

NEET (UG)-2018

Question Paper (NN) with Answer, Dated 06-05-2018

Code: NN

PHYSICS

Choose the correct (✓) answer:

- The magnetic potential energy stored in a certain inductor is 25 mJ, when the current in the inductor is 60 mA. This inductor is of inductance
 - 13.89 H
 - 0.13 H
 - 1.389 H
 - 138.88 H

Ans. (1)

- An object is placed at a distance of 40 cm from a concave mirror of focal length 15 cm. If the object is displaced through a distance of 20 cm towards the mirror, the displacement of the image will be
 - 36 cm towards their mirror
 - 30 cm away from the mirror
 - 30 cm towards the mirror
 - 36 cm away from the mirror

Ans. (4)

- An em waves is propagating in a medium with a velocity $\vec{V} = V\hat{i}$. The instantaneous oscillating electric field of this em wave is along +y axis. The then the direction of oscillating magnetic field of the em wave will be along
 - x direction
 - z direction
 - y direction
 - +z direction

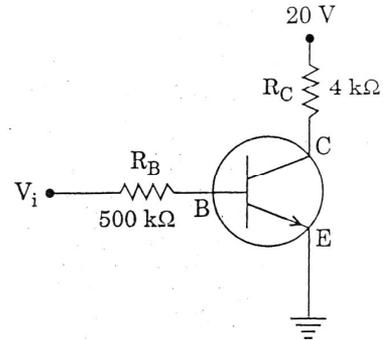
Ans. (4)

- The refractive index of the material of a prism is $\sqrt{2}$ and the angle of the prism is 30° . One of the two refracting surfaces of the prism is made a mirror inwards by silver coating. A beam of monochromatic light entering the prism from the other face will retrace its path (after reflection from the silvered surface) if its angle of incidence on the prism is

(1) zero	(2) 60°
(3) 30°	(4) 45°

Ans. (4)

- In the circuit shown in figure, the input voltage V_i is 20 V, $V_{BE} = 0$ and $V_{CE} = 0$. The values of I_B , I_C and β are given by



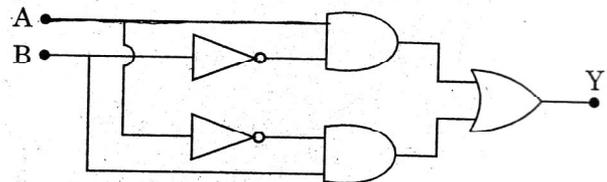
- $I_B = 40 \mu A, I_C = 5 \text{ mA}, \beta = 125$
- $I_B = 40 \mu A, I_C = 10 \text{ mA}, \beta = 250$
- $I_B = 20 \mu A, I_C = 5 \text{ mA}, \beta = 250$
- $I_B = 25 \mu A, I_C = 5 \text{ mA}, \beta = 200$

Ans. (1)

- In a p-n junction diode, change in temperature due to heating
 - affects the overall V-I characteristics of p-n junction
 - affects only reverse resistance
 - does not affect resistance of p-n junction
 - affects only forward resistance

Ans. (1)

- In the combination of the following gates the output Y can be written in terms of inputs A and B as



- $\overline{A+B}$
- $\overline{A.B}$
- $\overline{A.B} + A.B$
- $A.\overline{B} + \overline{A}.B$

Ans. (4)

8. The power radiated by a black body is P and it radiates maximum energy at wavelength, λ_0 . If the temperature of the black body is now changed so that it radiates maximum energy at wavelength $\frac{3}{4}\lambda_0$, the power radiated by it becomes nP . The value of n is

- (1) $\frac{81}{256}$ (2) $\frac{3}{4}$
 (3) $\frac{256}{81}$ (4) $\frac{4}{3}$

Ans. (3)

9. The two wires are made of the same material and have the same volume. The first wire has cross-sectional area A and the second wire has cross-sectional area $3A$. If the length of the first wire is increased by Δl on applying a force F , how much force is needed to stretch the second wire by the same amount?

- (1) F (2) $9F$
 (3) $4F$ (4) $6F$

Ans. (2)

10. A sample of 0.1 g of water at 100°C and normal pressure ($1.013 \times 10^5 \text{ Nm}^{-2}$) requires 54 cal of heat energy to convert to steam at 100°C . If the volume of the steam produced is 167.1 cc, the change in internal energy of the sample, is

- (1) 84.5 J (2) 104.3 J
 (3) 42.2 J (4) 208.7 J

Ans. (4)

11. A small sphere of radius ' r ' falls from rest in a viscous liquid. As a result, heat is produced due to viscous force. The rate of production of heat when the sphere attains its terminal velocity, is proportional to

- (1) r^4 (2) r^3
 (3) r^5 (4) r^2

Ans. (3)

12. When the light of frequency $2\nu_0$ (where ν_0 is threshold frequency), it incident on a metal plate, the maximum velocity of electrons emitted is v_1 . When the frequency of the incident radiation is increased to $5\nu_0$, the maximum velocity of electrons emitted from the same plate is v_2 . The ratio of v_1 to v_2 is

- (1) 2 : 1 (2) 1 : 2
 (3) 4 : 1 (4) 1 : 4

Ans. (2)

13. For a radioactive material, half-life is 10 minutes. If initially there are 600 number of nuclei, the time taken (in minutes) for the disintegration of 450 nuclei is

- (1) 15 (2) 20
 (3) 30 (4) 10

Ans. (2)

14. An electron of mass m with an initial velocity $\vec{V} = V_0\hat{i}$ ($V_0 > 0$) enters an electric field $\vec{E} = -E_0\hat{j}$ ($E_0 = \text{constant} > 0$) at $t = 0$. If λ_0 is its de-Broglie wavelength initially, then its de-Broglie wavelength at time t is

- (1) λ_0 (2) $\frac{\lambda_0}{\left(1 + \frac{eE_0 t}{mV_0}\right)}$
 (3) $\lambda_0 t$ (4) $\lambda_0 \left(1 + \frac{eE_0 t}{mV_0}\right)$

Ans. (2)

15. The ratio of kinetic energy to the total energy of an electron in a Bohr orbit of the hydrogen atom, is

- (1) 1 : -2 (2) 1 : 1
 (3) 2 : -1 (4) 1 : -1

Ans. (4)

16. A tuning fork is used to produce resonance in a glass tube. The length of the air column in this tube can be adjusted by a variable piston. At room temperature of 27°C two successive resonances are produced at 20 cm and 73 cm of column length. If the frequency of the tuning fork is 320 Hz, the velocity of sound in air at 27°C is

- (1) 300 m/s (2) 330 m/s
 (3) 350 m/s (4) 339 m/s

Ans. (4)

17. The electrostatic force between the metal plates of an isolated parallel plate capacitor C having charge Q and area A , is

- (1) Inversely proportional to the distance between the plates
 (2) Independent of the distance between the plates
 (3) Proportional to the square root of the distance between the plates
 (4) Linearly proportional to the distance between the plates

Ans. (2)

18. A pendulum is hung from the roof of a sufficiently high building and is moving freely to and fro like a simple harmonic oscillator. The acceleration of the bob of the pendulum is 20 m/s^2 at a distance of 5 m from the mean position. The time period of oscillation is

- (1) 1s (2) $2\pi\text{s}$
 (3) 2s (4) πs

Ans. (4)

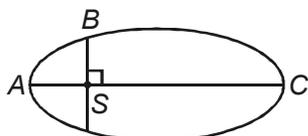
19. An electron falls from rest through a vertical distance h in a uniform and vertically upward directed electric field E . The direction of electric field is now reversed, keeping its magnitude the same. A proton is allowed to fall from rest in it through the same vertical distance h .

The time of fall of the electron, in comparison to the time of fall of the proton is

- (1) equal
- (2) smaller
- (3) 10 times greater
- (4) 5 times greater

Ans. (2)

20. The kinetic energies of a planet in an elliptical orbit about the Sun, the positions A, B and C are K_A , K_B and K_C , respectively. AC is the major axis and SB is perpendicular to AC at the position of the Sun S as shown in figure. Then



- (1) $K_B > K_A > K_C$
- (2) $K_B < K_A < K_C$
- (3) $K_B < K_A < K_C$
- (4) $K_A > K_B > K_C$

Ans. (4)

21. A solid sphere is in rolling motion. In rolling motion a body possesses translational kinetic energy (K_t) as well as rotational kinetic energy (K_r) simultaneously. The ratio $K_t : (K_t + K_r)$ for the sphere is

- (1) 2 : 5
- (2) 7 : 10
- (3) 10 : 7
- (4) 5 : 7

Ans. (4)

22. If the mass of the Sun were ten times smaller and the universal gravitational constant were ten times larger in magnitude, which of the following is not correct?

- (1) 'g' on the Earth will not change
- (2) Raindrops will fall faster
- (3) The time period of a simple pendulum on the Earth would decrease
- (4) Walking on the ground would become more difficult

Ans. (1)

23. A solid sphere is rotating freely about its symmetry axis in free space. The radius of the sphere is increased keeping its mass same. Which of the following physical quantities would remain constant for the sphere?

- (1) Angular momentum
- (2) Angular velocity
- (3) Rotational kinetic energy
- (4) Moment of inertia

Ans. (1)

24. A metallic rod of mass per unit length 0.5 kg m^{-1} is lying horizontally on a smooth inclined plane which makes an angle of 30° with the horizontal. The rod is not allowed to slide down by flowing a current through it when a magnetic field of induction 0.25 T is acting on it in the vertical direction. The current flowing in the rod to keep it stationary is

- (1) 11.32 A
- (2) 7.14 A
- (3) 14.76 A
- (4) 5.98 A

Ans. (1)

25. An inductor 20 mH , a capacitor $100 \mu\text{F}$ and a resistor 50Ω are connected in series across a source of emf, $V = 10 \sin 314 t$. The power loss in the circuit is

- (1) 1.13 W
- (2) 0.79 W
- (3) 2.74 W
- (4) 0.43 W

Ans. (2)

26. A thin diamagnetic rod is placed vertically between the poles of an electromagnet. When the current in the electromagnet is switched on, then the diamagnetic rod is pushed up, out of the horizontal magnetic field. Hence the rod gains gravitational potential energy. The work required to do this comes from

- (1) the induced electric field due to the changing magnetic field
- (2) the current source
- (3) the lattice structure of the material of the rod
- (4) the magnetic field

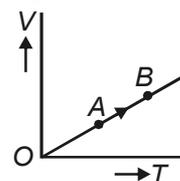
Ans. (2)

27. Current sensitivity of a moving coil galvanometer is 5 div / mA and its voltage sensitivity (angular deflection per unit voltage applied) is 20 div / V . The resistance of the galvanometer is

- (1) 500Ω
- (2) 40Ω
- (3) 250Ω
- (4) 25Ω

Ans. (3)

28. The volume (V) of a monoatomic gas varies with its temperature (T), as shown in the graph. The ratio of work done by the gas, to the heat absorbed by it, when it undergoes a change from state A to state B, is



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

Ans. (2)

29. The fundamental frequency is an open organ pipe is equal to the third harmonic of a closed organ pipe. If the length of the closed organ pipe is 20 cm , the length of the open organ pipe is

- (1) 16 cm
- (2) 13.2 cm
- (3) 12.5 cm
- (4) 8 cm

Ans. (2)

30. The efficiency of an ideal heat engine working between

the freezing point and boiling point of water, is

- (1) 12.5% (2) 26.8%
(3) 6.25% (4) 20%

Ans. (2)

31. At what temperature will the rms speed of oxygen molecules become just sufficient for escaping from the Earth's atmosphere?

(Given:

Mass of oxygen molecule = (m) = 2.76×10^{-26} kg

Boltzmann's constant $k_B = 1.38 \times 10^{-23}$ J K⁻¹)

- (1) 1.254×10^4 K (2) 2.508×10^4 K
(3) 5.016×10^4 K (4) 8.360×10^4 K

Ans. (4)

32. Unpolarised light is incident from air on a plane surface of a material of refractive index ' μ '. At a particular angle of incidence ' i ', it is found that the reflected and refracted rays are perpendicular to each other. Which of the following options is correct for this situation?

(1) $i = 10^{-1} \left(\frac{1}{\mu} \right)$

(2) Reflected light is polarised with its electric vector parallel to the plane of incidence

(3) $i = \sin^{-1} \left(\frac{1}{\mu} \right)$

(4) Reflected light is polarised with its electric vector perpendicular to the plane of incidence

Ans. (4)

33. In Young's double slit experiment, the separation d between slits is 2 mm, the wavelength λ of the light used is 5896 Å and distance D between the screen and slits is 100 cm. It is found that the angular width of the fringes is 0.20°. To increase the fringe angular width to 0.21° (with same λ and D) the separation between the slits needs to change to

- (1) 1.7 mm (2) 1.8 mm
(3) 2.1 mm (4) 1.9 mm

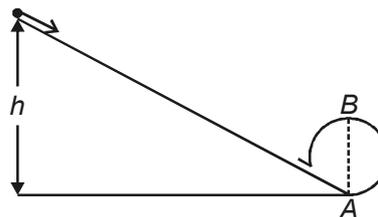
Ans. (4)

34. An astronomical refracting telescope will have large angular magnification and high angular resolution, when it has an objective lens of

- (1) small focal length and small diameter
(2) small focal length and large diameter
(3) large focal length and large diameter
(4) large focal length and small diameter

Ans. (3)

35. A body is initially at rest and sliding along a frictionless track from a height h (as shown in figure) just completes a vertical circle of diameter $AB = D$. The height h is equal to



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

Ans. (1)

36. Three objects, A : (a solid sphere), B : (a thin circular disk and C : (a circular ring), each have the same mass M and radius R . They all spin with the same angular speed ω about their own symmetry axes. The amounts of work (W) required to bring them to rest, would satisfy the relation

- (1) $W_A > W_C > W_B$ (2) $W_C > W_B > W_A$
(3) $W_B > W_A > W_C$ (4) $W_A > W_B > W_C$

Ans. (2)

37. Which one of the following statements is **incorrect**?

- (1) Coefficient of sliding friction has dimensions of length
(2) Rolling friction is smaller than sliding friction
(3) Frictional force opposes the relative motion
(4) Limiting value of static friction is directly proportional to normal reaction

Ans. (1)

38. A moving block having mass m , collides with another stationary block having mass $4m$. The lighter block comes to rest after collision. When the initial velocity of the lighter block is v , then the value of coefficient of restitution (e) will be

- (1) 0.4 (2) 0.5
(3) 0.8 (4) 0.25

Ans. (4)

39. A carbon resistor of (47 ± 4.7) k Ω to be marked with rings of different colours for its identification. The colour code sequence will be

- (1) Green – Orange – Violet – Gold
(2) Violet – Yellow – Orange – Silver
(3) Yellow – Green – Violet – Gold
(4) Yellow – Violet – Orange – Silver

Ans. (4)

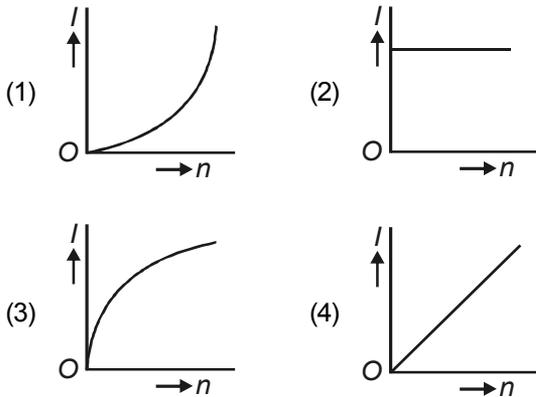
40. A set of ' n ' equal resistors, of value ' R ' each, are connected in series to a battery of emf ' E ' and internal resistance ' R '. The current drawn is I . Now, the ' n ' resistors are connected in parallel to the same battery. Then the current drawn from battery is $10I$. The value of

'n' is

- (1) 9 (2) 10
(3) 20 (4) 11

Ans. (2)

41. The battery consists of a variable number 'n' of identical cells (having internal resistance 'r' each) which are connected in series. The terminals of the battery are short-circuited and the current I is measured. Which of the graphs shows the correct relationship between I and n?



Ans. (2)

42. A toy car with charge q moves on a frictionless horizontal plane surface under the influence of a uniform electric field \vec{E} . Due to the force $q\vec{E}$, its velocity increases from 0 to 6 m/s in one second duration. At what instant the direction of the field is reversed. The car continues to move for two more seconds under the influence of this field. The average velocity and the average speed of the toy car between 0 to 3 seconds are respectively
- (1) 1.5 m/s, 3 m/s (2) 2 m/s, 4 m/s
(3) 1 m/s, 3.5 m/s (4) 1 m/s, 3 m/s

Ans. (4)

BIOLOGY

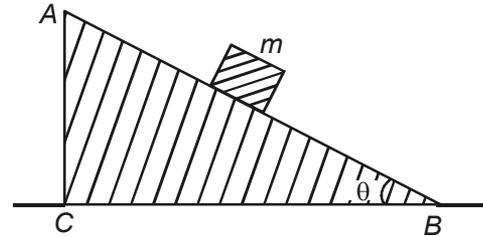
46. Which of the following hormones can play a significant role in osteoporosis?
- (1) Parathyroid hormone and Prolactin
(2) Aldosterone and Prolactin
(3) Estrogen and Parathyroid hormone
(4) Progesterone and Aldosterone

Ans. (3)

47. Which of the following is an amino acid derived hormone?
- (1) Estriol
(2) Epinephrine
(3) Estradiol
(4) Ecdysone

Ans. (2)

43. A block of mass m is placed on a smooth inclined wedge ABC of inclination θ as shown in the figure. The wedge is given an acceleration 'a' towards the right. The relation between a and θ for the block to remain stationary on the wedge is



- (1) $a = g \tan \theta$ (2) $a = \frac{g}{\operatorname{cosec} \theta}$
(3) $a = g \cos \theta$ (4) $a = \frac{g}{\sin \theta}$

Ans. (1)

44. A student measured the diameter of a small steel ball using a screw gauge of least count 0.001 cm. The main scale reading is 5 mm and zero of circular scale division coincides with 25 divisions above the reference level. If screw gauge has a zero error of -0.004 cm, the correct diameter of the ball is
- (1) 0.529 cm (2) 0.521 cm
(3) 0.053 cm (4) 0.525 cm

Ans. (1)

45. The moment of the force, $\vec{F} = 4\hat{i} + 5\hat{j} - 6\hat{k}$ at (2, 0, -3), about the point (2, -2, -2), is given by
- (1) $-7\hat{i} - 4\hat{j} - 8\hat{k}$ (2) $-8\hat{i} - 4\hat{j} - 7\hat{k}$
(3) $-7\hat{i} - 8\hat{j} - 4\hat{k}$ (4) $-4\hat{i} - \hat{j} - 8\hat{k}$

Ans. (1)

48. Which of the following structures or regions is **incorrectly** paired with its function?
- (1) Corpus callosum : band of fibers connecting left and right cerebral hemispheres.
(2) Medulla oblongata : controls respiration and cardiovascular reflexes
(3) Hypothalamus : production of releasing hormones and regulation of temperature, hunger and thirst
(4) Limbic system : consists of fibre tracts that interconnect different regions of brain; controls movement

Ans. (4)

49. The transparent lens in the human eye is held in its place by

- (1) Smooth muscles attached to the ciliary body
- (2) Ligaments attached to the ciliary body
- (3) Smooth muscles attached to the iris
- (4) Ligaments attached to the iris

Ans. (2)

50. The amnion of mammalian embryo is derived from

- (1) Ectoderm and endoderm
- (2) Ectoderm and mesoderm
- (3) Mesoderm and trophoblast
- (4) Endoderm and mesoderm

Ans. (2)

51. Hormones secreted by the placenta to maintain pregnancy are

- (1) hCG, progesterones, estrogen, glucocorticoids
- (2) hCG, hPL, progesterones, prolactin
- (3) hCG, hPL, progesterones, estrogens
- (4) hCG, hPL, estrogens, relaxin, oxytocin

Ans. (3)

52. The contraceptive 'SAHELI'

- (1) Is a post-coital contraceptive
- (2) Blocks estrogen receptors in the uterus, preventing eggs from getting implanted.
- (3) Is an IUD
- (4) Increases the concentration of estrogen and prevents ovulation in females

Ans. (2)

53. The difference between spermiogenesis and spermiation is

- (1) In spermiogenesis spermatozoa are formed, while in spermiation spermatozoa are released from sertoli cells into the cavity of seminiferous tubules
- (2) In spermiogenesis spermatids are formed, while in spermiation spermatozoa are formed
- (3) In spermiogenesis spermatozoa from sertoli cells are released into the cavity of seminiferous tubules, while in spermiation spermatozoa are formed
- (4) In spermiogenesis spermatozoa are formed, while in spermiation spermatids are formed

Ans. (1)

54. A woman has an X-linked condition on one of her X chromosomes. This chromosome can be inherited by

- (1) Both sons and daughters
- (2) Only daughters
- (3) Only grandchildren
- (4) Only sons

Ans. (1)

55. According to Hugo de Vries, the mechanism of evolution is

- (1) Minor mutations
- (2) Multiple step mutations
- (3) Phenotypic variations
- (4) Saltation

Ans. (4)

56. All of the following are part of an operon **except**

- (1) A promoter
- (2) An operator
- (3) An enhancer
- (4) Structural genes

Ans. (3)

57. AGGTATCGCAT is a sequence from the coding strand of a gene. What will be the corresponding sequence of the transcribed mRNA?

- (1) UCCAUAGCGUA
- (2) AGGUAUCGCAU
- (3) ACCUAUGCGAU
- (4) UGGTUTCGCAT

Ans. (2)

58. Match the items given in Column I with those in Column II and select the **correct** option given below :

<i>Column I</i>	<i>Column II</i>
a. Proliferative Phase	(i) Breakdown of endometrial lining
b. Secretory Phase	(ii) Follicular Phase
c. Menstruation	(iii) Luteal Phase
(1) a-iii, b-i, c-ii	(2) a-iii, b-ii, c-i
(3) a-ii, b-iii, c-i	(4) a-i, b-iii, c-ii

Ans. (3)

59. In which disease does mosquito transmitted pathogen cause chronic inflammation of lymphatic vessels?

- (1) Amoebiasis
- (2) Elephantiasis
- (3) Ringworm disease
- (4) Ascariasis

Ans. (2)

60. Among the following sets of examples for divergent evolution, select the **incorrect** option :

- (1) Eye of octopus, bat and man
- (2) Forelimbs of man, bat and cheetah
- (3) Brain of bat, man and cheetah
- (4) Heart of bat, man and cheetah

Ans. (1)

61. The similarity of bone structure in the forelimbs of many vertebrates is an example of

- (1) Adaptive radiation
- (2) Homology
- (3) convergent evolution
- (4) Analogy

Ans. (2)

62. Which of the following is **not** an autoimmune disease?

- (1) Vitiligo
- (2) Psoriasis
- (3) Alzheimer's disease
- (4) Rheumatoid arthritis

Ans. (3)

63. Which of the following characteristics represent 'Inheritance of blood groups' in humans?
- Dominance
 - Co-dominance
 - Multiple allele
 - Incomplete dominance
 - Polygenic inheritance
- (1) a, c and e (2) b, c and e
(3) b, d and e (4) a, b and c
- Ans. (4)**
64. Conversion of milk to curd improves its nutritional value by increasing the amount of
- Vitamin E
 - Vitamin D
 - Vitamin B₁₂
 - Vitamin A
- Ans. (3)**
65. Match the items given in Column I with those in Column II and select the **correct** option given below:
- | <i>Column I</i> | <i>Column II</i> |
|----------------------|---------------------------|
| a. Eutrophication | (i) UV-B radiation |
| b. Sanitary landfill | (ii) Deforestation |
| c. Snow blindness | (iii) Nutrient enrichment |
| d. Jhum cultivation | (iv) Waste disposal |
- (1) a-i, b-ii, c-iv, d-iii (2) a-ii, b-i, c-iii, d-iv
(3) a-iii, b-iv, c-i, d-ii (4) a-i, b-iii, c-iv, d-ii
- Ans. (3)**
66. Which one of the following population interactions is widely used in medical science for the production of antibiotics?
- Amensalism
 - Commensalism
 - Parasitism
 - Mutualism
- Ans. (1)**
67. All of the following are included in 'Ex-situ conservation' **except**
- Seed banks
 - Wildlife safari parks
 - Botanical gardens
 - Sacred groves
- Ans. (4)**
68. In a growing population of a country,
- Pre-reproductive individuals are less than the reproductive individuals
 - Pre-reproductive individuals are more than the reproductive individuals
 - Reproductive and pre-reproductive individuals are equal in number
 - Reproductive individuals are less than the post-reproductive individuals
- Ans. (2)**
69. Which part of poppy plant is used to obtain the drug "Smack"?
- Leaves
 - Flowers
 - Roots
 - Latex
- Ans. (4)**
70. Which of the following gastric cells indirectly help in erythropoiesis?
- Parietal cells
 - Chief cells
 - Goblet cells
 - Mucous cells
- Ans. (1)**
71. Match the items given in Column I with those in Column II and select the **correct** option given below:
- | <i>Column I</i> | <i>Column II</i> |
|-----------------|-------------------------|
| a. Fibrinogen | (i) Osmotic balance |
| b. Globulin | (ii) Blood clotting |
| c. Albumin | (iii) Defence mechanism |
- (1) a-ii, b-iii, c-i (2) a-iii, b-ii, c-i
(3) a-i, b-iii, c-ii (4) a-i, b-ii, c-iii
- Ans. (1)**
72. Which of the following is an occupational respiratory disorder?
- Emphysema
 - Anthraxis
 - Botulism
 - Silicosis
- Ans. (4)**
73. Calcium is important in skeletal muscle contraction because it
- Prevents the formation of bonds between the myosin cross bridges and the actin filament
 - Binds to troponin to remove the masking of active sites on actin for myosin
 - Detaches the myosin head from the actin filament
 - Activates the myosin ATPase by binding to it
- Ans. (2)**
74. Nissl bodies are mainly composed of
- Free ribosomes and RER
 - Proteins and lipids
 - Nucleic acids and SER
 - DNA and RNA
- Ans. (1)**
75. Which of these statements is **incorrect**?
- Oxidative phosphorylation takes place in outer mitochondrial membrane
 - Enzymes of TCA cycle are present in mitochondrial matrix
 - Glycolysis operates as long as it is supplied with NAD that can pick up hydrogen atoms
 - Glycolysis occurs in cytosol
- Ans. (1)**

76. Select the **incorrect** match:

- (1) Polytene chromosome : Oocytes of amphibians
 (2) Lampbrush chromosome : Diplotene bivalents
 (3) Submetacentric chromosomes : L-shaped chromosomes
 (4) Allosomes : Sex chromosomes

Ans. (1)

77. Which of the following terms describe human dentition?

- (1) Pleurodont, Diphyodont, Heterodont
 (2) Thecodont, Diphyodont, Homodont
 (3) Pleurodont, Monophyodont, Homodont
 (4) Thecodont, Diphyodont, Heterodont

Ans. (4)

78. Which of the following events does **not** occur in rough endoplasmic reticulum?

- (1) Phospholipid synthesis
 (2) Protein folding
 (3) Cleavage of signal peptide
 (4) Protein glycosylation

Ans. (1)

79. Many ribosomes may associate with a single mRNA to form multiple copies of a polypeptide simultaneously. Such strings of ribosomes are termed as

- (1) Nucleosome
 (2) Polysome
 (3) Plastidome
 (4) Polyhedral bodies

Ans. (2)

80. Ciliates differ from all other protozoans in

- (1) Having two types of nuclei
 (2) Using flagella for locomotion
 (3) Using pseudopodia for capturing prey
 (4) Having a contractile vacuole for removing excess water

Ans. (1)

81. Identify the vertebrate group of animals characterised by crop and gizzard in its digestive system

- (1) Osteichthyes
 (2) Amphibia
 (3) Aves
 (4) Reptilia

Ans. (3)

82. Which one of these animals is **not** a homeotherm?

- (1) *Psittacula*
 (2) *Macropus*
 (3) *Camelus*
 (4) *Chelone*

Ans. (4)

83. Which of the following features is used to identify a male cockroach from a female cockroach?

- (1) Present of anal cerci
 (2) Presence of a boat shaped sternum on the 9th abdominal segment
 (3) Forewings with darker tegmina
 (4) Presence of caudal styles

Ans. (4)

84. Which of the following animals does **not** undergo metamorphosis?

- (1) Starfish (2) Earthworm
 (3) Moth (4) Tunicate

Ans. (2)

85. Which of the following organisms are known as chief producers in the oceans?

- (1) Euglenoids (2) Dinoflagellates
 (3) Cyanobacteria (4) Diatoms

Ans. (4)

86. Which of the following options correctly represents the lung conditions in asthma and emphysema, respectively?

- (1) Decreased respiratory surface; inflammation of bronchioles
 (2) Inflammation of bronchioles; Decreased respiratory surface
 (3) Increased respiratory surface; Inflammation of bronchioles
 (4) Increased number of bronchioles; Increased respiratory surface

Ans. (2)

87. Match the items given in Column I with those in Column II and select the **correct** option given below:

<i>Column I</i>	<i>Column II</i>
a. Tricuspid valve	(i) Between left atrium and left ventricle
b. Bicuspid valve	(ii) Between right ventricle and pulmonary artery
c. Semilunar valve	(iii) Between right atrium and right ventricle
(1) a-ii, b-i, c-iii	(2) a-iii, b-i, c-ii
(3) a-i, b-ii, c-iii	(4) a-i, b-iii, c-ii

Ans. (2)

88. Match the items given in Column I with those in Column II and select the **correct** option given below:

<i>Column I</i>	<i>Column II</i>
a. Tidal volume	(i) 2500 - 3000 mL
b. Inspiratory Reserve volume	(ii) 1100 - 1200 mL
c. Expiratory Reserve volume	(iii) 500 - 550 mL
d. Residual volume	(iv) 1000 - 1100 mL

- (1) a-iv, b-iii, c-ii, d-i (2) a-iii, b-ii, c-i, d-iv
 (3) a-i, b-iv, c-ii, d-iii (4) a-iii, b-i, c-iv, d-ii

Ans. (4)

89. Match the items given in Column I with those in Column II and select the **correct** option given below:

<i>Column I</i>	<i>Column II</i>
a. Glycosuria	(i) Accumulation of uric acid in joints
b. Gout	(ii) Mass of crystallised salts within the kidney
c. Renal calculi	(iii) Inflammation in glomeruli
d. Glomerular nephritis	(iv) Presence of glucose in urine

- (1) a-iv, b-i, c-ii, d-iii (2) a-iii, b-ii, c-iv, d-i
 (3) a-ii, b-iii, c-i, d-iv (4) a-i, b-ii, c-iii, d-iv

Ans. (1)

90. Match the items given in Column I with those in Column II and select the **correct** option given below:

<i>Column I</i>	<i>Column II</i>
(Function)	(Part of Excretory System)
a. Ultrafiltration	(i) Henle's loop
b. Concentration of urine	(ii) Ureter
c. Transport of urine	(iii) Urinary bladder
d. Storage of urine	(iv) Malpighian corpuscle
	(v) Proximal convoluted tubule

- (1) a-v, b-iv, c-i, d-iii (2) a-iv, b-v, c-ii, d-iii
 (3) a-v, b-iv, c-i, d-ii (4) a-iv, b-i, c-ii, d-iii

Ans. (4)

91. Secondary xylem and phloem in dicot stem are produced by

- (1) Axillary meristems
 (2) Apical meristems
 (3) Phellogen
 (4) Vascular cambium

Ans. (4)

92. Pneumatophores occur in

- (1) Submerged hydrophytes
 (2) Halophytes
 (3) Carnivorous plants
 (4) Free-floating hydrophytes

Ans. (2)

93. Plants having little or no secondary growth are

- (1) Cycads (2) Grasses
 (3) Conifers (4) Deciduous angiosperms

Ans. (2)

94. Select the **wrong** statement:

- (1) Mitochondria are the powerhouse of the cell in all kingdoms except Monera
 (2) Cell wall is present in members of Fungi and Plantae
 (3) Pseudopodia are locomotory and feeding structures in Sporozoans
 (4) Mushrooms belong to Basidiomycetes

Ans. (3)

95. Casparian strips occur in

- (1) Endodermis
 (2) Epidermis
 (3) Cortex
 (4) Pericycle

Ans. (1)

96. Sweet potato is a modified

- (1) Rhizome (2) Stem
 (3) Tap root (4) Adventitious root

Ans. (4)

97. Which of the following statements is **correct**?

- (1) Stems are usually unbranched in both *Cycas* and *Cedrus*
 (2) Ovules are not enclosed by ovary wall in gymnosperms
 (3) Horsetails are gymnosperms
 (4) *Selaginella* is heterosporous, while *Salvinia* is homosporous

Ans. (2)

98. What type of ecological pyramid would be obtained with the following data?

Secondary consumer : 120 g
 Primary consumer : 60g
 Primary producer : 10g

- (1) Upright pyramid of biomass
 (2) Inverted pyramid of biomass
 (3) Upright pyramid of numbers
 (4) Pyramid of energy

Ans. (2)

99. World Ozone Day is celebrated on

- (1) 22nd April (2) 5th June
 (3) 16th September (4) 21st April

Ans. (3)

100. In stratosphere, which of the following elements acts as a catalyst in degradation of ozone and release of molecular oxygen?

- (1) Oxygen (2) Carbon
 (3) Fe (4) Cl

Ans. (4)

101. Natality refers to

- (1) Number of individuals entering a habitat
- (2) Death rate
- (3) Number of individuals leaving the habitat
- (4) Birth rate

Ans. (4)

102. Niche is

- (1) The functional role played by the organism where it lives
- (2) All the biological factors in the organism's environment
- (3) The range of temperature that the organism needs to live
- (4) The physical space where an organism lives

Ans. (1)

103. Which of the following is a secondary pollutant?

- | | |
|---------------------|---------------------|
| (1) O ₃ | (2) CO |
| (3) SO ₂ | (4) CO ₂ |

Ans. (1)

104. Winged pollen grains are present in

- | | |
|------------------|------------------|
| (1) <i>Pinus</i> | (2) Mustard |
| (3) Mango | (4) <i>Cycas</i> |

Ans. (1)

105. After karyogamy followed by meiosis, spores are produced exogenously in

- | | |
|--------------------------|-----------------------|
| (1) <i>Saccharomyces</i> | (2) <i>Neurospora</i> |
| (3) <i>Agaricus</i> | (4) <i>Alternaria</i> |

Ans. (3)

106. Which one is **wrongly** matched?

- | | | |
|----------------------------|---|---------------------|
| (1) Unicellular organism | : | <i>Chlorella</i> |
| (2) Uniflagellate gametes | : | <i>Polysiphonia</i> |
| (3) Gemma cups | : | <i>Marchantia</i> |
| (4) Biflagellate zoospores | : | Brown algae |

Ans. (2)

107. Match the items given in Column I with those in Column II and select the **correct** option given below:

- | Column I | Column II |
|--------------|--|
| a. Herbarium | (i) It is a place having a collection of preserved plants and animals |
| b. Key | (ii) A list that enumerates methodically all the species found in an area with brief description aiding identification |
| c. Museum | (iii) Is a place where dried and pressed plant specimens mounted on sheets are kept |

- | | |
|--------------|---|
| d. Catalogue | (iv) A booklet containing a list of characters and their alternates which are helpful in identification of various taxa |
|--------------|---|

- | | |
|----------------------------|----------------------------|
| (1) a-iii, b-iv, c-i, d-ii | (2) a-i, b-iv, c-iii, d-ii |
| (3) a-ii, b-iv, c-iii, d-i | (4) a-iii, b-ii, c-i, d-iv |

Ans. (1)

108. Which one of the following plants shows a very close relationship with a species of moth, where none of the two can complete its life cycle without the other?

- | | |
|------------------|---------------------|
| (1) <i>Viola</i> | (2) <i>Hydrilla</i> |
| (3) Banana | (4) <i>Yucca</i> |

Ans. (4)

109. Pollen grains can be stored for several years in liquid nitrogen having a temperature of

- | | |
|------------|------------|
| (1) -160°C | (2) -120°C |
| (3) -196°C | (4) -80°C |

Ans. (3)

110. In which of the following forms is iron absorbed by plants?

- (1) Both ferric and ferrous
- (2) Ferric
- (3) Free element
- (4) Ferrous

Ans. (2)

111. Which of the following elements is responsible for maintaining turgor in cells?

- | | |
|---------------|---------------|
| (1) Calcium | (2) Magnesium |
| (3) Potassium | (4) Sodium |

Ans. (3)

112. Double fertilization is

- (1) Syngamy and triple fusion
- (2) Fusion of two male gametes of a pollen tube with two different eggs
- (3) Fusion of two male gametes with one egg
- (4) Fusion of one male gamete with two polar nuclei

Ans. (1)

113. What is the role of NAD⁺ in cellular respiration?

- (1) It is the final electron acceptor for anaerobic respiration
- (2) It functions as an enzyme
- (3) It is a nucleotide source for ATP synthesis
- (4) It functions as an electron carrier

Ans. (4)

114. Oxygen is **not** produced during photosynthesis by

- | | |
|------------------|----------------------------|
| (1) <i>Chara</i> | (2) Green sulphur bacteria |
| (3) <i>Cycas</i> | (4) <i>Nostoc</i> |

Ans. (2)

115. The Golgi complex participates in
- (1) Activation of amino acid
 - (2) Fatty acid breakdown
 - (3) Respiration in bacteria
 - (4) Formation of secretory vesicles

Ans. (4)

116. Stomatal movement is **not** affected by
- (1) CO₂ concentration
 - (2) Temperature
 - (3) O₂ concentration
 - (4) Light

Ans. (3)

117. Stomata in grass leaf are
- (1) Barrel shaped
 - (2) Dumb-bell shaped
 - (3) Rectangular
 - (4) Kidney shaped

Ans. (2)

118. Which of the following is true for nucleolus?
- (1) It is a site for active ribosomal RNA synthesis
 - (2) Larger nucleoli are present in dividing cells
 - (3) It takes part in spindle formation
 - (4) It is a membrane-bound structure

Ans. (1)

119. Which of the following is **not** a product of light reaction of photosynthesis?
- (1) Oxygen
 - (2) ATP
 - (3) NADPH
 - (4) NADH

Ans. (4)

120. The stage during which separation of the paired homologous chromosomes begins is
- (1) Zygotene
 - (2) Pachytene
 - (3) Diakinesis
 - (4) Diplotene

Ans. (4)

121. The two functional groups characteristic of sugars are
- (1) Carbonyl and hydroxyl
 - (2) Hydroxyl and methyl
 - (3) Carbonyl and phosphate
 - (4) Carbonyl and methyl

Ans. (1)

122. Which among the following is **not** a prokaryote?
- (1) *Oscillatoria*
 - (2) *Saccharomyces*
 - (3) *Nostoc*
 - (4) *Mycobacterium*

Ans. (2)

123. Offsets are produced by
- (1) Parthenogenesis
 - (2) Meiotic divisions
 - (3) Parthenocarp
 - (4) Mitotic divisions

Ans. (4)

124. Select the **correct** statement:

- (1) Transduction was discovered by S. Altman
- (2) Franklin Stahl coined the term "linkage"
- (3) Spliceosomes take part in translation
- (4) Punnett square was developed by a British scientist

Ans. (4)

125. Which of the following has proved helpful in preserving pollen as fossils?
- (1) Sporopollenin
 - (2) Pollenkitt
 - (3) Oil content
 - (4) Cellulosic intine

Ans. (1)

126. Which of the following pairs is **wrongly** matched?
- (1) T.H. Morgan : Linkage
 - (2) Starch synthesis in pea : Multiple alleles
 - (3) XO type sex determination : Grasshopper
 - (4) ABO blood grouping : Co-dominance

Ans. (2)

127. Select the **correct** match:

- (1) Francois Jacob and Jacques Monod : *Lac operon*
- (2) Alec Jeffreys : *Streptococcus pneumoniae*
- (3) Matthew Meselson and F. Stahl : *Pisum sativum*
- (4) Alfred Hershey and Martha Chase : TMV

Ans. (1)

128. Which of the following flowers only once in its life-time?

- (1) Papaya
- (2) Bamboo species
- (3) Mango
- (4) Jackfruit

Ans. (2)

129. The experimental proof for semiconservative replication of DNA was first shown in a

- (1) Virus
- (2) Fungus
- (3) Plant
- (4) Bacterium

Ans. (4)

130. Which of the following is commonly used as a vector for introducing a DNA fragment in human lymphocytes?

- (1) pBR 322
- (2) Retrovirus
- (3) λ phage
- (4) Ti plasmid

Ans. (2)

131. Select the **correct** match:

- (1) G. Mendel : Transformation
 (2) Ribozyme : Nucleic acid
 (3) T. H. Morgan : Transduction
 (4) $F_2 \times$ Recessive parent : Dihybrid cross

Ans. (2)

132. Use of bioresources by multinational companies and organisations without authorisation from the concerned country and its people is called

- (1) Bioexploitation (2) Bio-infringement
 (3) Biodegradation (4) Biopiracy

Ans. (4)

133. A 'new' variety of rice was patented by a foreign company, though such varieties have been present in India for a long time. This is related to

- (1) Basmati (2) Co-667
 (3) Lerma Rojo (4) Sharbati Sonora

Ans. (1)

134. In India, the organisation responsible for assessing the safety of introducing genetically modified organisms for public use is

- (1) Genetic Engineering Appraisal Committee (GEAC)
 (2) Indian Council of Medical Research (ICMR)
 (3) Research Committee on Genetic Manipulation (RCGM)
 (4) Council for Scientific and Industrial Research (CSIR)

Ans. (1)

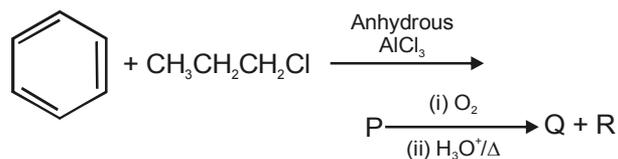
135. The **correct** order of steps in Polymerase Chain Reaction (PCR) is

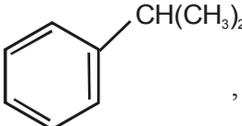
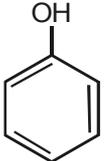
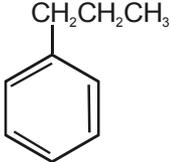
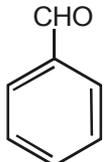
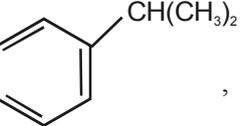
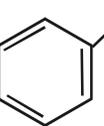
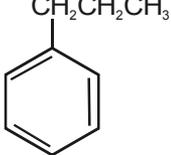
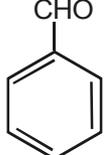
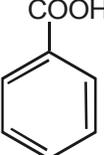
- (1) Denaturation, Annealing, Extension
 (2) Extension, Denaturation, Annealing
 (3) Denaturation, Extension, Annealing
 (4) Annealing, Extension, Denaturation

Ans. (1)

CHEMISTRY

136. Identify the major products P, Q and R in the following sequence of reactions :



- (1)  ,  , $\text{CH}_3\text{-CO-CH}_3$
- (2)  ,  , $\text{CH}_3\text{CH}_2\text{-OH}$
- (3)  ,  , $\text{CH}_3\text{CH(OH)CH}_3$
- (4)  ,  , 

Ans. (1)

137. Which of the following compounds can form a zwitterion ?

- (1) Glycine (2) Aniline
 (3) Benzoic acid (4) Acetanilide

Ans. (1)

138. The geometry and magnetic behaviour of the complex $[\text{Ni}(\text{CO})_4]$ are

- (1) Tetrahedral geometry and paramagnetic
 (2) Square planar geometry and diamagnetic
 (3) Square planar geometry and paramagnetic
 (4) Tetrahedral geometry and diamagnetic

Ans. (4)

139. Iron carbonyl, $\text{Fe}(\text{CO})_5$ is

- (1) Dinuclear
 (2) Tetranuclear
 (3) Trinuclear
 (4) Mononuclear

Ans. (4)

140. Match the metal ions given in Column I with the spin magnetic moments of the ions given in Column II and assign the **correct** code :

- | | |
|---------------------|-----------------------|
| a. Co^{3+} | (i) $\sqrt{8}$ B.M. |
| b. Cr^{3+} | (ii) $\sqrt{35}$ B.M. |
| c. Fe^{3+} | (iii) $\sqrt{3}$ B.M. |
| d. Ni^{2+} | (iv) $\sqrt{24}$ B.M. |
| | (v) $\sqrt{15}$ B.M. |

	a	b	c	d
(1)	iii	v	i	ii
(2)	iv	v	ii	i
(3)	iv	i	ii	iii
(4)	i	ii	iii	iv

Ans. (2)

141. The type of isomerism shown by the complex $[\text{CoCl}_2(\text{en})_2]$ is

- (1) Linkage isomerism
- (2) Geometrical isomerism
- (3) Ionization isomerism
- (4) Coordination isomerism

Ans. (2)

142. Which one of the following ions exhibits d-d transition and paramagnetism as well ?

- | | |
|-------------------------|----------------------------------|
| (1) MnO_4^{2-} | (2) CrO_4^{2-} |
| (3) MnO_4^- | (4) $\text{Cr}_2\text{O}_7^{2-}$ |

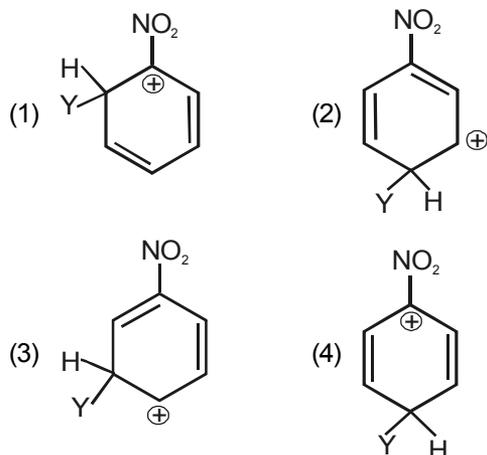
Ans. (1)

143. Which of the following molecules represents the order of hybridisation sp^2, sp^2, sp, sp from left to right atoms?

- (1) $\text{CH}_3 - \text{CH} = \text{CH} - \text{CH}_3$
- (2) $\text{HC} \equiv \text{C} - \text{C} \equiv \text{CH}$
- (3) $\text{CH}_2 = \text{CH} - \text{CH} = \text{CH}_2$
- (4) $\text{CH}_2 = \text{CH} - \text{C} \equiv \text{CH}$

Ans. (4)

144. Which of the following carbocations is expected to be most stable ?

**Ans. (3)**

145. Which of the following is correct with respect to – I effect of the substituents ? (R = alkyl)

- (1) $-\text{NR}_2 > -\text{OR} > -\text{F}$
- (2) $-\text{NH}_2 < -\text{OR} < -\text{F}$
- (3) $-\text{NH}_2 > -\text{OR} > -\text{F}$
- (4) $-\text{NR}_2 < -\text{OR} < -\text{F}$

Ans. (4)

146. The solubility of BaSO_4 in water is $2.42 \times 10^{-3} \text{ gL}^{-1}$ at 298 K. The value of its solubility product (K_{sp}) will be

(Given molar mass of $\text{BaSO}_4 = 233 \text{ g mol}^{-1}$)

- (1) $1.08 \times 10^{-8} \text{ mol}^2 \text{ L}^{-2}$
- (2) $1.08 \times 10^{-10} \text{ mol}^2 \text{ L}^{-2}$
- (3) $1.08 \times 10^{-14} \text{ mol}^2 \text{ L}^{-2}$
- (4) $1.08 \times 10^{-12} \text{ mol}^2 \text{ L}^{-2}$

Ans. (2)

147. Given van der Waals constant for $\text{NH}_3, \text{H}_2, \text{O}_2$ and CO_2 are respectively 4.17, 0.244, 1.36 and 3.59, which one of the following gases is most easily liquefied ?

- | | |
|-------------------|-------------------|
| (1) CO_2 | (2) NH_3 |
| (3) O_2 | (4) H_2 |

Ans. (2)

148. Following solutions were prepared by mixing different volumes of NaOH and HCl of different concentrations :

- (a) $60 \text{ mL } \frac{M}{10} \text{ HCl} + 40 \text{ mL } \frac{M}{10} \text{ NaOH}$
- (b) $55 \text{ mL } \frac{M}{10} \text{ HCl} + 45 \text{ mL } \frac{M}{10} \text{ NaOH}$
- (c) $75 \text{ mL } \frac{M}{5} \text{ HCl} + 25 \text{ mL } \frac{M}{5} \text{ NaOH}$
- (d) $100 \text{ mL } \frac{M}{10} \text{ HCl} + 100 \text{ mL } \frac{M}{10} \text{ NaOH}$

pH of which of them will be equal to 1 ?

- | | |
|-------|-------|
| (1) c | (2) b |
| (3) d | (4) a |

Ans. (1)

149. On which of the following properties does the coagulating power of an ion depend ?

- (1) The sign of charge on the ion alone
- (2) The magnitude of the charge on the ion alone
- (3) Both magnitude and sign of the charge on the ion
- (4) Size of the ion alone

Ans. (3)

150. Which of the following statements is not true for halogens ?

- (1) Chlorine has the highest electron-gain enthalpy.
- (2) All form monobasic oxyacids.
- (3) All but fluorine show positive oxidation states.
- (4) All are oxidizing agents.

Ans. (4)

151. Considering Ellingham diagram, which of the following metals can be used to reduce alumina ?

- | | |
|--------|--------|
| (1) Cu | (2) Fe |
| (3) Mg | (4) Zn |

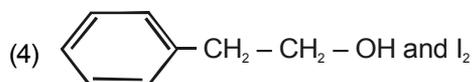
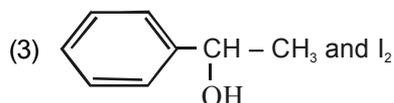
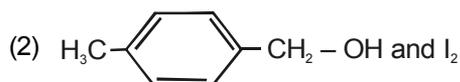
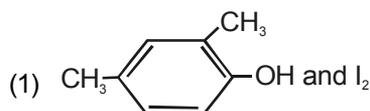
Ans. (3)

- (1) Formation of intermolecular H-bonding
- (2) Formation of intramolecular H-bonding
- (3) More extensive association of carboxylic acid via van der Waals force of attraction
- (4) Formation of carboxylate ion

Ans. (1)

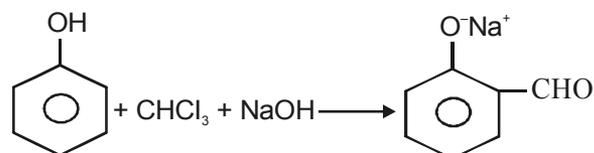
165. Compound A, $C_8H_{10}O$, is found to react with NaOI (produced by reacting Y with NaOH) and yields a yellow precipitate with characteristic smell.

A and Y are respectively



Ans. (3)

166. In the reaction



the electrophile involved is

- (1) Dichlorocarbene ($\cdot CCl_2$)
- (2) Dichloromethyl cation ($\oplus CHCl_2$)
- (3) Dichloromethyl anion ($\ominus CHCl_2$)
- (4) Formyl cation ($\oplus CHO$)

Ans. (1)

167. The bond dissociation energies of X_2 , Y_2 and XY are in the ratio of 1 : 0.5 : 1. ΔH for the formation of XY is -200 kJ mol^{-1} . The bond dissociation energy of X_2 will be

- (1) 400 kJ mol^{-1}
- (2) 200 kJ mol^{-1}
- (3) 800 kJ mol^{-1}
- (4) 100 kJ mol^{-1}

Ans. (3)

168. When initial concentration of the reactant is doubled, the half-life period of a zero order reaction

- (1) Remains unchanged
- (2) Is halved
- (3) Is tripled
- (4) Is doubled

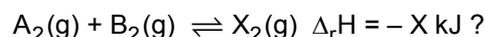
Ans. (4)

169. The correction factor 'a' to the ideal gas equation corresponds to

- (1) Forces of attraction between the gas molecules
- (2) Density of the gas molecules
- (3) Electric field present between the gas molecules
- (4) Volume of the gas molecules

Ans. (1)

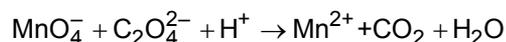
170. Which one of the following conditions will favour maximum formation of the product in the reaction,



- (1) High temperature and low pressure
- (2) Low temperature and high pressure
- (3) High temperature and high pressure
- (4) Low temperature and low pressure

Ans. (2)

171. For the redox reaction



the correct coefficient of the reactants for the balanced equation are

	MnO_4^-	$C_2O_4^{2-}$	H^+
(1)	5	16	2
(2)	16	5	2
(3)	2	16	5
(4)	2	5	16

Ans. (4)

172. Regarding cross-linked or network polymers, which of the following statements is incorrect ?

- (1) They contain strong covalent bonds in their polymers chains.
- (2) They contain covalent bonds between various linear polymer chains.
- (3) Examples are bakelite and melamine.
- (4) They are formed from bi- and tri-functional monomers.

Ans. (1)

173. Nitration of aniline in strong acidic medium also gives m-nitroaniline because

- (1) In acidic (strong) medium aniline is present as anilinium ion.
- (2) In spite of substituents nitro group always goes to only m-position

- (3) In absence of substituents nitro group always goes to m-position.
 (4) In electrophilic substitution reactions amino group is meta directive.

Ans. (1)

174. Which of the following oxides is most acidic in nature?

- (1) CaO (2) MgO
 (3) BaO (4) BeO

Ans. (4)

175. The difference between amylose and amylopectin is

- (1) Amylose is made up of glucose and galactose
 (2) Amylopectin have $1 \rightarrow 4$ α -linkage and $1 \rightarrow 6$ α -linkage
 (3) Amylopectin have $1 \rightarrow 4$ α -linkage and $1 \rightarrow 6$ β -linkage
 (4) Amylose have $1 \rightarrow 4$ α -linkage and $1 \rightarrow 6$ β -linkage

Ans. (2)

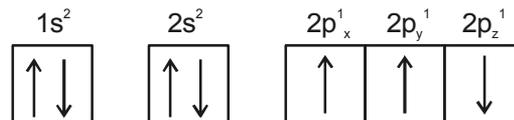
176. A mixture of 2.3 g formic acid and 4.5g oxalic acid is treated with conc. H_2SO_4 . The evolved gaseous mixture is passed through KOH pellets. Weight (in g) of the remaining product at STP will be

- (1) 4.4 (2) 1.4
 (3) 2.8 (4) 3.0

Ans. (3)

177. Which one is a wrong statement?

- (1) The value of m for d_{z^2} is zero
 (2) Total orbital angular momentum of electron in 's' orbital is equal to zero
 (3) The electronic configuration of N atom is



- (4) An orbital is designated by three quantum numbers while an electron in an atom is designated by four quantum numbers

Ans. (3)

178. Consider the following species:

CN^+ , CN^- , NO and CN

Which one of these will have the highest bond order?

- (1) CN (2) NO
 (3) CN^+ (4) CN^-

Ans. (4)

179. Magnesium reacts with an element (X) to form an ionic compound. If the ground state electronic configuration of (X) is $1s^2 2s^2 2p^3$, the simplest formula for this compound is

- (1) Mg_3X_2 (2) Mg_2X_3
 (3) Mg_2X (4) MgX_2

Ans. (1)

180. Iron exhibits bcc structure at room temperature. Above $900^\circ C$, it transforms to fcc structure. The ratio of density of iron at room temperature to that at $900^\circ C$ (assuming molar mass and atomic radii of iron remains constant with temperature) is

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

Ans. (3)

