NEW STANDARD ACADEMY

Marks: 90

Date : 12-08-24 **CLASS : 12TH NEET** **Time: 3 HRS**

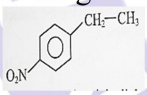
PHYSICS

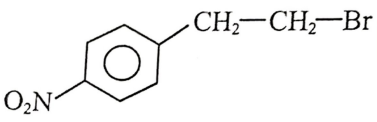
1. The de-Broglie wavelength of an electron having 80 eV of energy is nearly (1eV = 1.6×10^{-19} J , mass of electron = 9×10^{-31} kg and Planck's constant = 6.6×10^{-34} J-sec)
   (a) 140 Å (b) 0.14 Å
   (c) 14 Å (d) 1.4 Å
2. The de Broglie wavelength associated with a hydrogen atom moving with a thermal velocity of 3 km/s will be
   (a) 1Å (b) 0.66 Å
   c) 6.6 Å (d) 66 Å
3. When a radiation is incident on a photoelectron emitter, the stopping potential is found to be 9 V. If e/m for the electron is 1.8 x 10^{11} C/kg, the maximum velocity of the ejected electrons is
   (a) 6×10^{50} (b) 8×10^{5} m / s
   (c) 1.8×10^{6} m / s (d) 1.8×10^{5} m / s
4. Photoelectric emission is observed from a metallic surface for frequencies $v_1 and\ v_2$ of the incident light rays ($v_1 > v_2$) If the maximum values of kinetic energy of the photoelectrons emitted in the two cases are in the ratio of 1: k, then the threshold frequency of the metallic surface is
   (a) $\frac{v_1-v_2}{k-1}$ b) $\frac{kv_1-v_2}{k-1}$
   (c) $\frac{kv_2-v_1}{k-1}$ (d) $\frac{v_2-v_1}{k-1}$
5. A proton, a neutron, an electron and an α particle have same energy. Then, their de Broglie wavelengths compare as
   (a)$\lambda_p = \lambda_n > \lambda_e > \lambda_\alpha$
   (b) $\lambda\alpha < \lambda_p = \lambda_n < \lambda_e$
   (c) $\lambda_n < \lambda_p = \lambda_n > \lambda\alpha$
   (d) $\lambda_e = \lambda_p = \lambda_n = \lambda\alpha$
6. An electron is moving with an initial velocity $v = v_0\,\hat{\imath}$ and is in a magnetic field $B = B_0\hat{\jmath}$ Then, its de Broglie wavelength
   (a) remains constant
   (b) increases with time
   (c) decreases with time
   (d) increases and decreases periodically
7. A particle is dropped from a height H. The de-Broglie wavelength of the particle as a function of height is proportional to
   (a) H (b) $H^{1/2}$
   (c) H^{0} (d) $H^{-1/2}$
8. An electron (mass m) with an initial velocity $v=v_0 i (v_0>0)$ is in an electric field $E = -E_0\,\hat{\imath}$ (E_0 = constant > 0). its de Broglie wavelength at time t is given by
   (a) $\frac{\lambda_0}{\left[1+\frac{eE_0\ t}{m\ v_0}\right]}$ b) $\lambda_0\left[1+\frac{eE_0}{m}\frac{t}{v_0}\right]$
   (c) λ_0 d) $\lambda_0 t$
9. The de Broglie wavelength of a photon is twice the de-Broglie wavelength of an electron. The speed of the electron is $v_e = \frac{c}{100}$then,
   a) $\frac{E_e}{E_p} = 10^{-4}$ b) $\frac{E_e}{E_p} = 10^{-2}$
   c) $\frac{p_e}{m_e c} = 10^{-2}$ d) $\frac{p_e}{m_e c} = 10^{-4}$
10. The ratio of momenta of an electron and an α particle which are accelerated from rest by a potential differ- ence of 100 V is
    (a) 1 (b) $\sqrt{\frac{2m_e}{m_\alpha}}$
    (c) $\sqrt{\frac{m_e}{m_\alpha}}$ (d) $\sqrt{\frac{m_e}{2m_\alpha}}$
11. The kinetic energy of an electron which is accelerated through a potential of 100 V is
    (a) 1.602×10^{-17} J
    (b) 418.6 calories
    (c) 1.16 x 10 K
    (d) 6.626×10^{-3} W
12. A charge of magnitude 3e and mass 2m is moving in an electric field E. The acceleration imparted to the charge is
    (a) 2Ee/3m
    (b) 3Ee/2m
    (c) 2m/3Ee
    (d) 3m/2Ee
13. The de-Broglie wavelength associated with the particle of mass m moving with velocity v is

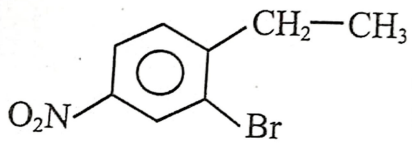
(a) h/mv
(b) mv/h
(c) mh/v
(d) 4×10^4

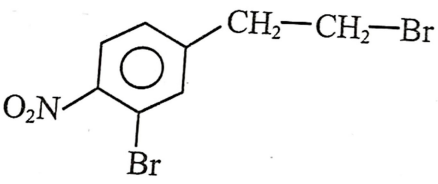
14. The de-Broglie wavelength λ associated with an elec tron having kinetic energy E is given by the expression
a) $\frac{h}{\sqrt{2mE}}$ b) $\frac{2h}{mE}$
c) 2mhE d) $\frac{2\sqrt{2mE}}{h}$
15. Energy conversion in a photoelectric cell takes place from
a) Chemical to electrical
b) Magnetic to electrical
c) Optical to electrical
d) Mechanical to electrical

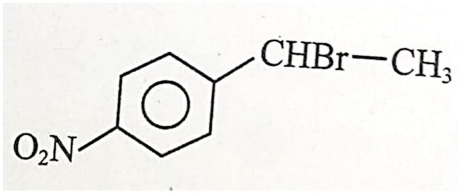
CHEMISTRY

1. Trimethylene dichloride is
a)Alkyl halide b) Geminal dihalide
b) Vicinal dihalide d) Poymethylene dihalide
2. Allyl chloride is
a) Monohalogen derivative
b) Dihalogen derivative
c) Trihalogen derivative
d) Tetrahalogen derivative
3. When  reacts with bromine in presence of heat or ultraviolet light the major product from is

a) 

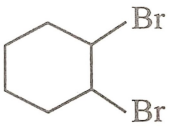
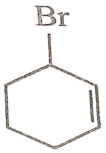
b) 

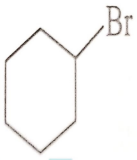
c) 

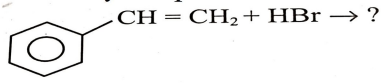
d) 

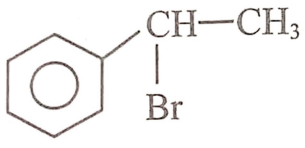
4. Choos the correct name of the compound.

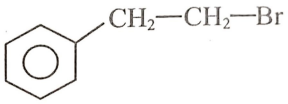
a) Chloroformyl chloroethane
b) 1,2-Dichloropropanal
c) 1,2-Dichloropropanone
d) 2- Chloropropanoyl Chloride
5. Cyclohexene on reacting with bromine in presence of ultraviolet light produces___ as a major product

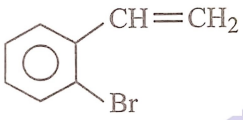
a)  b) 

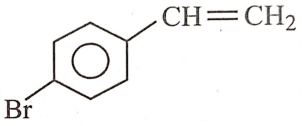
c)  d) $C_6H_6Br_6$

6. Molecular structure of crotyl bromide is
a) CH_3- CH=CH-CH_2-Br
B) CH_3 – CH_2 –CH =CH –Br
C) CH_2 =CH-CH_2- CH_2-Br
D) CH_3- CH=C- CH_3
Br
7. Most reactive alcohol towards Lucas reagent is
a) Primary alcohol
b) Secondary alcohol
c) Tertiary alcohol
d) Isoalcohol
8. Ethyl alcohol on heating with sodium bromide and conc.H_2SO_4 produces
a) Bromo ethane
b) Ethylene
c) Ethylene dibromide
d) Ethane
9. Indentify the product of reaction


a) 

b) 

c) 

d) 

10. During the formation of 2-chloropropane from propane the intermediate formed is
    a) n-propyl free radical
    b) sec. propyl free radical
    c) sec. propyl carbonium ion
    d) sec. propyl carbanion
11. Which reaction is termed Darzen's reaction
    a) ROH + HCI
    b) ROH + PCI_5,
    c) ROH + $SOCI_2$,
    d) ROH + PCI_3,
12. The reaction of silver carboxylates with bromine dissolved in carbon tetrachloride is called
    a) Hofmann reaction
    b) Rosenmund reaction
    c) Borodine Hunsdiecker reaction
    d) Hypobromide reaction
13. Which of the following has the highest boiling point?
    a) CH_3CH_2I
    b) CH_3I
    c) CH_3Cl
    d) CH_3Br
14. Which of the following has highest dipole moment?
    a) CH_3Cl
    b) CH_3Br
    c) CH_3F
    d) CH_3I
15. In S_N 1 the first step involves the formation of
    a) free radical
    b) cabocation
    c) carbanion
    d) final product

BIOLOGY

1. The Abingdon tortoise in Galapagos islands became extinct due to introduction of
    a) Goat b) Sheep
    c) Dog 4) Cow
2. Amensalism is _____ type of Interaction:
    a) (+) and (0) b) (0) and(-)
    c) (+) and (-) d) (-) and (-)
3. An orchid growing as an epiphyte on a mango tree is an example of:
    a) Parasitism b) predation
    c) Commensalism d) Mutualism
4. Plant and herbivore relationship is an example of:
    a) Parasitism b) Competition
    c) predation d) Commensalism
5. The presence of a predatory species
    a) always drives a prey species to extinction.
    b) Can positively affect a prey species by having a detrimental effect on competing species.
    c) indicates that the climax stage of succession has been reached.
    d) None of the above.
6. Parasitism differs from predation because
    a) the presence of parasitism doesn't lead to selection for defensive adaptations in parasitized species.
    b) parasites and the species they parasitize never engage in an evolutionary "arms race."
    c) parasites don't have strong effects on the populations of the species they parasitize.
    d) None of the above.
7. The elimination of predators by humans
    a) will cause its prey to experience exponential growth until new predators arrive or evolve.
    b) will lead to an increase in the carrying capacity of the environment.
    c) may increase the population size of a prey species if that prey's population was being regulated by predation from the predator.
    d) will lead to an Allee effect.
8. Select an incorrect statement for parasitism/parasites/ predators
    a) Predators are quite mobile and capable of capturing the prey

b) Hosts also develop defensive mechanisms to protect themselves from the parasites, as in the case of limbless hosts.
c) Parasites have good means of dispersal and require specialized structures to reach or invade the host
d) The newly acquired predators and parasites are often more damaging than the older ones, since the latter are familiar and the species getting affected have adjusted

9. Gause's principle of competitive exclusion states that:
a) no two species can occupy the same niche indefinitely
for the same limiting resources.
b) larger organisms exclude smaller ones through competition.
c) more abundant species will exclude the less abundant species through competition.
d) competition for the same resources excludes species having different food preferences

10. Asymptote in a logistic growth curve is obtained when:
a) K>N
b) K<N.
c) the value of "r" approaches zero.
d) K = N.

11. Mycorrhizae are the example of
a) antibiotics. b) mutualism
c) fungistasis d) amensalism.

12. Which one of the following population interactions is widely used in medical science for the production of antibiotics?
a) commensalısm b) amensalism
c) parasitism d) mutualism

13. In a growing population of a country,
a) pre-reproductive individuals are more than the reproduc- tive individuals.
b) pre-reproductive individuals are less than the reproduc- tive individuals
c) reproductive and pre-reproductive individuals are equal in number.
d) reproductive individuals are less than the post- reproductive individuals.

14. Natality refers to:
a) birth rate.
b) number of individuals leaving the habitat.
c) death rate.
d) number of individuals entering a habitat.

15. A biologist studied the population of rats in a barn. He found that the average natality was 250, average mortality 240, immigration 20, and emigration 30. The net increase in population is.
a) 5. b) 0.
c) 10. d) 15.