NEW STANDARD ACADEMY

Marks: 90

Date : 20-08-24 **CLASS : 12TH NEET** **Time: 3 HRS**

PHYSICS

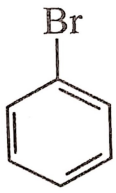
1. In the Bohr's hydrogen atom model, the radius of the stationary orbit is directly proportional to(n = principle quantum number)
   (a) n^{-1} (b) n
   (c) n^{-3} (d) n^{2}
2. In the nth orbit, the energy of an electron $E_n = \frac{13.6}{n^2}$ eV for hydrogen atom. The energy required to take the electron from first orbit to second orbit will be
   (a) 10.2 eV (b) 12.1 eV
   (c) 13.6 eV (d) 3.4 eV
3. In the following atoms and molecules for the transition from 2 to n = 1 the spectral line of minimum wavelength will be produced by
   (a) Hydrogen atom
   (b) Deuterium atom
   (c) Uni-ionized helium
   (d) di-ionized lithium
4. The size of an atom is of the order of
   (a) 10-8m (b) 10^{-10}m
   (c) 10^{-12}m (d) 10^{-14} m
5. Ionization potential of hydrogen atom is 13.6 V. Hydrogen atoms in the ground state are excited by monochromatic radiation of photon energy 12.1 eV. The spectral lines emitted by hydrogen atoms according to Bohr's theory will be
   (a) One (b) Two
   (c) Three (d) Four
6. Consider an electron in the nth orbit of a hydrogen atom in the Bohr model. The circumference of the orbit can be expressed in terms of the de Broglie wavelength of that electron as
   (a) (0.259) ηλ (b) $\sqrt{n}\lambda$
   (c) (13.6) λ (d) n λ
7. The spectral series of the hydrogen spectrum that lies in the ultraviolet region is the
   (a) Balmer series
   (b) Pfund series
   (c) Paschen series
   (d) Lyman series
8. As per Bohr model, the minimum energy (in eV) required to remove an electron from the ground state of doubly ionized Li atom (Z = 3) is
   (a) 1.51 (b) 13.6
   (c) 40.8 (d) 122.4
9. To explain his theory, Bohr used
   (a) Conservation of linear momentum
   (b) Conservation of angular momentum
   (c) Conservation of quantum frequency
   (d) Conservation of energy
10. The ionisation energy of hydrogen atom is 13.6 eV. Following Bohr's theory, the energy corresponding to a transition between the 3rd and the 4th orbit is
    (a) 3.40 eV
    (b) 1.51 eV
    (c) 0.85 eV
    (d) 0.66 eV
11. In Rutherford's scattering experiment, what will be the correct angle for a scattering for an impact parameter b = 0
    (a) 90° (b) 270°
    (c) 0° (d) 180°
12. The radius of hydrogen atom in its ground state is 5.3 X 10 ^ - 11 m. After collision with an electron it is found to have a radius of 21.2 X 10 ^ - 11 m. What is the principal quantum number n of the final state of the atom
    (a) n = 4 (b) n = 2
    (c) n = 16 (d) n = 3
13. Bohr's atom model assumes
    (a) The nucleus is of infinite mass and is at rest.
    (b) Electrons in a quantized orbit will not radiate energy
    (c) Mass of electron remains constant.
    (d) All the above conditions
14. Which of the following particles are constituents of the nucleus?

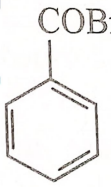
(a) Protons and electrons
(b) Protons and neutrons
(c) Neutrons and electrons
(d) Neutrons and positrons

15. The mass number of a nucleus is
(a) always less than its atomic number.
(b) always more than its atomic number.
(c) always equal to its atomic number.
(d) sometimes more than and sometimes equal to its atomic number.

CHEMISTRY

1. Which of the following alcohol react with conc. HCl in the absence of anhydrous $ZnCl_2$, and at room temperature to form alkyl chloride?
(a) 3-Ethyl-4-methylpentan-2-ol
(b) 3-Ethyl-3-methylpentan-2-ol
(c) 3, 3-Dimethylpentan-2-ol
(d) 3-Ethyl-2-methylpentan-2-ol
2. Silver benzoate reacts with bromine in acetone to form

(a) 

(b) 

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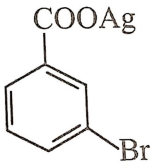
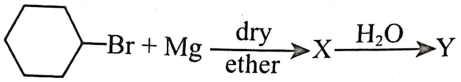
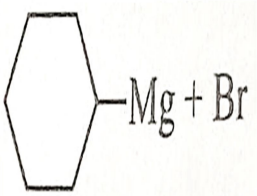
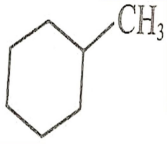
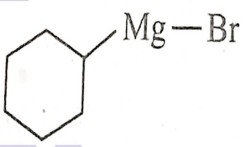
(d) 

3. Which of the following statement is correct?
(a) Decreasing order of density of alkyl halides is RI > RBr > RCI > RF
(b) The stability order of alkyl halides is RF > RCI > RBr >RI
(c) Among isomeric alkyl halides the decrease in boiling point 1° >2° >3°
(d) All of the above
4. The correct order of polarity of alkyl halides is
(a) RI > RBr < RCl > RF
(b) RF > RCI > RBr > RI
(c) RCI > RF > RBr> RI
(d) None of these
5. The S_N2 reactivity order for halides is
(a) R - F > R - Cl > R - Br > R - I
(b) R - I > R - Br > R - CI > R - F
(c) R - Br > R - 1 > R - CI > R - F
(d) R - Cl > R - BR > R - F > R – I
6. In S_N1 reaction, the first step involves the formation of
(a) Free radical (b) Carbanion
(c) Carbocation (d) Final product
7. Identify Y in the following reaction:



(a) 
(b) 

(c) 

(d) 

8. Tert pentyl bromide on boiling with silver oxide suspended in water produce
(a) 2,2-Dimethylpropan-1-ol
(b) 2- Methylbutan-1-ol
(c) 1, 1-Dimethylpropan-1-ol
(d) 2-Methylbutan-1-ol
9. Find out the correct statement about the chemical reactions of alkyl halides
(1) Alkyl halides on heating with alcoholic KNO_2 form nitroalkanes
(2) Alkyl halides on heating with alcoholic $AgNO_2$ form alkyl nitrities
(3) Alkyl halides on heating with $LiAlH_4$ form alkanes
(4) Ethyl bromide on heating with silver acetate form ethyl ethanoate
10. During Williamson's synthesis, ethers are obtained from
(a) R-OH and conc H_2SO_4
(b) R-OH and CH_2N_2
(c) R-X and R-COOAg
(d) R-X and RONa
11. The reaction, $C_2H_2Br + NaOH \rightarrow C_2H_2OH + NaBr$ is
(a) Electrophilic substitution
(b) Nucleophilic substitution
(c) Redox reaction
(d) Free radical substitution
12. When ethyl iodide is treated with dry silver oxide, it forms
(a) C_2H_4
(b) CH_3CH_2CHO

(c) C_2H_5OH
(d) $C_2H_5OC_2H_5$

13. In Wurtz reaction of alkyl halides, the reactivity of alkyl halides follows the decreasing order
(a) RI > RBr > RCl
(b) RCI>RBr > RI
(c) RBr>RI > RCI
(d) None of these

14. The reaction $C_2H_2ONa + C_2H_2I \rightarrow (C_2H_5)_2O+NaI$ is called
(a) Hoffmann reaction
(b) williamson's Synthesis
(c) Wurtz reaction
(d) Electrophilic substitution

15. Which of the following is the correct order of decreasing reactivity towards nucleophilic substitution?
(a) Vinyl chloride > Allyl chloride > Propyl chloride
(b) Propyl chloride > Vinyl chloride > Allyl chloride
(c) Allyl chloride > Vinyl chloride > Propyl chloride
(d) Allyl chloride > Propyl chloride >Vinyl chloride

BIOLOGY

1. The net primary productivity of an ecosystem is
a) Total weight of green plants - respiratory losses
b) Total weight of green plants + respiratory losses
c) Respiratory losses alone
d) None of the above

2. Which of the following are consumers of second order"
(a) Herbivores (b) Carnivores
(c) Top carnivores (d) None of the above

3. The biomass available for consumption by the herbivores and the decomposers is called
(a) Standing crop
(b) Gross primary productivity
(c) Net primary productivity
(d) Secondary productivity

4. Part of PAR captured by plants is
(a) 2%-10%
(b) 1%-2%
(c) 50%
(d) 0.5%-1%

5. Find incorrect statement (s) w.r.1 primary producers:
(a) Entrap solar energy
(b) Also called transducers
(c) Respiratory loss is more than consumers
(d) Both (2) and (3)

6. Go throught the statements
A in terrestrial ecosystem maximum energy is present in T1
B. In grassland ecosystem, the pyramid of biomass is upright
C. In pyramid of food, the producers occupy the base
D. Energy flow in an ecosystern is bidirectional
E. If all green plants of earth are destroyed, all animals shall die ultimately
F. The typical biome of an area having 50 to 100 cm of rainfall is grassland How many of the above statement(s) is wrong?
(a)1 (b) 2 (c) 3 (d) 4

7. The annual net primary productivity of the whole biosphere is approximately
(a) 150 billiontons (b) 160 billiontons
(c) 170 billiontons (d)180 billiontons

8. The important step in the process of decomposition in order is
(a) Catabolism→ Fragmentation→ Leaching→ Humification→ Mineralization
(b)Catabolism→Fragmentation→Humification → Leaching → Mineralization
(c) Fragmentation →Humification→ Catabolism →Leaching-→ Mineralization
(d) Fragmentation→ Leaching →Catabolism→ Humification →Mineralization

9. In trophic level of our ecosystem we belong to -
(a) Secondary consumer and fourth trophic level
(b) Secondary consumer and 3rd trophic level
(c) Tertiary consumer and 3rd trophic level
d) Tertiary consumer and fourth trophic level

10. The component of the ecosystem are seen to function as a unit when you consider which of the following aspects
A. Productivity
B. Decomposition
C. Energy flow
D. Nutrient cycle
(a) A, B, C, D
(b) A, B, C
(c) A, B
(d) A only

11. Which of the following is wrong?
(a) GFC and DFC are not interconnected
(b) GFC and DFC are interconnected
(c) GFC and DFC forms food web
(d) Some of the organism of DFC are prey to GFC animals

12. Dead plant remains such as leaves, bark, flowers and dead remains of animais, including fecal matter constitutes
(a) Detritus (b) Duff
(c) Solonchak (d) Humus

13. Net primary productivity
(a) For oceans is 60% of biosphere productivity
(b) Depends upon photosynthetic capacity of transducers
(c) Remains constant in temperate area throughout the year
(d) Limited by light in marine habitats only

14. The amount of biomass or organic matter produced per unit area over -a time period by plants during photosynthesis is called primary production, which is expressed as
(a) g^{-2} (b) kcal m^{-2}
(c) (kcal m^{-2}) yr^{-1} (d) Both (a) & (b)

15. With which of four levels of biological organisation of Ecology is basically concerned?
A Organisms
B. Species
C Family
D Population
E Community
F Biomass
(a) A, B, C. D (b) A. C. D. E
(c) A. D. E. F (d) B, C