

JIPMER-02-06-2019-Morning

Chemistry

- $^{19}\text{F}^{-1}$, $^{16}\text{O}^{-2}$, ^{20}Ne choose the correct statement
 - Both O^{-2} and F^{-} are isoelectronic.
 - All given have equal no of e^{-}
 - F^{-} and Ne have equal number of e^{-}
 - All
- Hund's Rule state that:
 - Number of two e^{-} can be in two separate orbitals
 - Number of two e^{-} can be present with similar spin in a orbital.
 - No one e^{-} can exist in 'd' orbital
 - None of these
- If two atoms have equal number of electron it is called:
 - Iso-electronic
 - isotone
 - isobar
 - None of these

4. In an ideal gas equation which is constant:

- (1) Temperature
- (2) Pressure
- (3) Volume
- (4) Universal gas constant

5. Formula of half-life of a zero order reaction is:

- (1) $\frac{C_0}{K}$
- (2) $\frac{C_0}{2K}$
- (3) $\frac{2C_0}{K}$
- (4) $\frac{2C_0}{2K}$

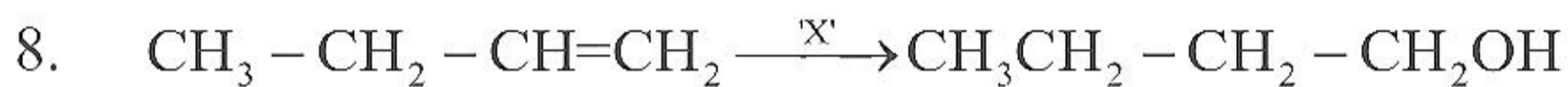
6. What is the value of γ for a monoatomic gas (ideal gas):

- (1) $\frac{7}{5}$
- (2) $\frac{4}{3}$

- (3) $\frac{5}{2}$
 (4) None

7. What is the oxidation number of Cr in $\text{Na}_2\text{Cr}_2\text{O}_7$:

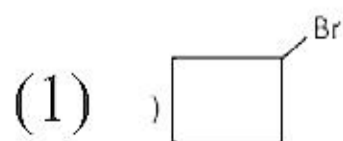
- (1) 2
 (2) 6
 (3) 10
 (4) 16



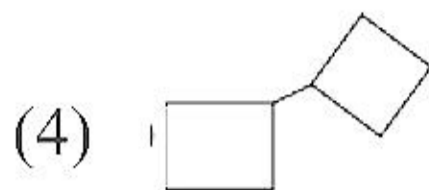
What is suitable reagent 'X' is?

- (1) $\text{H}_2|\text{Pt}$
 (2) $\text{B}_2\text{H}_6|\text{THF}, \text{H}_2\text{O}_2|\text{OH}^-$
 (3) $\text{Br}_2|\text{HCl}$
 (4) $\text{HBr}|\text{H}_2\text{O}_2$

9. If react with Cl_2 in presence of light and then react with Na metal in dry ether, final product is



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10. In which of the following oxidation state of phosphorous is +3?

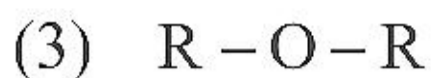
- (1) Orthophosphoric acid
- (2) Pyrophosphoric acid
- (3) Orthophosphorous acid
- (4) Meta phosphoric acid

11. Which of the following amino acid optically inactive:

- (1) Glycine
- (2) Valine
- (3) Alanine
- (4) Histidine

12. Which of the following can form H-bond?

- (1) NH_3
- (2) R-CN



13. $CH_3 - CH_2 - CH_2 - Br \xrightarrow{\text{alc. KOH}}$ Final product is:

(1) Propene

(2) Propanol

(3) Cyclopropane

(4) propane-1, 2-diol

14. Which cannot behave as a Nucleophile for SN^2 reaction:

(1) H_2O

(2) CN^-

(3) NH_2^-

(4) I^-

15. Which of the following is epimeric pair?

(1) Glucose + Fructose

(2) Fructose and Mannose

(3) Glucose and Mannose

(4) Glucose and Sucrose

16. What is the hybridization of 'O' in H_2O .

- (1) sp
- (2) sp^3
- (3) sp^2
- (4) No hybridisation

17. $CH_2 = CH - CHO \xrightarrow{?} CH_2 = CH - CH_2 - OH$

Suitable reagent for conversion of following reaction?

- (1) $NaBH_4$
- (2) Ni/H_2
- (3) $Zn/Hg/HCl$
- (4) Red P+HI

18. Moles of $N_2 = 0.4$ and moles of $O_2 = 0.1$ find P_{N_2} (Partial pressure) $N_2 = ?$ at atmospheric pressure

- (1) 0.2 atm
- (2) 0.8 atm
- (3) 0.6 atm
- (4) 0.4 atm

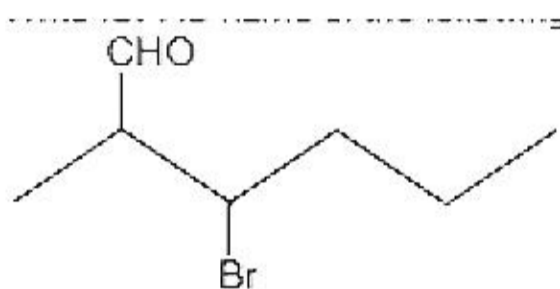
19. If half-life of a substance is 36 minutes. Find amount left after 2 hrs. Initial amount is 10gm?

- (1) 1 gm
- (2) 2 gm
- (3) 3 gm
- (4) 4 gm

20. Most common isotopes of hydrogen (Non radioactive)

- (1) Protium
- (2) Deuterium
- (3) Tritium
- (4) All

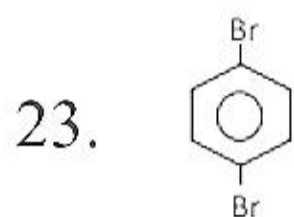
21. Write IUPAC name of the following



- (1) 2-Bromo-2-ethyl, hexanal
- (2) 3-Bromo-2-methyl hexanal
- (3) 2-Methyl-3-Bromo hexanal
- (4) 3-Bromo-2-formyl hexane.

22. Which of the following statement correct for isotope of carbon

- (1) graphite is conductor of electricity
- (2) diamond have all sp^3 carbon
- (3) graphite is more stable thermodynamically than diamond
- (4) All are correct



Write the IUPAC name of given structure

- (1) Para Bromo Benzene
- (2) 1,4-di bromo benzene
- (3) Both (1) and (2) are correct
- (4) Meta bromo benzene

24. Bordeaux mixture consists of?

- (1) $CuSO_4 + Ca(OH)_2$
- (2) $CuSO_4 + CaCl_2$
- (3) $ZnSO_4 + Mg(OH)_2$
- (4) $FeSO_4 + Ba(OH)_2$

25. BrO_3^- Changes into Br_2 in an acidic medium of a unbalanced equation how many electron should be present on the balanced electron.

- (1) 10 electron in left
- (2) 6 electron in left
- (3) 6 electron in left
- (4) 3 electron in right

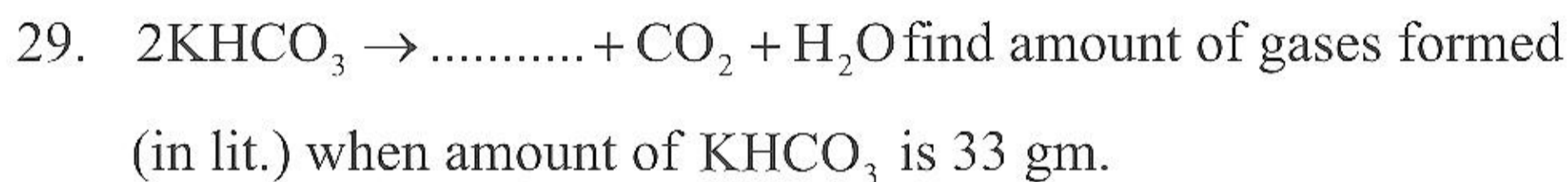
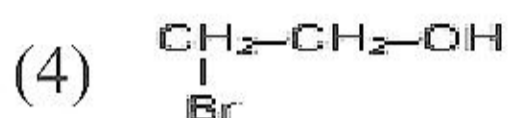
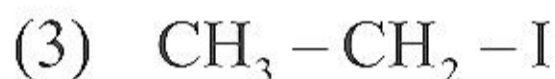
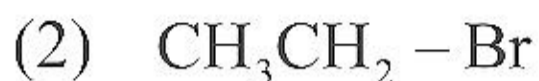
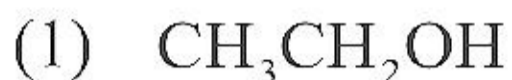
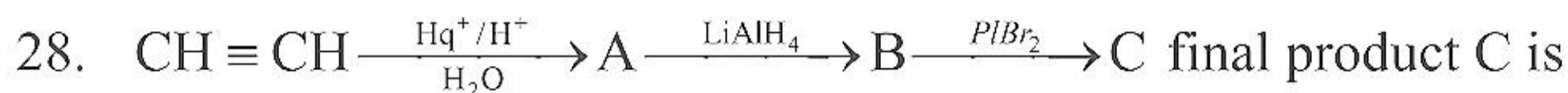
26. Glucose \xrightarrow{HCN} X $\xrightarrow{\text{Hydrolysis}}$ Y $\xrightarrow{\text{RedP+HI}}$ Z IUPAC name of 'Y' and 'Z'

- (1) Hexa hydroxyl heptanoic acid, heptane
- (2) Hepta hydroxyl hexanoic acid, hexane
- (3) Penta hydroxyl hexanoic acid, hexane
- (4) Hepta hydroxyl hexanoic acid, heptane

27. Azimuthal quantum number (l) defined

- (1) Shape of orbitals
- (2) Orientation of orbitals
- (3) Energy of orbitals

(4) Size of orbitals



1) 5.6

2) 11.2

3) 7.46

4) 22.4

30. Frenkel defect is present in which of the following:

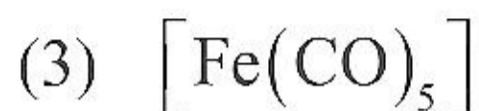
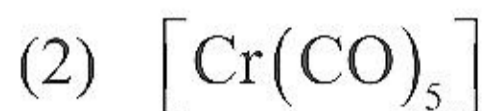
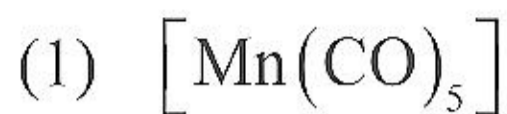
(1) NaOH

(2) NaI

(3) AgBr

(4) None

31. Which one follow 18 electron octet rule:



(4) None

32. How many ions obtain after dissociation of this complex



(1) 3

(2) 2

(3) 5

(4) 4

33. Which one of the following is a mineral of iron?

(1) Malachite

(2) Cassiterite

(3) Pyrolusite

(4) Magnetite

34. Which of the following is an example of thermosetting polymer?

- (1) Polyethene
- (2) PVC
- (3) Neoprene
- (4) Bakelite

35. Which of the following ions is coloured?

- (1) Cu^+
- (2) Cu^{2+}
- (3) Ti^{4+}
- (4) V^{5+}

36. E° for the cell,

$\text{Zn}|\text{Zn}^{2+}(\text{aq})||\text{Cu}^{2+}(\text{aq})|\text{Cu}(\text{s})$ is 1.01 V at 25 °C. The

equilibrium constant for the cell reaction

$\text{Zn} + \text{Cu}^{2+}(\text{aq}) \rightleftharpoons \text{Cu} + \text{Zn}^{2+}(\text{aq})$ is of the order of

- (1) 10^{-37}
- (2) 10^{37}
- (3) 10^{-17}
- (4) 10^{17}

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37. The unit of equivalent conductivity is

- (1) ohm cm
- (2) $\text{ohm}^{-1} \text{cm}^2 (\text{g equivalent})^{-1}$
- (3) $\text{ohm cm}^2 (\text{g equivalent})$
- (4) S cm^{-2}

38. Reagent used to convert allyl alcohol to acrolein is

- (1) MnO_2
- (2) H_2O_2
- (3) OsO_4
- (4) KMnO_4

39. In the reaction $\text{C}_6\text{H}_5\text{NH}_2 + \text{CS}_2 \xrightarrow[\Delta]{\text{HgCl}_2}$ the product obtained is

- (1) phenyl isocyanide
- (2) phenyl cyanide
- (3) *p*-amino benzene sulphonic acid
- (4) phenyl isothiocyanate

40. Which of the following alkaline earth metal hydroxides is amphoteric in character?
- (1) $\text{Be}(\text{OH})_2$
 - (2) $\text{Ca}(\text{OH})_2$
 - (3) $\text{Sr}(\text{OH})_2$
 - (4) $\text{Ba}(\text{OH})_2$
41. When electric current is passed through an ionic hydride in molten state :
- (1) hydrogen is liberated at anode
 - (2) hydrogen is liberated at cathode
 - (3) hydride ion migrates towards cathode
 - (4) hydride ion remains in solution
42. When two ice cubes are pressed over each other, they unite to form one cube. Which of the following forces is responsible to hold them together?
- (1) Hydrogen bond formation
 - (2) van der Waals force
 - (3) Covalent attraction

(4) Ionic interaction

43. When Sn^{2+} changes to Sn^{4+} in a reaction

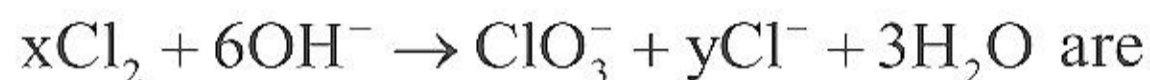
(1) It loses two electrons

(2) It gains two electrons

(3) It loses two protons

(4) It gains two protons

44. The values of x and y in the following redox reaction.



(1) $x = 2, y = 4$

(2) $x = 5, y = 3$

(3) $x = 3, y = 5$

(4) $x = 4, y = 2$

45. Which of the following mixtures of gases does not obey

Dalton's law of partial pressure ?

(1) O_2 and CO_2

(2) N_2 and O_2

(3) Cl_2 and O_2

(4) NH_3 and HCl

46. In compound A, 1.00g of nitrogen unites with 0.57g of oxygen. In compound B, 2.00g of nitrogen combines with 2.24g of oxygen. In compound C, 3.00g of nitrogen combines with 5.11g of oxygen. These results obey the following law

- (1) law of constant proportion
- (2) law of multiple proportion
- (3) law of reciprocal proportion
- (4) Dalton's law of partial pressure

47. How many moles of KI are required to produce 0.4 moles of K_2HgI_4 ?

- (1) 0.4
- (2) 0.8
- (3) 3.2
- (4) 1.6

48. What is DDT among the following ?

- (1) Greenhouse gas
- (2) A fertilizer

- (3) Biodegradable pollutant
- (4) Non-biodegradable pollutant

49. Which of the following colligative properties can provide molar mass of proteins (or polymers or colloids) with greatest precision ?

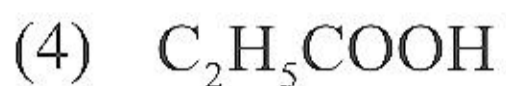
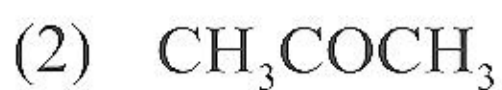
- (1) Depression in freezing point
- (2) Osmotic pressure
- (3) Relative lowering of vapour pressure
- (4) Elevation of boiling point

50. During adsorption

- (1) $T\Delta S$ is positive
- (2) $\Delta H - T\Delta S$ is negative
- (3) ΔH is positive
- (4) $T\Delta S$ and ΔG become zero

51. Which of the following will give red precipitate when reacted with complexes formed by copper sulphate and sodium tartarate ?

- (1) CH_3CHO



52. Which of the following is a bactericidal antibiotic ?

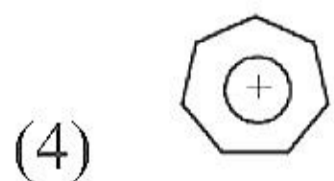
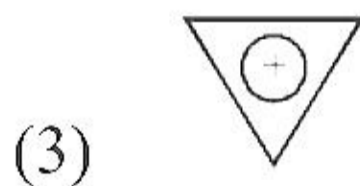
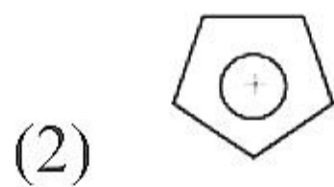
(1) Ofloxacin

(2) Tetracycline

(3) Chloramphenicol

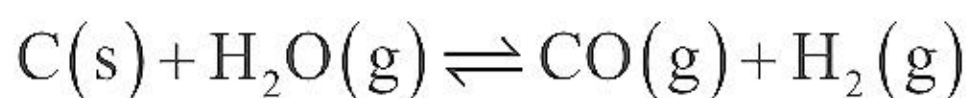
(4) Erythromycin

53. Which of the following is anti aromatic compound ?



54. In what manner will increase of pressure affect the following equation ?

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- (1) Shift in the forward direction
- (2) Shift in the reverse direction
- (3) Increase in the yield of hydrogen
- (4) No effect

55. Which of the following alkyl halides is used as a methylating agent?

- (1) $\text{C}_2\text{H}_5\text{Br}$
- (2) $\text{C}_6\text{H}_5\text{Cl}$
- (3) CH_3I
- (4) $\text{C}_2\text{H}_5\text{Cl}$

56. The radius of a calcium ion is 94 pm and of the oxide ion is 146 pm. The possible crystal structure of calcium oxide will be

- (1) tetrahedral
- (2) trigonal
- (3) octahedral
- (4) pyramidal

57. What is order with respect to A, B, C, respectively

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[A]	[B]	[C]	rate (M/sec.)
0.2	0.1	0.02	8.08×10^{-3}
0.1	0.2	0.02	2.01×10^{-3}
0.1	1.8	0.18	6.03×10^{-3}
0.2	0.1	0.08	6.464×10^{-2}

- (1) $-1, 1, 3/2$
 (2) $-1, 1, 1/2$
 (3) $1, 3/2, -1$
 (4) $1, -1, 3/2$

58. Surface tension of lyophilic sols is

- (1) lower than that of H_2O
 (2) more than that of H_2O
 (3) equal to that of H_2O
 (4) can either lower or more than H_2O

59. When 1M H_2SO_4 is completely neutralised by sodium hydroxide, the heat liberated is 114.64 kJ. What is the enthalpy of neutralisation ?

- (1) +114.64 kJ
 (2) -114.64 kJ

(3) -57.32 kJ

(4) $+57.32 \text{ kJ}$

60. Which of the following halides undergoes S_N1 reaction at the fastest rate ?

