doubtnut
India's Number 1 Education App

CHEMISTRY

PHYSICAL, INORGANIC, AND ORGANIC CHEMISTRY

DPP

Questions

1. 1 mole by definition represents same number of particles as

A. Number of atoms present in exactly 8 g of ${}_{8}^{16}O$ isotope.

B. Number of molecules in exactly 2 g of H_2 gas

C. Number of atoms present in exactly 16 g of ${}_{8}^{16}O$ isotope

D. Number of atoms present in exactly 12 g of ${}_{6}^{12}C$ isotope

Answer:

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2. The weight of a molecule of the compound $C_6H_{12}O_6$ is about :

A. 180

B. 3×10^{-22} g

C. 22×10^{-23} g

D. 132 g

Answer:

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3. The mass of half mole of electrons is about (Given: Mass of electron $= 9.1 \times 10^{-28}$ g)

A. 0 546 mg

B. 0.273 mg

C. 1.092 mg

D. 4.55 mg

Answer:

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4. 39.4 kg of gold was recovered from a smuggler. The number of atoms of gold recovered are :

A. 200

B. 1.2044×10^{25}

C. 6.022×10^{25}

D. 1.2044×10^{26}

Answer:

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5. The charge on 1 gram ions of AI^{3+} is .

(a). $\frac{1}{27}N_Ae$ coulomb

(b). $\frac{1}{3}N_Ae$ coulomb

(c). $\frac{1}{9}N_Ae$ coulomb

(d). $3 \times N_Ae$ coulomb

A. $\frac{1}{27}N_A$ e coulomb

B. $\frac{1}{3}N_A$ e coulomb

C. $\frac{1}{9}N_A$ e coulomb

D. $3N_A$ e coulomb

Answer:

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6. Calculate the number of atoms in 0.5 mole atoms of nitrogen.

A. 24 g of Mg

B. 8 g of Oxygen gas

C. 32 g of S

D. 12 g of C

Answer:

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7. In which of the following pairs do 1 g of each have an equal number of molecules .

A. N_2O and CO

B. N_2 and CO

C. N_2O and CO_2

D. Both (B) and (C)

Answer:

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8. The number of atoms in 4.25 g of NH_3 is approximately

A. 1×10^{23}

B. 2×10^{23}

C. 4×10^{23}

D. 6×10^{23}

Answer:

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9. Total number of neutrons present in 4g of heavy water (D_2O) is :

(Where N_A represetns Avogadro's number)

A. $2.4N_A$

B. $4N_A$

C. $1.2N_A$

D. $2N_A$

Answer:

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10. The atomic weight for a triatomic gas is a. The correct formula for the number of moles of gas in its w g is:

A. $\frac{3\mathrm{w}}{a}$

B. $\frac{w}{3\mathrm{a}}$

C. $3wa$

D. $\frac{a}{3\mathrm{w}}$

Answer:

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11. 124 g of P_4 will contain which of the following :

(1) 4 atoms of Phosphorus

(2)$4N_A$ atoms of Phosphorus

(3) N_A molecules of Phosphorus

(4) 1 molecule of Phosphorus

A. 1 and 4

B. 2 and 3

C. 1 and 3

D. 2 and 4

Answer:

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12. Among the following samples, select the sample which contains maximum number of atoms.

A. 4 g of oxygen

B. 32 g of sulphur

C. 108 g of silver

D. 2 g atoms of nitrogen

Answer:

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13. A gaseous mixture contains oxygen and nitrogen in the ratio of $1:4$ by weight therefore the ratio of their number of molecules is

A. $1:2$

B. $1:4$

C. $2:1$

D. $4:1$

Answer:

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14. Sulphur exist in different allotropic forms like S_2, S_6 and S_8 etc. If equal moles of these three forms are taken in separate containers, then the ratio of number of atoms present in them respectively is :

A. $1:3:4$

B. $1:1:1$

C. $12:4:3$

D. $4:3:1$

Answer:

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15. The one which has least mass, is

A. 2 gram atom of Nitrogen

B. 3×10^{23} atoms of carbon

C. 1 mole of Sulphur atoms

D. 7 g of silver

Answer:

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16. Which of the following contains the greatest number of atoms?

A. 1 g of butane (C_4H_{10})

B. 1 g of nitrogen (N_2)

C. 1 g of silver (Ag)

D. 1 g of water (H_2O)

Answer:

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17. Cinnabar (HgS) is a prominent ore of mercury. How many grams of mercury are present in 225g of pure HgS? Molar mass of Hg and S are 200.6 g mol^{-1} and $32gmol^{-1}$ respectively.

A. 200g

B. 400 g

C. 160 g

D. None of these

Answer:

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18. An element is found in nature in two isotopic forms with mass numbers (A-1) and (A+3). If the average atomic mass of the element is found to be A, then the relative abundance of the heavier isotope in the nature will be :

A. $66.6\ \%$

B. $75\ \%$

C. $25\ \%$

D. $33.3\ \%$

Answer:

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19. What is the ratio of weights of O_2 and SO_2, the mixture of which contains equal number of molecules of each gas?

A. $1:8$

B. $8:1$

C. $1:2$

D. $2:1$

Answer:

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20. 360 amu of Glucose $(C_6H_{12}O_6)$ contains :

A. 2 moles of glucose molecules

B. 24 hydrogen atoms

C. 12 moles of carbon atoms

D. 2 glucose molecules

Answer:

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21. If 42 g of an unknown gas X occupies a volume of 125 L at 0.3 bar pressure and 300 K temperature then the gas X could be :

A. N_2

B. CO_2

C. CO

D. NO_2

Answer:

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22. Consider a sample containing $(NH_4)_2Cr_2O_7$

Mass of nitrogen present in sample if mass of oxygen present is 11.2 g

A. 1.4 g

B. 2.8 g

C. 28 g

D. 14 g

Answer:

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23. Calculate mass of carbon in 0.01 mole of $K_4\left[Fe(CN)_6\right]$ Report your answer after dividing by 0.08

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24. Find the number of g-molecules of oxygen in $6.023 \times 10^{24} CO$ molecules.

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25. A gaseous mixture contains $SO_3(g)$ and $C_2H_6(g)$ in a 16:15 ratio by mass. The ratio of total number of atoms present in $C_2H_6(g)$ and $SO_3(g)$ is:

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26. A gaseous mixture is composed of equal number of moles of CH_4, C_2H_6 and C_2H_2. Determine the average molecular mass of mixture (in amu)

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27. Which is not true with respect to cathode rays :

A. Cathode rays consist of fast moving electrons

B. For production of Cathode rays in a discharge tube the gas filled should be at a low pressure

C. For production of Cathode rays in a discharge tube, the voltage applied across the electrodes should be high

D. None of these

Answer:

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28. Select the correct statement

A. Cathode rays have charge only, no mass

B. Cathode move with same speed as that of light

C. The magnitude of e/m ratio for Cathode rays is 1.76×10^{11} C/g

D. Cathode rays are deflected by electric and magnetic field

Answer:

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29. The e/m ratio for cathode rays:

A. varies with the element forming the cathode in the discharge tube

B. varies with the gas in the discharge tube

C. is constant

D. has the smallest value when the discharge tube is filled with hydrogen

Answer:

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30. Select the correct statement(s)

A. Anode rays have charge as well as mass.

B. Anode rays are deflected by electric and magnetic field

C. Anode rays are also known as Positive rays or Canal rays

D. All of these

Answer:

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31. The e/m ratio for Anode rays

A. varies with the element forming the anode in the discharge tube

B. varies with the gas in the discharge tube

C. is constant

D. Both (A) & (B)

Answer:

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32. The highest value of e/m of anode rays has been observed when the discharge tube is filled with:

A. nitrogen

B. oxygen

C. hydrogen

D. helium

Answer:

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33. Which of the following shows an increasing value of e/m?

A. $n < \alpha < p < e$

B. $e < p < \alpha < n$

C. $n < p < e < \alpha$

D. $n < p < \alpha < e$

Answer:

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34. The ratio of the e/m values of a proton and an α-particle is:

A. $2:1$

B. $1:1$

C. $1:2$

D. $1:4$

Answer:

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35. Which has highest specific charge?

A. Na^{+} (mass no. =23)

B. Mg^{+2} (mass no. =24)

C. Al^{+3} (mass no. =27)

D. Si^{+4} (mass no. =28)

Answer:

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36. Rutherford's scattering experiment, which established the nuclear model of the atom, used a beam of

A. β-particles, which impinged on a metal foil & got absorbed

B. γ-rays, which impinged on a metal foil & ejected electrons

C. helium atoms, which impinged on a metal foil & got scattered

D. helium nuclei, which impinged on a metal foil & got scattered

Answer:

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37. The mass of an electron in amu is

A. 5.48×10^{-3} amu

B. 9.109×10^{-28} amu

C. 5.48×10^{-4} amu

D. 9.109×10^{-31} amu

Answer:

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38. How many moles of protons will have total charge equal to about 4825 coulombs

A. 0.02 mole

B. 0.5 mole

C. 0.05 mole

D. 0.2 mole

Answer:

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39. Which of the following samples does not contain a total of 1.8066×10^{24} atoms

A. 0.375 mole of S_8

B. 45 g of NO

C. 24 g of Oxygen

D. 0.5 gram molecule of ethene (C_2H_4)

Answer:

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40. Total number of H_2 molecules that can be obtained from all hydrogen atoms of 10 formula units of CH_3COONH_4 is :

A. 35 N_A

B. 140

C. 140 N_A

D. 35

Answer:

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41. The number of neutrons present in 7 gm of phosphonium $\left(PH_4^+\right)$ ion is $\left[._{15}^{31}P, ._1^1H\right]$:

A. 8 N_A

B. 3.2 N_A

C. 4 N_A

D. 5 N_A

Answer:

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42. Total number of ions in 17.1 g $Al_2(SO_4)_3$ is $\left[N_A = 6 \times 10^{23}\right]$

A. 1.5×10^{23}

B. 4.5×10^{23}

C. 3×10^{23}

D. 6×10^{22}

Answer:

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43. If 36 grams of ozone gas is replaced by an another unknown gas 'X' keeping all other parameters same and the gas X weighs 24 g. then the unknown gas may be

A. SO_2

B. O_2

C. CH_4

D. None of these

Answer:

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44. The potential energy of the electron present in the ground state of Li^{2+} ion is represented by :

A. $+\frac{3e^2}{4\pi\varepsilon_0 r}$

B. $-\frac{3e}{4\pi e_0 r}$

C. $-\frac{3e^2}{4\pi\varepsilon_0 r^2}$

D. $-\frac{3e^2}{4\pi\varepsilon_0 r}$

Answer:

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45. a-particles are projected towards the following metals,with the same kinetic energy. Towards which metal, the distance of closest approach is minimum?

A. Cu(Z=29)

B. Ag(Z=47)

C. Au(Z=79)

D. Ca(Z=20)

Answer:

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46. Which of the following pairs has different values of e/m:

A. A proton and a neutron

B. A proton and a Deuterium nucleus

C. A Deuterium nucleus and an α-particle

D. An electron and α-particle

Answer:

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47. As an electron (at rest) is brought towards a proton from infinity, its

A. Potential energy increases

B. Potential energy decreases

C. Kinetic energy increases

D. Total energy remains constant

Answer:

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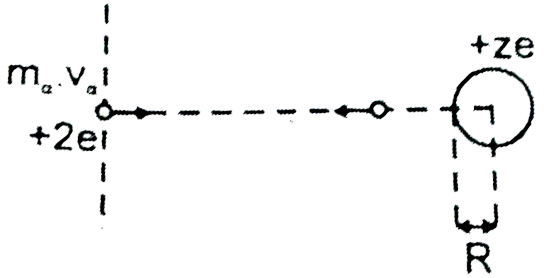
48. Rutherford model: The approximate size of the nucleus can be calculated by using energy conservation theorem in Rutherford's α-scattering experiment. If an α-particle is projected from infinity with speed v towards the nucleus having Z protons, then the α-particle which is reflected back or which is deflected by 180° must have approached closest to the nucleus .It can be approximated that α particle collides with the nucleus and gets back. Now if we apply the energy conservation equation at initial point and collision point then:



$$(\text{Total Energy})_{\text{initial}} = (\text{Total Energy})_{\text{final}}$$
$$(\text{K.E.})_i + (\text{P.E.})_i = (\text{K.E.})_f + (\text{P.E.})_f$$

$(P.\,E.\,)_i = 0$, since P.E. of two charge system separated by infinite distance is zero. Finally the particle stops and then starts coming back.

$$\frac{1}{2}m_\alpha v_\alpha^2 + 0 = 0 + \frac{Kq_1q_2}{R} \Rightarrow \frac{1}{2}m_\alpha v_\alpha^2 = K\frac{2e \times Ze}{R} \Rightarrow R = \frac{4KZe^2}{m_\alpha v_\alpha^2}$$

Thus the radius of nucleus can be calculated using above equation.

The nucleus is so small a particle that we can't define a sharp boundary for it

An α-particle with initial speed v_0 is projected from infinity and it approaches up to r_0 distance from a nuclie. Then, the initial speed of α-particle, which approaches upto $2r_0$ distance from the nucleus is :

A. $\sqrt{2}v_0$

B. $\dfrac{v_0}{\sqrt{2}}$

C. $2v_0$

D. $\frac{v_0}{2}$

Answer:

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49. If the diameter of two different nuclei are in the ratio 2: 1, then calculate the ratio of their mass number

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50. For a broadcasted electromagnetic wave having frequency of 1200 KHz, calculate number of waves that will be formed in 2 km distance

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51. Calculate the ratio of the energy of a photon of wavelength 3000 Å to that of a photon of wavelength 6000Å respectively

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52. What volume (in mL) of liquid H_2O_2 has same number of molecules as there are number of molecules in 22.4 ml $H_2O(g)$ at 2 atm and 546 K. [Given Density of liquid $H_2O_2 = 6.8 \times 10^{-3}$ gm/ml]

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53. If the atomic number (Z) and mass number (A) of an element X are related by the equation A+Z= 46 and the total number of neutrons in one atom of X is 16, then the total number of protons and electrons in one atom of element X='a'. Find value of 'a'

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54. If the frequency of violet radiation is 7.5×10^{14} Hz, then the value of wavenumber in m^{-1} for it is $p \times 10^{5}$. Give the value of p?

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55. A photon of $300nm$ is absorbed by a gas and then re-emits two photons . One re-emitted photon has wavelenght $4967nm$, the wavelength of second re-emitted photon is :

A. 450 nm

B. 800 nm

C. 200 nm

D. 750 nm

Answer:

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56. Identify the correct statement(s)

A. Cathode rays produce heating effect when they collide with a metal object

B. Anode rays consist of fast moving protons

C. For production of Cathode rays in a discharge tube, the gas filled should be at a very high pressure

D. The magnitude of e/m ratio for Cathode rays is 1.76×10^{11} C/Kg

Answer:

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57. In which of the following conditions the de Broglie wavelength of particle A will be less than that of particle $B(m_A > m_B)$?

A. Linear momentum of these particles is same

B. Both particles move with same speed

C. Both particles have same kinetic energy.

D. Same potential difference has been applied across both the particles from rest.

Answer:

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58. Select the correct statement

A. Orthosilicate ion $\left(SiO_4^{4-}\right)$ and Perchlorate ion $\left(CIO_4^-\right)$ are isoelectronic species

B. According to Rutherford formula, volume of a nucleus is directly proportional to mass number of nucleus

C. Isotopes have different number of nucleons in them

D. All atoms of Ar ,K and Ca are isobars of each other

Answer:

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59. What change in molar energy (in J) would be associated with an atomic transition giving rise to a radiation of 1 Hz frequency: $\left(h = 66 \times 10^{-34}\right.$ Js) Report your answer after multiplying by 10^{10}

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60. For a wave frequency is 10 Hz and wavelength is 2.5 m. How much distance (in metres) it will travel in 40 seconds?

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61. A certain dye absorbs 4000 Å and fluoresces at 8000 Å. These being wavelengths of maximum absorption that under given conditions 50 % of the absorbed energy is emitted. Calculate the ratio of the no. of quanta emitted to the number absorbed.

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62. In Rutherford formula, maximum number of a-particles deflecting is for which among the following angles θ:

A. 30°

B. 45°

C. 60°

D. 90°

Answer:

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63. If the volume of nucleus of an atom V is related to its mass number A as V prop A^n`according to Rutherford's formula, find the value of n :

A. n=-1

B. n=1

C. n=1/3

D. n=-1/3

Answer:

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64. Photon of which light has minimum energy

A. green

B. blue

C. violet

D. red

Answer:

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65. Visible spectrum contains light of following colours "Violet - Indigo - Blue - Green - Yellow - Orange - Red" (VIBGYOR).

Its frequency ranges from violet $\left(7.5 \times 10^{14} Hz\right)$ to re $\left(4 \times 10^{14} Hz.\right)$ Find out the maximum wavelength $\left(\text{in} Å\right)$ in this range.

A. 400 Å

B. 750 Å

C. 4000 Å

D. 7500 Å

Answer:

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66. Assume that 10^{-17}J of light energy is needed by the interior of the human eye to see an object . How many photons of green light $(\lambda = 495nm)$ are needed to generate this minimum energy . $[h = 6.6 \times 10^{-34} Js]$

A. 14

B. 15

C. 16

D. 17

Answer:

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67. The work function for a metal is 4eV. To emit a photoelectron of zero velocity from the surface of the metal, the wavelength of incident light should be :

A. 310 Å

B. 1550 Å

C. 155 Å

D. 3100 Å

Answer:

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68. The energies E_1 and E_2 of two radiations are $25eV$ and $50eV$ respectively. The relation between their wavelengths, i.e., λ_1 and λ_2 will be.

A. $\lambda_1 = \sqrt{2}\lambda_2$

B. $\lambda 1 = m\lambda_2$

C. $\lambda_1 = 4\lambda_2$

D. $\lambda_1 = \frac{1}{2}\lambda_2$

Answer:

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69. Which of the following statements is correct

A. Observations like Photoelectric effect and Blackbody radiations could not be explained by particle nature of electromagnetic radiations

B. UV rays and IR rays have the same frequency

C. Bohr's model is not valid for Li^+ ion

D. None of these

Answer:

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70. The energy required to remove an electron from metal X is E = $3.31 \times 10^{-20} J$. Calculate the maximum wavelength of light that can be photoeject an electron from metal X :

A. $4\mu m$

B. $6\mu m$

C. $7\mu m$

D. $5\mu m$

Answer:

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71. For which of the following species, Bohr theory doesn't apply

A. He^+

B. H

C. Li^{2+}

D. H^+

Answer:

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72. If radius of third stationary orbit (in Bohr's atom) is R. Then radius of fourth orbit will be

A. R/5

B. 9R

C. 9R/16

D. 16R/9

Answer:

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73. The radius of the first orbit of H-atom is r. then the radius of the first orbit of Li^{2+} will be:

A. 3r

B. 9r

C. r/3

D. r/9

Answer:

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74. The number of Br^- Ions in 2.1 g $CaBr_2$ is $[N_A = 6 \times 10^{23}]$

A. 1.26×10^{22}

B. 6.3×10^{21}

C. 1.05×10^{21}

D. 1.2×10^{20}

Answer:

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75. If the mass of 10^{22} molecules of a hydrocarbon is about 1.2 g, then the gram molecular mass of hydrocarbon is :

A. 36 g

B. 72 g

C. 54 g

D. 90 g

Answer:

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76. The value of R will be maximum for which of the following gases :

A. H_2

B. N_2

C. O_2

D. It has the same value for all gases

Answer:

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77. Volume occupied by an ideal gas at one atmospheric pressure and $0^{\circ} C$ is V ml. Its volume at 273 K will be

A. V ml

B. V/2 ml

C. 2V

D. None of these

Answer:

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78. Select the correct option

A. In Photoelectric effect, all the ejected electrons have maximum possible K.E

B. Work function is independent of the nature of the metal on which light falls

C. Thomson assumed the mass of the atom to be uniformly distributed throughout the atom

D. Rutherford's model explained the line spectrum of H atom

Answer:

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79. 11.2 litre of a gas at STP weighs 14 g The gas could not be

A. N_2

B. CO

C. C_2H_4

D. N_2O

Answer:

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80. x g Urea (NH_2CONH_2) contains y total number of atoms 4x g Acetic acid (CH_3COOH) contains py total number of atoms Find the value of p

A. 8

B. 4

C. 2

D. 6

Answer:

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81. The triad of nuclei that is isotonic is

A. ${}_{6}C^{14}, {}_{7}N^{15}, {}_{9}F^{17}$

B. ${}_{6}C^{12}, {}_{7}N^{14}, {}_{9}F^{19}$

C. ${}_{6}C^{14}, {}_{7}N^{14}, {}_{9}F^{17}$

D. ${}_{6}C^{14}, {}_{7}N^{14}, {}_{9}F^{19}$

Answer:

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82. $A\hat{}(+2)$ is isoelectronic with N_2O and has (Z+1) neutron (Z is atomic number of A) then mass number of A is

A. 45

B. 41

C. 49

D. 43

Answer:

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83. The de-Broglie wavelength of a particle with mass $1g$ and velocity $100m/\sec$ is.

A. $6.63 \times 10^{-33}m$

B. $6.63 \times 10^{-34}m$

C. $6.63 \times 10^{-35}m$

D. $6.65 \times 10^{-36}m$

Answer:

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84. If the kinetic energy of a particle is doubled, De-Broglie wavelength becomes :

A. 2 times

B. 4 times

C. $\sqrt{2}$ times

D. $\frac{1}{\sqrt{2}}$ times

Answer:

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85. Momentum of a photon of wavelength λ is :

A. $\frac{h}{\lambda}$

B. zero

C. $\frac{h\lambda}{c^2}$

D. $\frac{h\lambda}{c}$

Answer:

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86. When an electron drops from a higher energy level to a low energy level, then

A. energy is absorbed

B. energy is emitted

C. atomic number increases

D. atomic number decreases

Answer:

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87. In hydrogen atom, energy of second state is-3.4 eV. The, KE of electron in same orbit of hydrogen atom is

A. $+3.4$ eV

B. $+6.8$ eV

C. -13.6 eV

D. $+13.6$ eV

Answer:

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88. In a certain electronic transition in the Hydrogen atom from an initial state i to a final state the difference in the orbit radius $\left(r_i - r_f\right)$ is seven times the first Bohr radius. Identify the transition

A. $4 \rightarrow 1$

B. $4 \rightarrow 2$

C. $4 \rightarrow 3$

D. $3 \rightarrow 1$

Answer:

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89. The energy of an excited H-atom is -1.51 eV. Angular momentum of e^- in the given orbit will be

A. $3h/\pi$

B. $3h/2\pi$

C. $2h/\pi$

D. h/π

Answer:

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90. The radius of the an orbit of Be^{+3} ion is 0.529Å. The velocity of electron in this orbit will be

A. 0.545×10^6 m/s

B. 2.18×10^6 m/s

C. 4.36×10^6 m/s

D. 1.09×10^6 m/s

Answer:

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91. The ratio of radius of two different orbits in a H-atom is 4: 9 Then, the ratio of the frequency of revolution of electron in these orbits is

A. $2:3$

B. $27:8$

C. $3:2$

D. $8:27$

Answer:

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92. In a gasseous mixture, if alkane (C_xH_{2x+2}) and alaene (C_yH_{2y}) are taken in $2:1$ mole ratio, the average molecular weight of mixture is observed to be 20. If the same alkane and alkene are taken in $1:2$ mole ratio, the average molecular weight of mixture of mixture is observed to be 24. Then, the valule of 'x' and 'y' and respectively :

A. 2,1

B. 1,2

C. 2,3

D. 3,2

Answer:

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93. Which of the following charge (s) can exist on an oil drop (in Millikan's oil drop experiment)

A. $3.2 \times 10^{-19} C$

B. $8.3 \times 10^{-19} C$

C. $4.8 \times 10^{-19} C$

D. $9.6 \times 10^{-19} C$

Answer:

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94. A single electron orbits around a stationary nucleus of charge +Ze. It requires 47.2 eV to excite the electron from the 2^{nd} to 3^{rd} Bohr orbit. Find atomic number 'Z' of atom .

A. Atomic number of species is 5

B. The kinetic energy in first excited state is 85 eV

C. The potential energy in second state is -170 eV

D. First excitation potential of species is 255 V

Answer:

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95. Which one of the following relationships when graphed does not give a straight line for helium gas?

I. K.E. and T at constant pressure and volume

II. P v/s V at constant temperature for a constant mass

III. V v/s 1/T at constant pressure for a constant mass

A. I

B. II

C. III

D. IV

Answer:

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96. Infrared lamps are used in restaurants to keep the food warm. The infrared radiation is strongly absorbed by water, raising is temperature and that of the food. If the wavelength of infrared radiation is assumed to be $1500nm$, then the number of photons per second of infrared radiation produced by an infrared lamp that consumes energy at the rate of $100W$ and is $12\,\%$ efficient only is $y \times 10^{19}$. Find the value of y.

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97. The number of revolutions/sec made by an electron in lind orbit is 8 times of the number of revolutions/sec made by an electron in n^{th} orbit. Give the value of "n".

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98. In the Bohr's model , for unielectronic species following symbols are used

$r_{n,z} \rightarrow$ Radius of n^{th} orbit with atomic number "z"

$U_{n,z} \rightarrow$ Potential energy of electron in n^{th} orbit with atomic number "z"

$K_{n,z} \rightarrow$ Kinetic energy of electron in n^{th} orbit with atomic number "z"

$V_{n,z} \rightarrow$ Velocity of electon in n^{th} orbit with atomic number "z"

$T_{n,z} \rightarrow$ Time period of revolution of electon in n^{th} orbit with atomic number "z"

Calculate z in all in cases.

(i)$U_{1,2}:K_{1,z}=-8:9$

(ii)$r_{1,z}:r_{2,1}=1:12$

(iii)$v_{1,z}:v_{3,1}=15:1$

(iv)$T_{1,2}:T_{2,z}=9:32$

Report your answer as (2r-p-q-s) where p,q,r and s represents the value of "z" in parts (i),(ii),(iii),(iv).

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99. What is the ratio of the wave lengths of last lines of Balmer and Lyman series

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100. Number of possible sepectral lines which ,may br emitted in bracket series in H atom , if electron present in 9^{th} excited level returns to ground level ,are

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101. What minimum number of atoms lions should be present in a sample of H-like species, so that a maximum of 6 spectral lines can be produced of electronic transition from fifth excited state upto n=2 ?

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102. In a mixture of sample of H-atoms and He ions, electrons in all the H-atoms and He^+ ions are present in n = 4^{th} state. Then, find maximum number of different spectral lines obtained when all the electrons make transition from n=4 upto ground state

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103. Volume at NTP of 0.22 g of CO_2 is same as that of

A. 0.01 g of hydrogen

B. 0.085 g of NH_3

C. 320 mg of gaseous SO_2

D. All of these

Answer:

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104. Which of the following is incorrect about a sample of 11.2L CH_4 gas at STP :

A. Number of molecules in the samples are 3.01×10^{23}

B. Weight of 11.2 L of CH_4 (g) at STP is 8 g

C. Number of atoms in the sample are 15.05×10^{23}

D. None of these

Answer:

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105. Boron has two isotopes, B-10 and B-11. The average atomic mass of boron is found to be 10.80u. Calculate the percentage of abundance of these isotopes.

A. B-10=80% , B-11=20%

B. B-10=40 % , B-11=60%

C. B-10=20 % , B-11=80%

D. B-10=70 % , B-11=30%

Answer:

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106. 0.2 moles of an unknown compound weigh 5.6 g. The unknown compound is

A. N_2

B. CO_2

C. CO

D. N_2O

Answer:

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107. Be^{3+} and a proton are accelerated by the same potential, their de $-$ Broglie wavelengths have the ratio (assume mass of proton $=$ mass of neutron) :

A. $1:2$

B. $1:4$

C. $1:\sqrt{21}$

D. $1:3\sqrt{3}$

Answer:

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108. If numerical value of mass and velocity are equal then de Broglie wavelength in terms of K.E. is

A. $\frac{\mathrm{mh}}{2\mathrm{K.E.}}$

B. $\frac{h}{2\mathrm{mK.E.}}$

C. both are correct

D. none is correct

Answer:

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109. If the de-Broglie wavelength of an electron revolving in 2^{nd} orbit of H-atom is x, then radius of that orbit is given by :

A. $\frac{x}{\pi}$

B. $\frac{2x}{\pi}$

C. $\frac{x}{2\pi}$

D. Cannot be determined

Answer:

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110. The most probable radius (in pm) for finding the electron in He^{+} is.

A. 0.0

B. 52.9

C. 26.5

D. 105.8

Answer:

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111. What is the ratio of minimum to maximum wavelength of radiation emitted by electron when it jump from as higher state to ground state in Li^{2+} ion ?

A. $\frac{1}{4}$

B. $\frac{8}{9}$

C. $\frac{3}{4}$

D. $\frac{1}{9}$

Answer:

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112. According to Heisenberg's uncertainty principle, on increasing the wavelength of light used to locate a microscopic particle, uncertainly in measurement of position of particle :

A. Increases

B. decreases

C. Remains unchanged

D. Cannot be determined

Answer:

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113. The uncertainty in momentum of an electron is $1 \times 10^{-5} kg - m/s$. The uncertainty in its position will be $\left(h = 6.62 \times 10^{-34} kg = m^2/s\right)$.

A. 1.05×10^{-28} m

B. 1.05×10^{-26} m

C. 5.27×10^{-30} m

D. 5.25×10^{-28} m

Answer:

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114. Given $m_e = 9.11 \times 10^{-31} kg$ and $h = 6.626 \times 10^{-34} Js$, the uncertainty involved in the measuremenetof velocity within a distance of 0.1Å is

A. $5.79 \times 10^{8} ms^{-1}$

B. $5.79 \times 10^{5} ms^{-1}$

C. $5.79 \times 10^{6} ms^{-1}$

D. $5.79 \times 10^{7} ms^{-1}$

Answer:

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115. if uncertainty in momentum is twice the uncertainty in position of an electron, then uncertainty in velocity of electron is $\left[\hbar = \frac{l}{2\pi}\right]$

A. $\frac{1}{2m}\sqrt{\hbar}$

B. $\frac{h}{4\pi m}$

C. $\frac{1}{4m}$

D. $\frac{1}{m}\sqrt{\hbar}$

Answer:

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116. Two electrons A and B in an atom have the following set of quantum numbers , what is true for A and B: For A, n=3,l=2,m=-2, $s = \pm \frac{1}{2}$, For B,n=3,l=0,m=0,$s = \pm \frac{1}{2}$

A. A and B have same energy

B. A has more energy than B

C. B has more energy than A

D. A and B represent the same electron

Answer:

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117. Which of the following pair of orbitals for mentioned species have equal energy :

A. $2s\left(He^{+}\right)$ and $4p(H)$

B. $8p\left(He^{+}\right)$ and $6s\left(Li^{2+}\right)$

C. $6s\left(He^{+}\right)$ and $18s\left(Be^{3+}\right)$

D. $4p\left(He^{+}\right)$ and $8d\left(Be^{3+}\right)$

Answer:

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118. When photons of energy 4.25eV strike the surface of a metal A, the ejected photoelectrons have maximum kinetic energy, T_A (expressed in eV) and deBroglie wavelength λ_A. The maximum kinetic energy of photoelectrons liberated from another metal B by photons

of energy 4.20V is $T_B = T_A - 1.50eV$. If the deBroglie wavelength of those photoelectrons is $\lambda_B = 2\lambda_A$ then

A. The work function of metal A is 2.25 eV

B. The work function of metal B is 4.20 eV

C. $(KE)_A = 2eV$

D. $(KE)_B = 2.75eV$

Answer:

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119. Azimuthal quantum number (l) :

It describes the shape of electron cloud and the number of subshells in a shell. It can have value from 0 to (n-1)

Value of l	0	1	2	3
subshell	s	p	d	r

Number of orbitals in a subshell =2l+1

Orbital angular momentum L

$= \frac{h}{2\pi}\sqrt{l(l+1)} = \hbar\sqrt{l(l+1)} \quad \left[\hbar = \frac{h}{2\pi}\right]$

Magnetic quantum number (m) :

It describes the orientations of the subshells . It can have values from -l to +l including zero, i.e. , total (2l+1) values . Each value corresponds to an orbital. s-subshell has one orbital , p-subshell three orbitals $\left(p_x, p_y \text{ and } p_z\right)$, d-subshell five orbitals $\left(d_{\mathrm{xy}}, d_{\mathrm{yz}}, d_{x^2-y^2}, d_z^2\right)$ and f-subshell has seven orbitals.

Spin quantum number (s) :

It describes the spin of the electron. It has values +1/2 and -1/2 . Signifies clockwise spinning and anticlockwise rotation of electron about its own axis.

Spin of the electron produces angular momentum equal to $S = \sqrt{s(s+1)}\frac{h}{2\pi}$ where $s = +\frac{1}{2}$

Total spin of an atom $= +\frac{n}{2}$ or $-\frac{n}{2}$ (where n is the number of unpaired electron)

The magnetic moment of an atom

$\mu_s = \sqrt{n(n+2)}$ B.M. n=number of unpaired electrons

B.M. (Bohr magneton)

Orbital angular momentum of an electron is $\sqrt{3}\frac{h}{\pi}$ then the number of orientations of this orbital in spaces are :

A. 3

B. 5

C. 7

D. 9

Answer:

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120. In one experiment , a proton having kinetic energy of 1 eV is accelerated through a potential difference of 3 V. In another experiment, an α-particle having initial kinetic energy 20 eV is retarded by a potential difference of 2 V. Calculate the ratio of de-Broglie wavelengths of proton and α - particle.

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121. If the value of Azimuthal Quantum Numbe l for an electron in a particular subshell is 3, then what will be the maximum value of shell number associated with this electron.

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122. What is the value of $\left(\frac{n+l+m}{2}\right)$ for all possible orbitals with number of radial nodes = 1 and where $n \leq 3$.

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123. In a sample of hydrogen atom containing 1 mole of H atoms, electrons in 30% of H-atoms are in 1^{st} excited state and remaining are in 2^{nd} excited state and ground state . If the total energy emitted when all electrons return to ground state is 642.24 kJ, find % of

electron in 2^{nd} excited state . Energy level in H-atom = $E_1 = -13.6eV, E_2 = -3.4eV, E_3 = -1.5eV$ and (1 eV/ species =96 kJ /mole)

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124. What is the maximum possible number of electrons in an atom with (n+l=7)

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125. In a sample one H atom is in 1^{st} excited state, two He^+ ion are in II^{nd} excited state and three Li^{2+} ions are in III^{rd} excited state. Then , find the maximum number of spectral lines which can be obtained , when all possible transitions terminate at n=1 :

A. 9

B. 10

C. 11

D. 8

Answer:

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126. Among the following , which orbital in Be^{3+} has same energy as that of electron in He^{+} in ground state and also has 2 angular nodes ?

A. 2s

B. $2p_x$

C. $3d_{xy}$

D. None of these

Answer:

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127. A neutral atom of an element has 2K, 8L, 9M and 2N electrons . Which of the following is/are correctly matched :

A. Total number of s electrons -8

B. Total number of p electrons -12

C. Total number of d electrons -1

D. Number of unpaired electrons in element -3

Answer:

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128. 4.0 g of caustic soda (NaOH) contains same number of sodium ions as are present in :

A. 5.3 g of Na_2CO_3

B. 0.05 mole of Na_2SO_4

C. 5.85 g of NaC l

D. 0.1 mole of $NaNO_3$

Answer:

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129. Which of the following process lead to formation of isobars ?

A. 1 α particle and 2β particles are emitted

B. positron emission

C. β particle $\begin{pmatrix} 0 \\ e \\ -1 \end{pmatrix}$ emission

D. `K-electron capture

Answer:

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130. In the disintegration of a radioactive element, α- and β-particles are evolved from the nucleus.

$._0 n^1 \rightarrow ._1 H^1 + ._{-1} e^0 +$ Antineutrino + Energy

$4._1 H^1 \rightarrow ._2 He^4 + 2._{+1} e^0 +$ Energy

Then, emission of these particles changes the nuclear configuration and results into a daughter nuclide. Emission of an α-particles results into a daughter element having atomic number lowered by 2 and mass number by 4, on the other hand, emission of a β-particle yields an element having atomic number raised by 1.

During β-decay, the mass of atomic nucleus

A. decreases by 1 unit

B. increases by 1 unit

C. decreases by 2 unit

D. Remains unaffected

Answer:

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131. The de-Broglie wavelength of electron in a certain orbit 'n' of Be^{3+} ion is found to be 5.83 Å.Find the value of 'n'.Take I^{st} Bohr radius for H-atom =53 pm :

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132. Find the value of x+2y+z

x=no. of radial nodes in $3p_x$, y=no. of angular nodes in 6s

z=the maximum no. of electrons in $._{24}Cr$ with n=3 and s=$+\frac{1}{2}$ and orbital angular momentum $\sqrt{6}\hbar$

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133. $._{72}Re^{162} \rightarrow ._{z_1}X^{A_1} +$ alpha particle

$._{74}W^{188} \rightarrow ._{Z_2}Y^{A_2}$+Beta particle

value of $\frac{A_2 - A_1}{Z_2 - Z_1}$ is :

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134. Carbon has strong tendency to show catenation due to :

A. Its tetravalency

B. small size

C. Its high C-C bond energy

D. All of these

Answer:

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135. Which of the following is the empirical formula of C_6H_6 ?

A. CH

B. C_2H_2

C. C_6H_6

D. None of these

Answer: A

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136. What is the general formula of alkene ?

A. C_nH_{2n+2}

B. C_nH_{2n}

C. C_nH_{2n-2}

D. C_nH_{2n+4}

Answer: B

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137. Which of the following has 28 molecular mass ?

A. C_2H_2

B. C_2H_6

C. C_2H_4

D. C_3H_4

Answer:

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138. Which of the following is third member of C_nH_{2n-2} homologous series ?

A. C_2H_2

B. C_3H_4

C. C_4H_6

D. C_4H_8

Answer:

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139. Total number of bonds in $HC \equiv C - C \equiv CH$?

A. 8

B. 9

C. 10

D. 11

Answer:

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140. Ketene $CH_2 = C = O$ has

A. Only sp^2 carbon atom

B. Only sp carbon atom

C. sp^2 and sp carbon atoms

D. sp^3, sp^2 and sp carbon atoms

Answer:

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141. Which one is not true for all the members of a homologous series

A. All members have same general formula

B. All members have same chemical properties

C. All members have same physical properties

D. All members have same functional groups

Answer:

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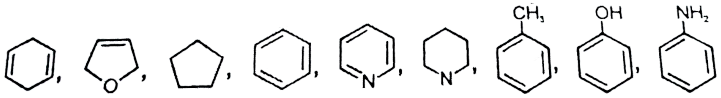
142. In the given compounds how many are unsaturated hydrocarbon ?



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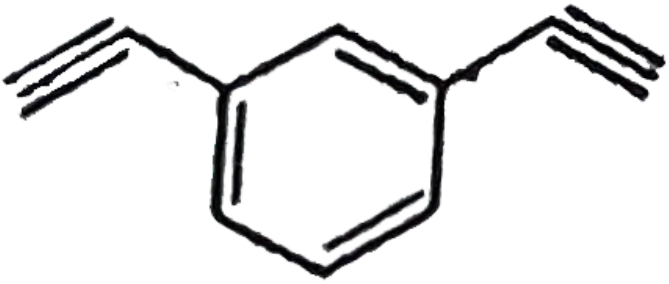
143. How many C-C sigma (σ) bonds are present in the given compound ?



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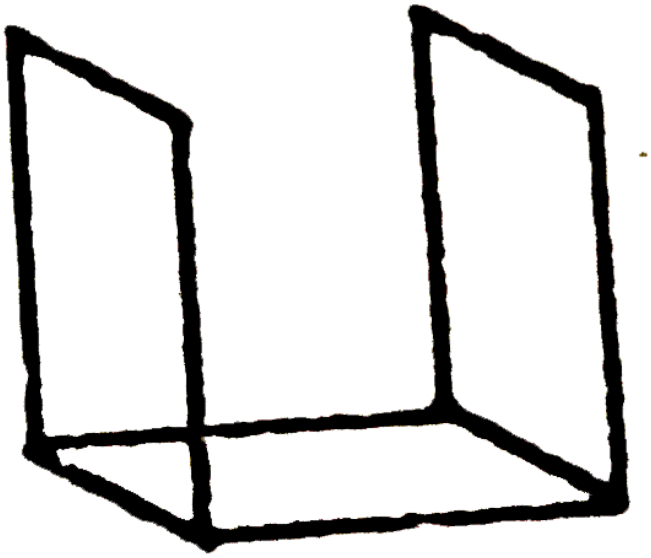
144. Total number of 3° hydrogens present in given compound are ?



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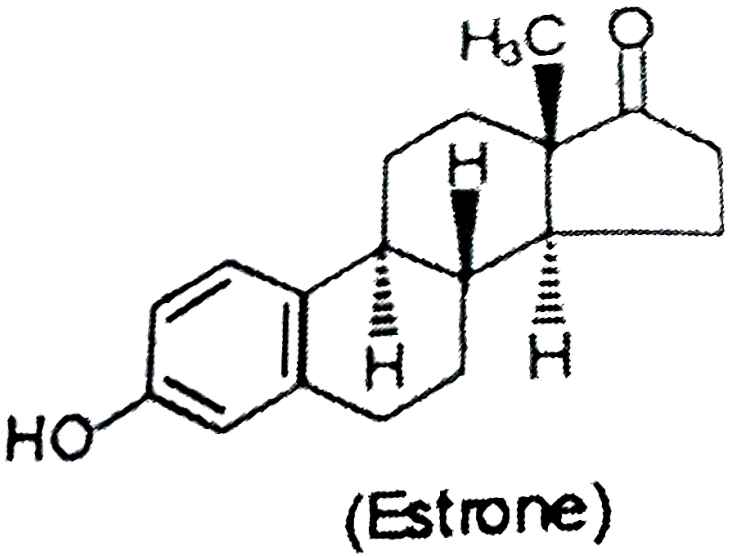

(Estrone)

145.

Estrone is a human hormones. How many number of sp^2 hybridised carbon atoms are present in the structure of estrone

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146. In the organic compound $\overset{1}{C}H_2 = \overset{2}{C}H - \overset{3}{C}H_2 - \overset{4}{C}H_2 - \overset{5}{C}H = \overset{6}{C}H_2$, the pair of hybridised orbitals involved in the formation of $C_2 - C_3$ bond is :

A. $sp - sp^2$

B. $sp - sp^3$

C. $sp^2 - sp^3$

D. $sp^3 - sp^3$

Answer:

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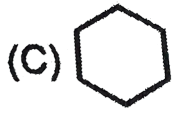
147. Which of the following has 3° carbon

A. $CH_3 - \underset{\underset{NH_3}{|}}{CH} - CH_2 - CH_3$

B. $CH_3 - \overset{\overset{CH_3}{|}}{\underset{\underset{CH_3}{|}}{C}} - OH$

C. 

D. $CH_3 - \overset{\overset{CH_3}{|}}{\underset{\underset{CH_3}{|}}{C}} - CH_3$

Answer:

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148. In following compound -

$$CH_3 - CH_2 - \overset{\overset{CH_3}{|}}{\underset{\underset{CH_3}{|}}{C}} - \underset{\underset{CH_3}{|}}{C}H - \overset{\overset{CH_3}{|}}{C}H - CH_2 - CH_3$$

The correct lowest set of locants are :

A. 3,3,4,5

B. 3,4,5,5

C. 4,5,3,3

D. 5,5,4,3

Answer:

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149. Which of the following is 3° chloride ?

A. $CH_3 - CH_2 - Cl$

B. $(CH_3)_2CHCl$

C. $(CH_3)_3CCl$

D. $(CH_3)_3CCH_2Cl$

Answer:

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150. What is the correct IUPAC name of $(CH_3)_4C$ is ?

A. Tetramethyl methane

B. Trimethylethane

C. Dimethyl propane

D. Pentane

Answer:

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151. What is the correct IUPAC name of $(C_2H_5)_4C$ is ?

A. Tetraethyl methane

B. 3,3-Diethyl pentane

C. Triethylethane

D. Octane

Answer:

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152. Which of the following are used as primary suffix :

A. Bromo

B. Nitro

C. Methoxy

D. $-\text{ene}$

Answer:

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153. The name of $CH_3 - \overset{\overset{CH_3}{|}}{\underset{\underset{CH_3}{|}}{C}} - CH_2 - \overset{\overset{CH_3}{|}}{CH} - CH_3$ is :

A. Isohexane

B. 2,2,4-Trimethylpentane

C. Neoocatne

D. Isoheptane

Answer:

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154. What is the general formula of alkyl group ?

A. C_nH_{2n+2}

B. C_nH_{2n}

C. C_nH_{2n+1}

D. C_nH_{2n-2}

Answer:

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155. Which of the following $IUPAC$ name is/are correct ?

A. 

B. 

C. 

D. 

Answer:

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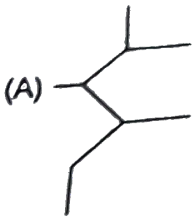
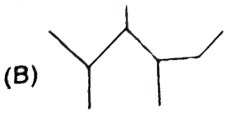
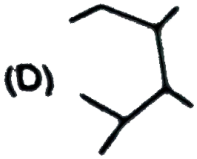
156. Which of the following structure represents 2, 2, 3-trimethylhexane ?

A. 

B. 

C. 

D. 

Answer:

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157. Which of the following is/are incorrect IUPAC name ?

A. 1,1,1-Dimethyl ethane

B. 2-Methyl-3-ethylpentane

C. 3-Methyl-4-ethylhexane

D. 3-Ethyl-4-methylhexane

Answer:

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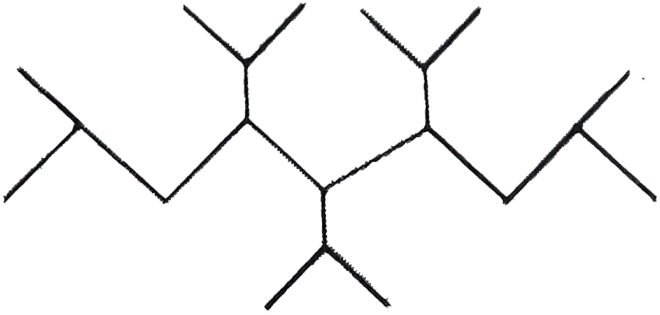
158. How many isopropyl groups are present in the parent chain ?



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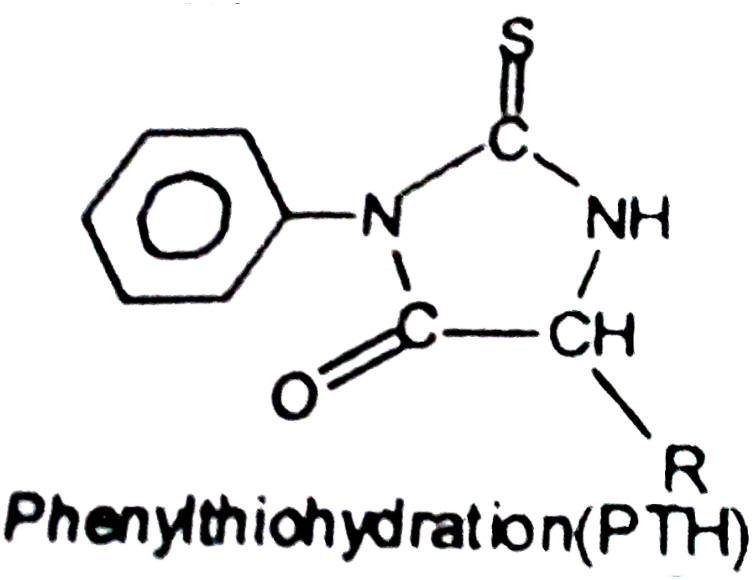

159.

Is a derivative of amino acid how many number of sp^2 hybridised carbon atoms in given structure.

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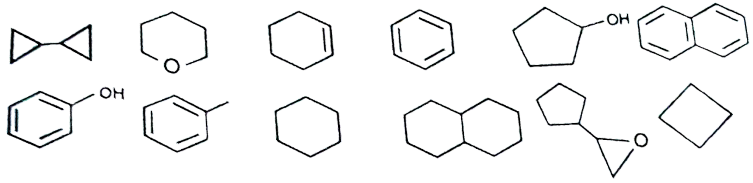
160. How many compounds are hydrocarbon in the following ?



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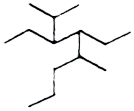
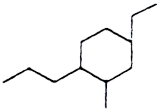
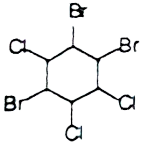
161. How many of following IUPAC names of given strutures are correct .

(1) 

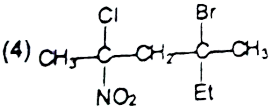
3,4-Diethyl-2,5-dimethyloctane

(2) 

5-Ethyl-1-methyl-2-propylcyclohexane

(3) 

1,2,4-Tribromo-3,5,6-trichlorocyclohexane

(4) 

4-Bromo-2-chloro-4-methyl-2-nitrohexane

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162. Which of the following compound is unstable

A. $CH_3 - CH = CH - Cl$

B. $CH_2 = CH - CH_2 - OH$

C. $CH_2 = CH - CH_2 - Cl$

D. $CH_3 - CH = CH - OH$

Answer:

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163. $CH_2 = CH - Br$ is a/an

A. Allylic bromide

B. Benzylic bromide

C. Vinylic bromide

D. All of these

Answer:

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164. The IUPAC name of compound $CH_3 - C(CH_3)_2 - CH_2 - CH = CH_2$ is

A. 2,2-Dimethylpent-4-ene

B. 2,2-Dimethyl-2-pentene

C. 1,1,1-Trimethylbut-3-ene

D. 4,4-Dimethylpent-1-ene

Answer:

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165. IUPAC name of $CH_3CH_2C(Br) = CH - Cl$ is

A. 2-Bromo-1-chlorobut-1-ene

B. 1-Chloro-2-bromobut-1-ene

C. 3-Chloro-2-bromobut-1-ene

D. 3-Bromo-4-chlorobut-3-ene

Answer:

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166. The IUPAC name of the following compound will be

$$\begin{array}{l} CH_3 - CH = C - CH_2 - CH_3 \\ \qquad\qquad\quad | \\ \qquad\qquad\; CH_2 - CH_2 - CH_3 \end{array}$$

A. 3-Ethyl-2-hexene

B. 3-Propyl-2-hexene

C. 3-Propyl-3-hexene

D. 4-Ethyl-4-hexene

Answer:

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167. IUPAC name of $CH_2 = CH - CH(C_2H_5)\underset{\underset{Br}{|}}{C} = CH_2$ is

A. 4-Bromo-3-ethylpenta-1,4-diene

B. 2-Bromo-3-ethylpenta-1,4-diene

C. 2-Bromo-3-ethylpenta-1,5-diene

D. None of these

Answer:

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168. The IUPAC name of the compound $CH_3 - CH(C_2H_5) - CH = CH - CH_3$ is

A. 4-Ethylpent-2-ene

B. 4-Methylhex-2-ene

C. 3-Ethylpent-2-ene

D. 2-Ethylpent-2-ene

Answer:

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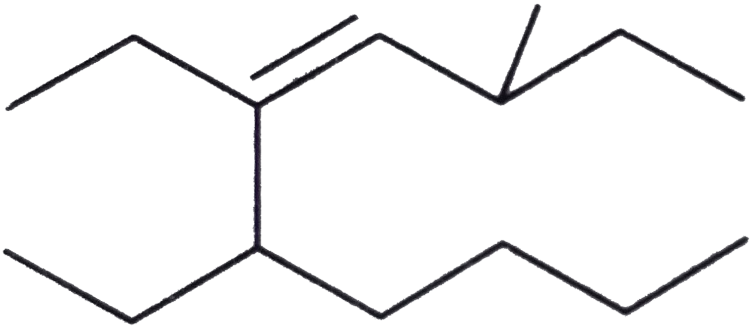
169. Consider the following compound:



The $IUPAC$ name of the this compound is

A. 5,6-Diethyl-3,8-dimethyldecane

B. 5,6-Diethyl-3,8-dimethyldec-4-ene

C. 3,5,6,8-Tetramethyldec-6-ene

D. 2,4,5,7-Tetraethyloct -3-ene

Answer:

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170. Which is /are secondary alcohol

A. Isopropanol

B. Secondary butanol

C. 3-methylpentane-2-ol

D. Pentan-3-ol

Answer:

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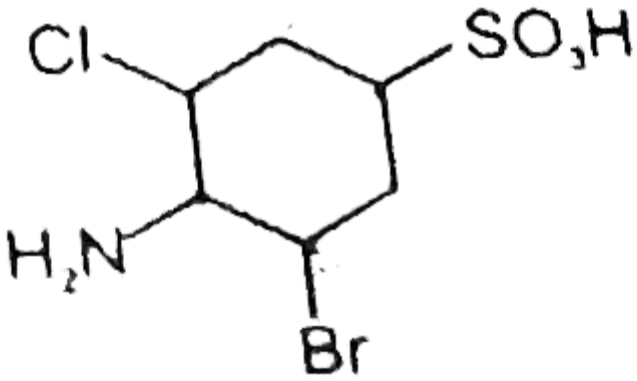
171. Which the sum of position of functional group and substituent in the given structure



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172. In how many of the following compound. -OH group directly attached on the benzene ring ?

(1) Glycol , (2)Glycerol , (3)o-cresol , (4)p-cresol , (5)Phenol , (6)aniline , (7) anisol , (8)resorcinol , (9)catehol , (10)Hydroquinone

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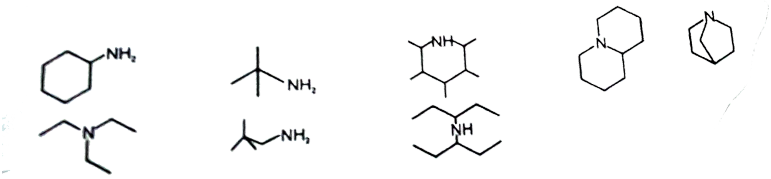
173. How many of the following are tertiary amines ?



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174. In the compound $H_3C - \underset{OH}{CH} - CH_2 - CH_2 - \underset{OH}{CH} - \underset{C_2H_5}{CH} - CH_3$ how many carbon atoms present in the parent chain ?

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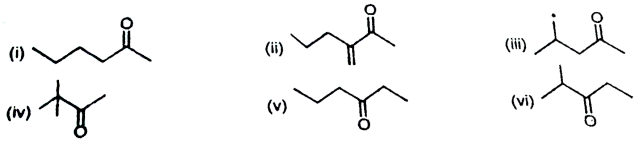
175. How many ketones of the following has hex root word ?



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176. The IUPAC name of compound $CH_3CONHBr$ is :

A. 1-Bromoacetamide

B. N-Bromoethanamide

C. Ethanoyl bromide

D. None of these

Answer:

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177. What is the common name of Ethanoic acid ?

A. Formic acid

B. Acetic acid

C. Acetaldehyde

D. Propionic acid

Answer:

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178. The IUPAC name of $CH_3 - \underset{\underset{NH_2}{|}}{CH} - CH_2CH = CH_2$ is

A. Pent-4-en-2-amine

B. 1-Methylbut-3-en-1-amine

C. Pent-1-en-4-amine

D. 4-Methylbut-1-en-4-amine

Answer:

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179. The compound 2-Ethylhex-2-ene-1-thiol has the structure :

A. $C_2H_5OH = CHCH_2CH_2SH$

B. $CH_3\underset{CH_3}{\underset{|}{C}}HCH_2CH = \underset{CH_3}{\underset{|}{C}}CH_2SH$

C. $CH_3CH_2CH_2CH = \underset{CH_2CH_3}{\underset{|}{C}}CH_2SH$

D. $CH_3\underset{SH}{\underset{|}{C}}HCH = CHCH_2NH_2$

Answer:

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180. The correct IUPAC name of the compound $(CH_3)_3CSO_3H$ is :

A. Trimethylmethane-1-sulphonic acid

B. 1,1-Dimethylethane-1-sulphonic acid

C. Butanesulphonic acid

D. 2-Methylpropane -2-sulphonic acid

Answer:

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181. The correct IUPAC name of $ClCH_2 - CH_2 - NH - CH_2 - CH_2 - CH_3$ is

A. 2-Chloroethylaminoethane

B. 2-Chloroethlyl(propyl) amine

C. N-(2-Chloroethyl) propan-1-amine

D. N-(2-chloroethyl) propylamine

Answer:

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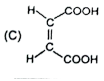
182. Which of the following is correctly matched ?

A. $\underset{OH}{\overset{|}{CH_2}} - \underset{OH}{\overset{|}{CH_2}}$ Glycol

B. $\underset{COOH}{\overset{|}{C}}\ OOH$ Oxalic acid

C.  Fumaric acid

D. $HOOC - CH_2 - CH_2 - COOH$ Succinic acid

Answer:

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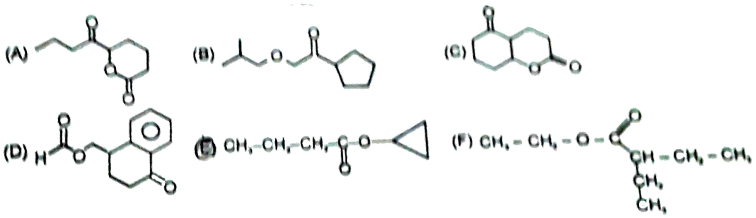
183. How many of the following compounds contain the functional group ester ?



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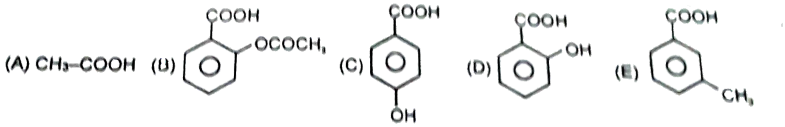
184. In how many of the following compound secondary suffix name is used as carboxylic acid ?



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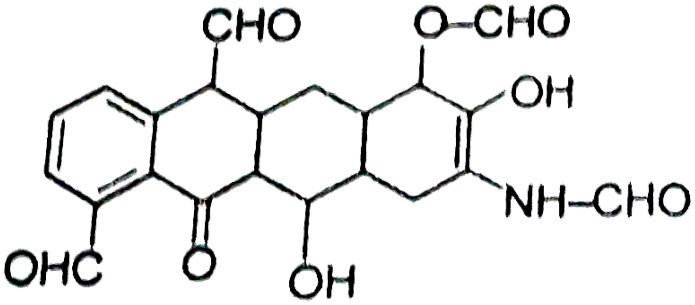

185.

How many aldehyde (-CHO) groups present in the given compound ?

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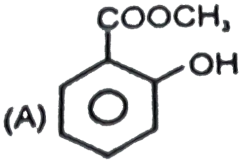
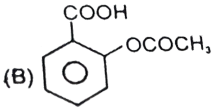
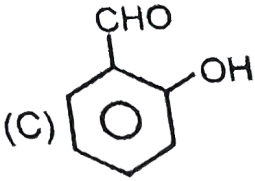
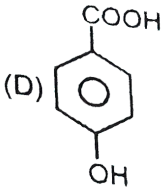
186. Which is Aspirin ?

A. 

B. 

C. 

D. 

Answer:

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187. How many benzylic hydrogen are present is cumene :

A. 1

B. 2

C. 3

D. 6

Answer:

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188. Isomers have essentially identical :

A. Structural formula

B. Chemical properties

C. Molecular formula

D. Physical properties

Answer:

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189. The structure $(CH_3)_2CHCH_2Br$ and $CH_3(CH_2)_3Br$ shows :

A. position isomers

B. chain isomerism

C. functional isomerism

D. None of these

Answer:

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190. What is the common name of Ethyl ethanoate ?

A. Methyl formate

B. Acetaldehyde

C. Ethyl formate

D. Ethyl acetate

Answer:

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191. n-Propyl alcohol and isopropyl alcohol are examples of

A. position isomers

B. chain isomerism

C. Tautomerism

D. Geometrical isomerism

Answer:

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192. The compound which is not isomeric with diethyl ether is :

A. n-Propylmethyl ether

B. Butan-1-ol

C. 2-Methylpropan-2-ol

D. Butanone

Answer:

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193. Number of possible position isomers for Dichlorobenzene is

A. 3

B. 4

C. 2

D. 5

Answer:

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194. Molecular formula C_3H_9N represents :

A. Only primary amine

B. Only secondary amine

C. Three primary amine, two secondary amine and one tertiary amine

D. Two primary amine, one secondary amine and one tertiary amine

Answer:

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195. Which of the following alkene can give 3-methylpentane on hydrogenation

A. 3-methylpent-1-ene

B. 3-methylpent-2-ene

C. 2-methylpent-1-ene

D. 2-ethylbut-1-ene

Answer:

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196. $H-\overset{O}{\overset{||}{C}}-OC_2H_5 \text{and} CH_3-\overset{O}{\overset{||}{C}}-CH_2-OH$

Which is/are true about above two structure -

A. Degree of unsaturation is (1)

B. Both have functional formula

C. Both are metamers

D. Both have same molecular formula

Answer:

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197. How many methyl hexane are possible :

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198. How many carboxylic acids (structural isomers only) of molecular formula $C_5H_{10}O_2$ is possible

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199. How many ketones with molecular formula $C_5H_{10}O$ is possible (structural isomers only).

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200. How many dichlorodiphenyl with molecular formula $C_{12}H_8Cl_2$ of each bezene ring containing only one (-Cl) group are possible :

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201. $CH_3 - \underset{CH_3}{\underset{|}{C}H} - Br \xrightarrow[\Delta]{\text{Na/ether}}$ Major product is :

A. $CH_3 - \underset{CH_3}{\underset{|}{C}H} - CH_3$

B. $CH_3 - \underset{CH_3}{\underset{|}{C}H} - CH_2 - CH_3$

C. $CH_3 - \underset{CH_3}{\underset{|}{C}H} - \underset{CH_3}{\underset{|}{C}H} - CH_3$

D. $CH_3 - \underset{\underset{CH_3}{|}}{C} - CH_2 - CH_3$

Answer:

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202. $CH_3 - CH_2 - CH_2 - CH_2 - \underset{\underset{Cl}{|}}{CH_2} \xrightarrow[\Delta]{\text{alc. KOH}}$ Major product is :

A. $CH_3 - CH_2 - CH_2 - CH_2 - CH_3$

B. $CH_3 - CH_2 - CH_2 - CH = CH_2$

C. $CH_3 - \underset{\underset{CH_3}{|}}{C} = CH - CH_3$

D. $CH_3 - \underset{\underset{CH_3}{|}}{C} = CH - CH_3$

Answer:

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203. $CH_3 - \underset{OH}{\overset{CH_3}{\underset{|}{\overset{|}{C}}}} - CH_3 \xrightarrow[\Delta]{Conc.\,H_2SO_4}$ Major product is :

A. $CH_3 - CH_2 - CH = CH_2$

B. $CH_3 - CH = CH - CH_3$

C. $CH_3 - CH_2 - CH_2 - CH_3$

D. $CH_3 - \underset{CH_3}{\underset{|}{C}} = CH_2$

Answer:

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204. $Ph - CH = CH_2 + HBr \text{Peroxide} \rightarrow$ Major product is :

A. $Ph - \underset{Br}{\underset{|}{CH}} - CH_3$

B. $Ph - CH_2 - \underset{Br}{\underset{|}{CH_2}}$

C. $Ph - \underset{Br}{\underset{|}{CH}} - \underset{Br}{\underset{|}{CH_2}}$

D. $Ph - C \equiv CH$

Answer:

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205. A compound (C_5H_8) gives with ppt. with ammonical $AgNO_3$ and on reduction followed by monochlorination it gives 4 structrual monochloro products. What is the possible structure of compound ?

A. $CH_3 - CH_2 - CH_2 - CH = CH_2$

B. $CH_3 - CH_2 - C \equiv CH$

C. $(CH_3)_2CH - C \equiv CH$

D. $CH_2 = CH - CH_2 - CH = CH_2$

Answer:

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206. $CH_3 - CH_2 - CH_2 - CHCl_2 \xrightarrow[\Delta]{NaNH_2}$ Major product is :

A. $CH_3C \equiv C - CH_3$

B. $CH_3 - CH_2 - C \equiv CH$

C. $CH_2 = CH - CH = CH_2$

D. $CH_3 - CH_2 - CH = CH_2$

Answer:

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207. $CH_3 - C \equiv CH \xrightarrow{HgSO_4, H_2SO_4}$ Major product is :

A. $CH_3 - \underset{\underset{OH}{|}}{CH} - CH_3$

B. $CH_3 - CH_2 - CHO$

C. $CH_3 - \underset{\underset{O}{||}}{C} - CH_3$

D. $CH_3 - CH_2 - \underset{|}{\underset{OH}{C}}H_2$

Answer:

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208. $Ph - C \equiv Ch \xrightarrow[H_2O_2 / OH^-]{B_2H_6}$ Major Product is :

A. $Ph - \underset{|}{\underset{OH}{C}}H - CH_3$

B. $Ph - CH_2 - CHO$

C. $Ph - \underset{||}{\underset{O}{C}} - CH_3$

D. $Ph - CH_2 - \underset{|}{\underset{OH}{C}}H_2$

Answer:

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209. $CaC_2 \xrightarrow{H_2O} AB \xrightarrow{Hg^{+2}/H_2SO_4}$

What is B ?

A. $HC \equiv CH$

B. CH_3CH_3

C. $CH_2 = CH_2$

D. CH_3CHO

Answer:

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210. $CH_3CH_2C \equiv CCH_2CH_3 + H_2O \xrightarrow{HgSO_4}$ Product, Product is :

A. $CH_3CH_2\overset{\overset{O}{||}}{C}CH_2CH_2CH_3$

B. $CH_3CH_2CH_2CH_2CH_2CH_3$

C. Both (A) & (B)

D. None of these

Answer:

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211. Treatment of phenol with bromine dissolved in CCl_4 gives :

A. A mixture of o-bromophenol and p-bromophenol

B. A precipitate of tribromophenol

C. No new product

D. Mainly m-bromophenol

Answer:

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212. Phenol + $CHCl_3 + KOH \rightarrow$ Product is :

A. benzoic acid

B. p-chlorophenol

C. salicylaldehyde

D. salicylic acid

Answer:

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213. Following equation illustrates

$$C_6H_5CI + 2NaOH \xrightarrow[200atm]{200-250^\circ C} C_6H_5ONa + NaCI + H_2O$$

A. Dow' process

B. Kolbe's process

C. Carbylamine test

D. Haloform reaction

Answer:

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214. Activation of benzene by $-NH_2$ group can be reduced by treating the compound with

A. acetone

B. ethyl alcohol

C. acetic acid

D. acetyl chloride

Answer:

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215. Common name of phenol is :

A. Carbonic acid

B. Carbolic acid

C. Lactic acid

D. Picric acid

Answer:

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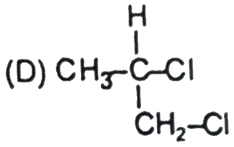
216. $CH_3 - \overset{H}{\underset{CH_3}{C}} - OH + SOCl_2 \rightarrow [X] + SO_2 + HCl$

Product [X] is :

A. $CH_3 - \overset{H}{\underset{CH_2}{C}} - O - Cl$

B. $CH_3 - \overset{H}{\underset{CH_3}{C}} - Cl$

C. $CH_3 - CH_2 - CH_2 - Cl$

D. 

Answer:

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217. $CH_3 - \overset{CH_3}{\underset{|}{C}} = \overset{CH_3}{\underset{|}{C}} - CH_3 + HBr \rightarrow X$

Product X is :

A. $CH_3 - \overset{CH_3}{\underset{H}{\overset{|}{\underset{|}{C}}}} - \overset{CH_3}{\underset{Br}{\overset{|}{\underset{|}{C}}}} - CH_3$

B. $CH_3 - \overset{CH_3}{\underset{H}{\overset{|}{\underset{|}{C}}}} - \overset{CH_3}{\underset{H}{\overset{|}{\underset{|}{C}}}} - CH_3$

C. $CH_3 - \overset{CH_3}{\underset{Br}{\overset{|}{\underset{|}{C}}}} - \overset{CH_3}{\underset{Br}{\overset{|}{\underset{|}{C}}}} - CH_3$

D. $CH_3 - \overset{CH_3}{\underset{Br}{\overset{|}{\underset{|}{C}}}} - \overset{CH_3}{\underset{Br}{\overset{|}{\underset{|}{C}}}} - CH_3$

Answer:

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218.

$$CH_3 - CH = CH - CH_3 \xrightarrow{\text{Reagent [Y]}} CH_3 - \underset{Cl}{CH} - CH_2 - CH_3$$

Which of the following reagent is used for the above conversion ?

A. HCl

B. Cl_2 / hv

C. PCl_3

D. PCl_5

Answer:

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219. $CH_3 - CH_2 - Cl + KOH(aq) \rightarrow [X] + KCl$

Product [X] is :

A. $CH_3 - CH_3$

B. $CH_3 - CH_2 - OH$

C. $CH_3 = CH_2$

D. $CH_3 - CH_2 - CH_2 - CH_3$

Answer:

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220. In the following reaction $CH_3 - ONa + CH_3 - CH_2 - Cl \rightarrow$

Product , Product is :

A. $CH_3 - O - CH_3$

B. $CH_2 = CH_2$

C. $CH_3 - CH_2 - O - CH_3$

D. $CH_3 - CH_3$

Answer:

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221. In the following reaction sequence :

$$CH_3 - \overset{CH_3}{\underset{|}{C}}H - OH \xrightarrow{PCl_3} \xrightarrow{CH_3ONa}$$

Final product is :

A. $CH_3 - \underset{CH_3}{\underset{|}{C}}H - O - C_2H_5$

B. $C_2H_5 - O - CH_3$

C. $C_2H_5 - O - CH_3$

D. $CH_3 - \underset{CH_3}{\underset{|}{C}}H - O - CH_3$

Answer:

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222. Which of the following give ether as a major product -

A. $CH_3 - CH_2 - OH \xrightarrow{PCl_5}$

B. $CH_3 - CH_2 - OH \xrightarrow[100-140^\circ C]{Conc.\,H_2SO_4}$

C. $CH_3 - CH_2 - Cl \xrightarrow{\text{Aq. KOH}}$

D. $CH_2 = CH_2 \xrightarrow{H_2 \frac{\emptyset}{H^\oplus}}$

Answer:

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223. Which test is used for $(1^\circ, 2^\circ, 3^\circ)$ alcohol.

A. 2,4-DNP test

B. Fehling solution test

C. Bromine water test

D. Lucas test

Answer:

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