser than HBr
C) B.P of HF is greater than HBr
D) B.P of HCl is greater than HBr, HF

27. **Which type of attractive force is present between acetone and chloroform?**
A) dipole-dipole forces
B) instantaneous dipole induced dipole forces
C) dipole-induced dipole forces
D) hydrogen bonding

28. **What about the solubility of hydrocarbons in H_2O?**
A) Readily soluble
B) insoluble
C) paratially soluble
D) soluble at high temperature

greater than 760 torr
720 torr
C) 700 torr
D) 680 torr

When external pressure is 760 torr, then boiling point of glycerine is:
A) 210°C
B) 260°C
C) 290°C
D) 240°C

In order to mention the boiling point of water at 110°C, the external pressure should be:
A) between 760 torr and 1200 torr
B) between 200 torr and 760 torr
C) 765 torr
D) between 1400 torr to 1600 torr

32. **Evaporation of water is possible at:**
A) 100°C
B) 0°C
C) above 100°C
D) at all temperature

33. **Ethanol is much more soluble in water than is ethyl ethanoate which one of the following statements correctly account for this?**
A) ethanol is polar molecules, but ethyl ethanoate is non-polar
B) ethanol is non-polar molecule but ethyl ehtanoate is polar
C) a hydrogen bond forms, between the H-atom of the –OH group in ethanol and O-atom of a water molecule
D) a hydrogen bond is formed between the H-atom of the –OH group in ethanol and hydrogen of a water molecules

34. **Which one of following intermolecular forces present between both polar and non-polar molecules?**
A) Debye forces
B) London forces
C) ion-dipole forces
D) dipole-dipole forces

35. **Hydrogen bonding is the electrostatic force of attraction between:**
A) highly negative atom and partial positive H-atom
B) highly electropositive atom and a partial negative H-atom
C) highly electronegative atom and a partial positive hydrogen atom
D) highly negative atom and partial positive H-atom

36. **Which of the following pair of molecules has only London dispersion forces?**
A) Ethanol and water molecules
B) Two hydrogen flouride molecules
C) Two propanone molecules
D) Two butane molecules

37. **The six parameters of any unit cell includes:**
A) two unit cell lengths and four unit cells angles
B) four unit cells lengths and tow unit cell angles
C) three unit cell angles and three unit cell lengths
D) five unit cell lengths and one unit cell angle

38. **The high stability of the ionic crystals cannot explain their:**
A) hardness
B) low volatility
C) electrical conductivity
D) high melting and boiling point

39. **Which statement about the electrical conductivity of ionic solids is correct?**
A) they conduct electricity in all states
B) they conduct electricity only in liquid state
C) they conduct electricity only in solid state
D) they conduct electricity both in molten and solution state

40. **58.5 a. m. u. of NaCl is called:**
A) Atomic mass
B) formula mass
C) molecular mass
D) both C and B

41. **The structure of the ionic crystals depends upon:**
A) geometry of the crystal
B) brittleness of the crystal
C) radius ratio of cations ad anions
D) number of faces and corners

42. **In NaCl crystal, the distance between nearest Cl- ions is 5.63°A, so the distance between nearest Na^+ and Cl^{-1} is:**
A) 2.815°A
B) 5.63°A
C) 1.87°A
D) 1.10°A

43. **The number of Cl^- ions present around one Na^+ in NaCl crystal is called:**
A) oxidation number
B) coordination number
C) valence number
D) ion number

44. **NaCl and CsF have the same geometry because:**
A) number of faces and corners in both cases are same

B) both have same melting and boiling points
C) radius ratio in both the cases is the same
D) same number of cations and anions in their crystal

45. **How many faces are present in each cubic unit cell?**
A) four
B) six
C) eight
D) ten

46. **Which one of the following is also called atomic solids?**
A) ionic solids
B) covalent solids
C) molecular solids
D) none of these

47. **Pressure cooker is used:**
A) For safety purpose
B) To increase time for cooking meal
C) To decrease boiling point of water by decreasing external pressure
D) To increase boiling point of water by increasing external pressure

48. **The covalent crystals having giant molecules like diamond and silicon carbide are:**
A) soluble in all the solvents
B) insoluble in all the polar solvents
C) soluble in all the non-polar solvents only
D) insoluble in all the solvents

49. Which of the following exerts the highest pressure.
A) 1 mol of N_2 at 0_oC in 11.2 dm^3
B) 1 mol of N_2 at 27_oC in 22.4 dm^3
C) 1 mol of H_2O at 27_oC in 1 dm^3
D) I mole of C_4H_{10} at its normal boiling poin

50. **Which one of the following pairs contain polar molecular solids?**
A) iodine and sugar
B) carbon dioxide and ice
C) phosphorus and carbon dioxide
D) sugar and ice

51. **Which one the following solids is soft and compressible?**
A) ionic solids
B) covalent solids
C) molecular solids
D) metallic solids

52. **Iodine to iodine bond distance in solid iodine is:**
A) 271.5 pm
B) 246.3 pm
C) 227.4 pm
D) 261.6 pm

53. **Which of the following liquids has higher boiling point?**
A) Acetone
B) Benzene
C) Phenol
D) Ethanol

54. **The SI unit of (a) constant in van der Waal's gas equation for real gases is:**
A) $Nm^{+4}\ mol^{-2}$
B) atm $dm^6\ mol^{+2}$
C) $Nm^{+2}\ mol^{-1}$
D) atm $dm^4\ mol^{-1}$

55. **Which one of the following hydrogen bonds is stronger than others? 2015**
A) $N\delta^-$—$H\delta+$ ..... $N\delta^-$—$H\delta+$ C) $O\delta^-$—$H\delta+$..... $O\delta^-$—$H\delta+$
B) $F\delta^-$—$H\delta+$ ..... $F\delta^-$—$H\delta+$ D) $N\delta^-$—$H\delta+$ ..... $O\delta^-$—$H\delta+$

56. **Gas is enclosed in a container of 20cm^3 with the moving piston. According to kinetic theory of gases, what will be the effect on freely moving molecules of the gas if temperature is increased from 20_oC to 100_oC?**
A) Pressure will become one half
B) Volume will increase
C) Temperature has no effect on freely moving molecules
D) Colliding capability of molecules will decrease

57. When large amount of heat is supplied to water in a beaker at constant 1atm. Pressure then.
A) Boiling point of water decreases
B) Boiling point of water increases
C) Boiling point of water remains constant
D) Boiling point of water first increases then decreases

58. **Which one of the following does not have hydrogen bonding?**
A) Biological compounds
B) Paints and dyes
C) Food materials
D) Dry ice

59. **When water freezes at 0°C its density decreases due to:**

...ange of bond angles
...empty space present in the structure of ice
C) cubic structure of ice
D) change of bond length

...ne **boiling point increase down the zero group elements due to:**
A) ion dipole forces
B) London forces
C) hydrogen bonding
D) dipole-dipole forces