Techior Solutions Pvt. Ltd.

NEET 2026 Mock Test

Total Time: 3 Hr | Total Marks: 720.0

Physics

1) At constant volume, temperature of a cylinder is increased then:

A) Collision on walls will be less

B) Collision frequency will increase

C) Collision will be in straight line

D) Collision will not change

2) A physical quantity of the dimension of length that can be formed out of c, G and $\frac{e^2}{4\pi\varepsilon_0}$ is: [c is velocity of light, G is universal constant of gravitation, e is charge]

A) $e^2\left[G\frac{e^2}{4\pi\varepsilon_0}\right]^{1/2}$

B) $\frac{1}{c^2}\left[\frac{e^2}{G4\pi\varepsilon_0}\right]^{1/2}$

C) $\frac{1}{c}G\frac{e^2}{4\pi\varepsilon_0}$

D) $\frac{1}{c^2}\left[G\frac{e^2}{4\pi\varepsilon_0}\right]^{1/2}$

3) Through which character we can distinguish the light waves from sound waves:

A) Interference

B) Refraction

C) Polarization

D) Reflection

4) If the dimensions of a physical quantity are given by $[M^a L^b T^c]$, then the physical quantity will be:

A) Force if, $a = 0, b = -1, c = -2$

B) Pressure if, $a = 1, b = -1, c = -2$

C) Velocity if, $a = 1, b = 0, c = -1$

D) Acceleration if, $a = 1, b = 1, c = -2$

5) Workdone in increasing the size of a soap bubble from radius of 3 cm to 5 cm is nearly (surface tension of soap solution $= 0.03\text{Nm}^{-1}$)

A) 0.2π Mj

B) 2π mJ

C) 0.4π mJ

D) 4π mJ

6) If two balls are projeted at angles of $45°$ and $60°$ and the maximum heights reached are same, what is the ratio of initial velocities?

A) $2:3$

B) $3:2$

C) $\sqrt{2}:\sqrt{3}$

D) $\sqrt{3}:\sqrt{2}$

7) 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 becomes 10I. The value of ' n ' is:

A) 20

B) 11

C) 10

D) 9

8) A polarizer is used to

A) reduce intensity of light

B) produce polarized light

C) increase intensity of light

D) produce unpolarized light

9) The speed of a homogenous solid sphere after rolling down an inclined plane of vertical height h from rest without sliding is:

A) $\sqrt{10gh/7}$

B) $\sqrt{gh}$

C) $\sqrt{6gh/5}$

D) $\sqrt{4gh/3}$

10) A car of mass 1600 kg negotiates a banked curve of radius 160 m on a frictionless road. If the banking angle is $45°$, the speed of the car is:

A) 45 m/s

B) 40 m/s

C) 20 m/s

D) 80 m/s

11) Given below are two statements:

Statement I: The presence of a negatively charged metal bob oscillating above a positively charged metal plate will affect the period of the pendulum.

Statement II: The interaction between the opposite charges generates an attractive electric force that modifies the effective acceleration experienced by the pendulum bob, thereby altering its period.
Choose the correct answer from the options given below:

A) Statement I is true, Statement II is true and Statement II is the correct explanation of Statement I

B) Statement I is true, Statement II is true, but Statement II is not the correct explanation of Statement I

C) Statement I is true, Statement II is false

D) Statement I is false, Statement II is true

12) A small object of uniform density rolls up a curved surface with an initial velocity " v ". It reaches up to a maximum height of $3v^2/4g$ with respect to the initial position. The object is:

A) Solid sphere

B) Hollow sphere

C) Disc

D) Ring

13) The acceleration due to gravity on planet A is 9 times the acceleration due to gravity on planet B. A man jumps to a height of 2 m on the surface of planet A . What is the height of the same jump on planet ?

A) 18 m

B) 6 m

C) $\frac{2}{3}$ m

D) 219 m

14) An alternating voltage source is connected in series with a resistor R and an inductor L . If the potential drop across resistor is 120 V and across inductor is 50 V then the supply voltage is

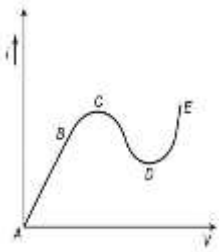
A) 170 V

B) 70 V

C) 130 V

D) 110 V

15) From the graph between current i and voltage V shown below, identify the portion corresponding to negative resistance:



A) DE

B) CD

C) BC

D) AB

16) Velocity of light in glass whose refractive index with respect to air is 1.5 is 2×10^8 m/s. Also in certain unknown liquid the velocity of light is found to be 2.5×10^8 m/s. The refractive index of the liquid with respect to air is

A) 0.64

B) 0.80

C) 1.20

D) 1.44

17) A charge of $40\mu C$ is given to a capacitor having capacitance $C = 10\mu$ F. The stored energy in ergs is:

A) 80×10^{-6}

B) 800

C) 80

D) 8000

18) A semi-conducting device is connected in a series circuit with a resistance. A current is found to pass through the circuit. If the polarity of the battery is reversed, the current drops to almost zero. The device may be:

A) A $p-n$ junction

B) An intrinsic semi-conductor

C) A p-type semi-conductor

D) An n-type semiconductor

19) A plane polarised light coming out of a polarizer with intensity I_0 enters an analyser kept at an angle of 45° with the polarizer. What will be the intensity of the light coming out of the analyser?

A) I_0

B) $\frac{I_0}{2}$

C) $\frac{I_0}{4}$

D) Zero

20) In which of the following cases the potential energy is defined

A) non-conservative forces only

B) conservative forces only

C) both conservative and non-conservative forces

D) none of these

21) Water with a mass of 2.0 kg is held at constant volume in a container while 10.0 kJ of energy is slowly added by a flame. The container is not well insulated, and as a result 2.0 kJ of energy leaks out to the surroundings. What is the temperature of water?

A) $0.28°C$

B) $27°C$

C) $0.96°C$

D) $1.27°C$

22) Statement I: A car is moving in a horizontal circular plane with varying speed, then the net frictional force is neither pointing towards the radial direction nor along the tangential direction.
Statement II: Components of the frictional force are providing the necessary tangential and centripetal acceleration, in the above situation.

A) Statement I is true, Statement II is true and Statement II is the correct explanation of Statement I

B) Statement I is true, Statement II is true, but Statement II is not the correct explanation of Statement I

C) Statement I is true, Statement II is false

D) Statement I is false, Statement II is true

23) A sound of wavelength λ travelling in a medium with a speed of v m/s enters into another medium where its speed is $2v$ m/s. Wavelength of the sound wave in the second medium is

A) λ

B) $\lambda/2$

C) 2λ

D) 4λ

24) A person of mass 60 kg is inside a lift of mass 940 kg and presses the button on control panel. The lift starts moving upwards with acceleration $1.0\ \text{ms}^{-2}$. If $g = 10\ \text{ms}^{-2}$, the tension in the supporting cable is:

A) 8600 N

B) 9680 N

C) 11000 N

D) 1200 N

25) Three sound waves of equal amplitudes have frequencies $(n-1), n, (n+1)$. They superimpose to give beats. The number of beats produced per second will be:

A) 1

B) 4

C) 3

D) 2

26) In a plane electromagnetic wave, the electric field oscillates sinusoidally at a frequency of 2×10^{10} Hz with amplitude of $48 \mathrm{Vm}^{-1}$. The wavelength of wave is

A) 24×10^{-10} m
B) 24×10^{8} m
C) 1.5×10^{8} m
D) 1.5×10^{-2} m

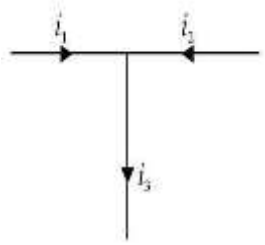
27) The isothermal elasticity of a gas is equal to:

A) Density
B) Volume
C) Pressure
D) Specific heat

28) A light string passing over a smooth light pulley connects two blocks of masses m_1 and m_2 (vertically). If the acceleration of system is $\frac{g}{8}$, then the ratio of masses is:

A) 8 : 1
B) 9 : 7
C) 4 : 3
D) 5 : 3

29) If $i_1 = 3\sin \omega t$ and $i_2 = 4\cos \omega t$, then i_3 is:



A) $5\sin(\omega t + 53°)$
B) $5\sin(\omega t + 37°)$
C) $5\sin(\omega t + 45°)$
D) $5\cos(\omega t + 53°)$

30) A current of 4×10^{-3} A is flowing in a long straight conductor. The value of line integral of magnetic field around the closed path enclosing the straight conductor will be

A) $1.6\pi \times 10^{-9} \mathrm{Wbm}^{-2}$
B) $1.6 \times 10^{-9} \mathrm{Wbm}^{-2}$
C) $1.6 \times 10^{-9} \mathrm{Wbm}^{-2}$
D) $1.6\pi \times 10^{-7} \mathrm{Wbm}^{-2}$

31) A particle of mass m is moving with a uniform velocity v_1. It is given an impulse such that its velocity becomes v_2. The impulse is equal to:

A) $m[|v_2| - |v_1|]$

B) $\frac{1}{2}[v_2^2 - v_1^2]$

C) $m[v_2 + v_1]$

D) $m[v_2 - v_1]$

32) A parallel beam of monochromatic light of wavelength 5000Å is incident normally on a single narrow slit of width 0.001 mm . The light is focused by a convex lens on a screen placed on the focal plane. The first minima will be formed for the angle of diffraction equal to

A) $0°$

B) $15°$

C) $30°$

D) $60°$

33) A long wire carrying a steady current is bent into a circular loop of one turn. The magnetic field at the centre of the loop is B. It is then bent into a circular coil of n turns. The magnetic field at the centre of this coil of n turns will be:

A) n B

B) n^2B

C) $2n$ B

D) $2n^2$ B

34) Voltage and current in AC circuit are given by $\mathrm{V} = 10\sin\left(50\pi t - \frac{\pi}{6}\right)$ and $\mathrm{I} = 4\sin\left(50\pi t + \frac{\pi}{6}\right)$

A) Voltage leads the current by 60°

B) Voltage leads the current by 30°

C) Current leads the voltage by 30°

D) Current leads the voltage by 60°

35) The electric potential at a point on the axis of an electric dipole depends on the distance r of the point from the dipole as:

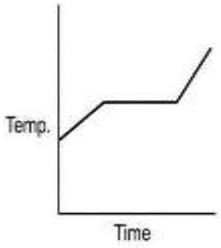
A) $\propto 1/r$

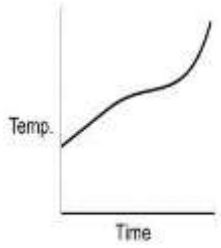
B) $\propto 1/r^2$

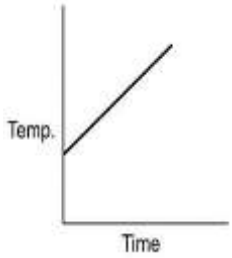
C) $\propto 1/r^2$

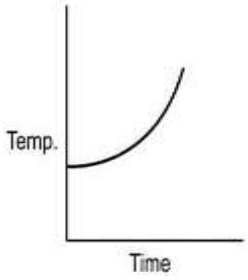
D) $\propto 1/r^3$

36) Liquid oxygen at 50 K is heated to 300 K at constant pressure of 1 atm . The rate of heating is constant. Which one of the following graphs represents the variation of temperature with time?

A) 

B) 

C) 

D) 

37) A man is sitting with folded hands on a revolving table. Suddenly, he stretches his arms, Angular speed of the table would:

A) Increase

B) Decrease

C) Remain the same

D) Nothing can be said

38) Which of the following statements is true about the indicator diagram of adiabatic and isothermal processes?

A) The slope of isothermal is more than that of adiabatic

B) The slope of adiabatic is more than that of isothermal

C) Both are parallel straight lines

D) Both are parallel curves

39) How many revolutions does an electron makes in the first Bohr orbit in one second?

A) 1.33×10^{16}

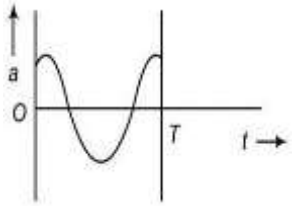
B) 6.57×10^{16}

C) 1.54×10^{16}

D) 6.57×10^{15}

40) The oscillation of a body on a smooth horizontal surface is represented by the equation $X = A\cos(\omega t)$, where $X =$ displacement at time and t, and $\omega =$ frequency of oscillation.
Which one of the following graph shows correctly variation of ' a ' with ' t '?

A)



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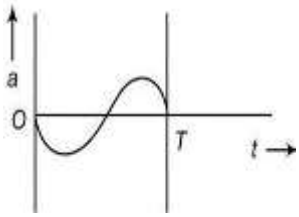

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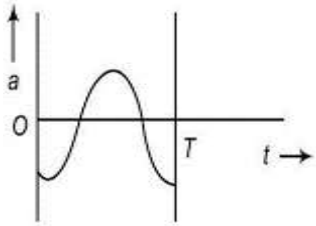
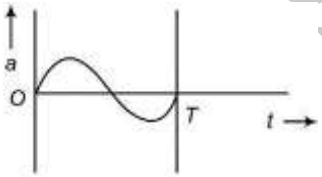


D)



41) The acceleration of electron in the first orbit of hydrogen atom is

A) $\frac{4\pi^2 m}{h^3}$

B) $\frac{h^2}{4\pi^2 mr}$

C) $\frac{h^2}{4\pi^2 m^2 r^3}$

D) $\frac{m^2 h^2}{4\pi^2 r^3}$

42) The magnetic flux across a loop of resistance 10Ω is given by $10t^2 - 8t + 6$ Wb. How much current is induced in the loop after 2 s ?

A) 3.2 A
B) 2.2 A
C) 4.2 A
D) 1.2 A

43) A specimen of silicon is to be made p-type semiconductor. For this one atom of indium, on an average, is doped in 5×10^7 silicon atoms. If the number density of silicon is 5×10^{28} atoms $/\mathrm{m}^2$, then the number of acceptor atoms per cm^3 will be:

A) 2.5×10^{30}
B) 1.0×10^{13}
C) 1.0×10^{15}
D) 2.5×10^{36}

44) In a p-n junction diode, change in temperature due to heating:

A) Does not affect resistance of $p-n$ junction
B) Affects only forward resistance
C) Affects only reverse resistance
D) Affects the overall V-I characteristics of P-N junction

45) A certain metallic surface is illuminated with monochromatic light of wavelength, λ. The stopping potential for photoelectric current for this light is $3\ V_0$. If the same surface is illuminated with light of wavelength 2λ, the stopping potential is V_0. The threshold wavelength for this surface for photoelectric effect is:

A) $\lambda/4$
B) $\lambda/6$
C) 6λ
D) 4λ

Chemistry

1) At $25^{\circ}C$, the dissociation constant of a base, BOH is 1.0×10^{-12}. The concentration of hydroxyl ions in 0.01 M aqueous solution of the base would be:

A) $2.0 \times 10^{-6}\ mol\ L^{-1}$

B) $1.0 \times 10^{-5}\ mol\ L^{-1}$

C) $1.0 \times 10^{-6}\ mol\ L^{-1}$

D) $1.0 \times 10^{-7}\ mol\ L^{-1}$

2) Following compounds are given:

(i) CH_3CH_2OH (ii) CH_3COCH_3

(iii) $CH_3-CHOH-CH_3$ (iv) CH_3OH

Which of the above compound(s), on being warmed with iodine solution and NaOH , will give iodoform?

A) (i), (iii) and (iv)

B) Only (ii)

C) (i), (ii) and (iii)

D) (i) and (ii)

3) Given below are two statements

Statement I: The bond angle in BCl_3 is 120°.
Statement II: The geometry of BCl_3 is trigonal.
Choose the correct answer from the options given below:

A) Statement I is incorrect but Statement II is true

B) Both statement I and Statement II are true

C) Both Statement I and Statement II are false

D) Statement I is correct but statement II is false

4) The angular momentum of electron in ' d ' orbital is equal to:

A) $2\sqrt{3}\ h$

B) h

C) $\sqrt{6}h$

D) $\sqrt{2}h$

5) One mole of Al^{3+} discharged completely by using charge?

A) 3 F

B) 1 F

C) 0.3 F

D) 2 F

6) Which of the following is an ideal solution?

A) Ethanol + water

B) Ethanol + benzene

C) Nitric acid + water

D) Benzene + toluene

7) Given below are two statements: one is labelled as

Assertion A and the other is labelled as Reason R:
Assertion A: Gadolinium belongs to 4 f series.
Reasons R: atomic number of Gadolinium is 64.
In the light of the above statements, choose the correct answer from the options given below:

A) Both A and R are true and R is NOT the correct explanation of A

B) A is true but R is false

C) A is false but R is true

D) Both A and R are true and R is the correct explanation of A

8) The rate of first-order reaction is $0.04\ mol\ L^{-1}\ s^{-1}$ at 10 seconds and $0.03\ mol\ L^{-1}\ s^{-1}$ at 20 seconds after initiation of the reaction. The half-life period of the reaction is:

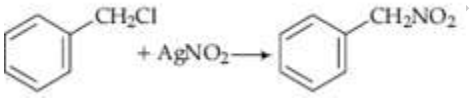
A) 44.1 s

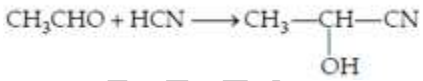
B) 54.1 s

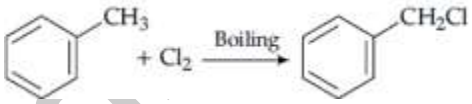
C) 24.1 s

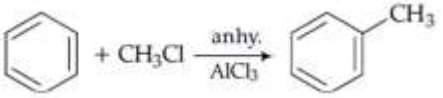
D) 34.1 s

9) Which one of the following is a free-radical substitution reaction?

A) 

B) 

C) 

D) 

10) A mixture of gases contains H_2 and O_2 gases in the ratio of $1:4(w/w)$. What is the molar ratio of the two gases in the mixture?

A) 16 : 1
B) 2 : 1
C) 1 : 4
D) 4 : 1

11) Consider the following statements.

(1) XeF_4 is colourless crystalline solid and undergoes sublimation.

(2) $XeOF_4$ is colourless volatile liquid.

(3) XeO_3 is colourless explosive solid.

The correct statements are:

A) (1) and (2) only
B) (2) and (3) only
C) (1) and (3) only
D) (1), (2) and (3)

12) The experimental data for the reaction $2\,A + B_2 \longrightarrow 2AB$ is:

Exp.	[A]	[B]	Rate (Ms^{-1})
1.	0.50	0.50	1.6×10^{-4}
2.	0.50	1.00	3.2×10^{-4}
3.	1.00	1.00	3.2×10^{-4}

The rate equation for the above data is:

A) rate $= k[B_2]$
B) rate $= k[B_2]^2$
C) rate $= k[A]^2[B]^2$
D) rate $= k[A]^2[B]$

13) The enthalpy of vaporization of $H_2O(l)$ is xkJ/mol and enthalpy of formation of water vapour ykJ/mol. Enthalpy of formation of $H_2O(l)$. would be

A) $(y-x)kJmol^{-1}$
B) $(x-y)kJmol^{-1}$
C) $(x+y)kJmol^{-1}$
D) $(2x-y)kJmol^{-1}$

14) How many isomers are possible for coordination complex $[Co(NH_3)_5(NO_2)](NO_3)_2$.\

A) 6

B) 10

C) 4

D) 12

15) What is the correct IUPAC name of the following coordination compound.

$[Cr(py)_3Cl_3]$

A) Trichlorotripyridinium chromium (III)

B) Tripyridiniumtrichloro chromium (III)

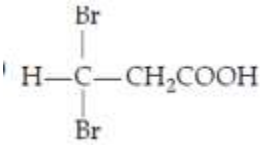
C) Trichlorotripyridine chromium (III)

D) Trichlorotripyridine chromium (II)

16) Propionic acid with Br_2/P yields a dibromo product. Its structure would be:

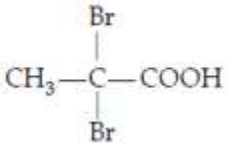
A) $CH_2Br—CHBr—COOH$

B)



C) $CH_2Br—CH_2—COBr$

D)



17) Equal volumes of four acid solutions having $pH1,2,3$ and 4 are mixed in a container. The concentration of hydrogen ion in the mixture of

A) $4.25 \times 10^{-4}M$

B) $2.78 \times 10^{-2}M$

C) $2.30 \times 10^{-3}M$

D) $1.35 \times 10^{-2}M$

18) The correct order of increasing bond length of $C-H, C-O, C-C$ and $C=C$ is:

A) $C-C < C=C < C-O < C-H$

B) $C-O < C-H < C-C < C=C$

C) $C-H < C-O < C-C < C=C$

D) $C-H < C=C < C-O < C-C$

19) The efficiency of a fuel cell is given by:

A) $\frac{\Delta G}{\Delta S}$

B) $\frac{\Delta G}{\Delta H}$

C) $\frac{\Delta S}{\Delta G}$

D) $\frac{\Delta H}{\Delta G}$

20) Given below are two statements: one is labelled as

Assertion A and the other is labelled as Reason R:
Assertion A: Acetone and ethanol distinguished by 2, 4 DNP test.
Reasons R: Ethanol do not react with 2, 4 DNP
In the light of the above statements, choose the correct answer from the options given below:

A) Both A and R are true and R is NOT the correct explanation of A

B) A is true but R is false

C) A is false but R is true

D) Both A and R are true and R is the correct explanation of A

21) The numbers of mole of phenylhydrazine needed to form fructosazone when react with fructose is:

A) 1

B) 2

C) 3

D) 4

22) Which one of the following orders is correct for the bond dissociation enthalpy of halogen molecules?

A) $Br_2 > I_2 > F_2 > Cl_2$

B) $F_2 > Cl_2 > Br_2 > I_2$

C) $I_2 > Br_2 > Cl_2 > F_2$

D) $Cl_2 > Br_2 > F_2 > I_2$

23) In H-atom spectrum electron jumps from 5th excited state to 1st excited state then total number of spectral lines, number of lines in Lyman series and Paschen series respectively are:

A) 10, 4, 3

B) 15, 0, 4

C) 15, 4, 5

D) 10, 0, 3

24) Given below are two statements

Statement I: SF_6 exists but SH_6 does not.
Statement II:
$d\pi - p\pi$ bonding cannot take place in SH_6.
Choose the correct answer from the options given below:

A) Statement I is incorrect but Statement II is true

B) Both statement I and Statement II are true

C) Both Statement I and Statement II are false

D) Statement I is correct but statement II is false

25) Given below are two statements: one is labelled as

Assertion A and the other is labelled as Reason R.
Assertion A: The structure of XeF_6 is not symmetrical.
Reasons R: XeF_6 have zero dipole moment.
In the light of the above statements, choose the correct answer from the options given below:

A) Both A and R are true and R is NOT the correct explanation of A

B) A is true but R is false

C) A is false but R is true

D) Both A and R are true and R is the correct explanation of A

26) Match list I with List II.

List I	List II
(A) Protein	(i) DNA
(B) Nucleic acid	(ii) Polymer of α-amino acids
	(iii) glucogen
(C) Polysaccharides	(iv) maltase

Choose the correct answer from the options given below.

A) (A)-(ii), (B)-(i), (C)-(iii), (D)-(iv)

B) (A)-(i), (B)-(ii), (C)-(iv), (D)-(iii)

C) (A)-(iv), (B)-(iii), (C)-(ii), (D)-(i)

D) (A)-(iii), (B)-(ii), (C)-(iv), (D)-(i)

27) The incorrect statements among the following is:

A) Glucose on oxidation with Br_2/H_2O gives gluconic acid

B) The pentaacetate of glucose does not react with hydroxyl amine

C) The six membered cyclic structure of glucose is called furanose structure

D) The two cyclic hemiacetal forms of glucose are anomers of each other

28) The species Ar, K^+ and Ca^{2+} contain the same number of electrons. In which order do their radii increase?

A) $Ca^{2+} < K^+ < Ar$

B) $K^+ < Ar < Ca^{2+}$

C) $Ar < K^+ < Ca^{2+}$

D) $Ca^{2+} < Ar < K^+$

29) Indicate the coordination number and oxidation state of the complex $[Ni(en)_2(C_2O_4)]NO_2$.

A) +1

B) +2

C) -2

D) +3

30) Aqueous solution of which of the following compounds is the best conductor of electric current?

A) Hydrochloric acid, HCl

B) Ammonia, NH_3

C) Fructose, $C_6H_{12}O_6$

D) Acetic acid, $C_2H_4O_2$

31) In which of the following reaction $C-C$ bond formation does not take place?

A) Gattermann-Koch reaction

B) Étard reaction

C) Benzoin condensation

D) Swarts reaction

32) In which of the following options the order of arrangement does not agree with the variation of property indicated against it?

A) $I < Br < Cl < F$ (increasing electron gain enthalpy)

B) $Li < Na < K < Rb$ (increasing metallic radius)

C) $Al^{3+} < Mg^{2+} < Na^+ < F^-$ (increasing ionic size)

D) (a) and (c) both

33) Among the following compounds, one that is most reactive towards electrophilic nitration is

A) benzoic acid

B) nitrobenzene

C) toluene

D) benzene

34) In which of the following molecules/ions BF_3, NO_2^-, NH_2^- and H_2O, the central atom is sp^2 hybridised?

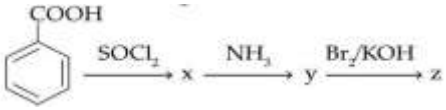
A) NO_2^- and NH_2^-

B) NH_2^- and H_2O

C) NO_2^- and H_2O

D) BF_3 and NO_2^-

35) Give the IUPAC nomenclature of the final product(z) formed in the following reactions.



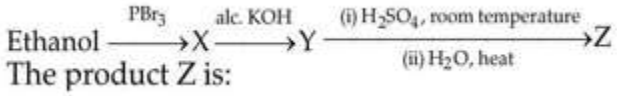
A) Aniline

B) Chlorobenzene

C) Benzamide

D) Benzoyl chloride

36) Consider the following reaction:



The product Z is:

A) $CH_3CH_2O-CH_2-CH_3$

B) $CH_3-CH_2-O-SO_3H$

C) CH_3CH_2OH

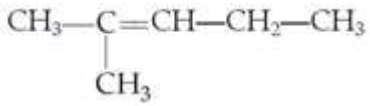
D) $CH_2=CH_2$

37) Which of the following will not show cis-trans isomerism?

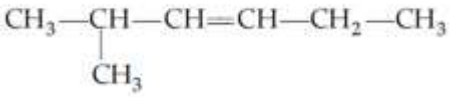
A) $CH_3—CH=CH—CH_3$

B) $CH_3—CH_2—CH=CH—CH_2CH_3$

C)



D)



38) The value of ΔH and ΔS for the reaction,

$C_{(\text{grpphite})}(s) + CO_2(g) \rightarrow 2CO(g)$ are 170 kJ and $170 JK^{-1}$, respectively. This reaction will be spontaneous at:

A) 710 K

B) 910 K

C) 1110 K

D) 510 K

39) Which of the following is correct with respect to -I effect of the substituents? [R = alkyl]

A) $-NH_2 > -OR > -F$

B) $-NR_2 < -OR < -F$

C) $-NH_2 < -OR < -F$

D) $-NR_2 > -OR > -F$

40) Which of the following statement(s) is correct?

A) $[Fe(CN)_6]^4$ is diamagnetic but $[Fe(CN)_6]^{3-}$ is paramagnetic

B) Fe^{3+} ions always form tetrahedral complexes

C) In a compound with an octahedral structure, the d_{xy} and d_{yz} orbitals of a metal ion should be vacant.

D) The ferric ammonium alum is a complex salt.

41) In which electrophilic substitution reaction slow step is breaking of $C-H$ bond?

A) Sulphonation of benzene

B) Nitration of benzene

C) Chlorination of benzene

D) All of these

42) A button cell used in watches functions as following:

$$Zn(s) + Ag_2O(s) + H_2O(l) \rightarrow 2Ag(s) + Zn^{2+}(aq) + 2OH^-(aq)$$

If half-cell potentials are:

$$\mathbf{Zn}^{2+}(aq) + 2e^- \rightarrow \mathbf{Zn}(s) E^\circ = -0.76\ V$$
$$Ag_2O(s) + H_2O(l) + 2e^- \rightarrow 2Ag(s) + 2OH^-(aq), E^\circ = 0.34\ V$$

The cell potential will be:

A) 1.10 V

B) 0.42 V

C) 0.84 V

D) 1.34 V

43) In acidic medium, H_2O_2 changes $Cr_2O_7{}^{2-}$ to CrO_5 which has two ($-O-O-$) bonds. Oxidation state of Cr in CrO_5 is:

A) +5

B) +3

C) +6

D) -10

44) What is the activation energy for a reaction if its rate doubles when the temperature is raised from $20°C$ to $35°C$?
($R = 8.314\ J\ mol^{-1}\ K^{-1}$)

A) $342\ kJ\ mol^{-1}$
B) $269\ kJ\ mol^{-1}$
C) $34.7\ kJ\ mol^{-1}$
D) $15.1\ kJ\ mol^{-1}$

45) A solution has 1 : 4 mole ratio of pentane to hexane. The vapour pressure of the pure hydrocarbons at $20°C$ are 440 mm of Hg for pentane and 120 mm of Hg for hexane. The mole fraction of pentane in the vapour phase would be:

A) 0.549
B) 0.200
C) 0.786
D) 0.478

Botany

1) Read the following statements and select the incorrect one.

A) Chloroplast has 705 ribosomes

B) Nucleolus is not bound by any membrane

C) RER helps in synthesis of fats and proteins

D) Lysosome contains hydrolytic enzymes

2) In the DNA of an organism a total number of 5386 nucleotides were present. The proportion of different bases were: Adenine = 29%; Guanine = 17%; Cytosine = 32% , Thymine = 17%. Considering the Chargaff's rule it can be concluded that:

A) It is a single stranded linear RNA

B) It is single stranded linear DNA

C) It is a double stranded linear DNA

D) It is a double stranded circular DNA

3) Given below are two statements: One is labelled as Assertion A and the other is labelled as Reason R.
Assertion A: Eukaryotic cells have a cell wall composed of peptidoglycan.
Reason R: This feature distinguishes them from prokaryotic cells, where peptidoglycan is a characteristic component of the cell wall.
In the light of the above statements, choose the most appropriate answer from the options given below:

A) Both A and R are correct but R is NOT the correct explanation of A

B) A is correct but R is not correct

C) A is not correct but R is correct

D) Both A and R are correct and R is the correct explanation of A

4) Match the following microbes with the Microbes Product:
A. Aspergillus niger
i. Lactic acid
B. Acetobacter aceti
ii. Butyric acid
C. Clostridium butylicum
iii. Acetic acid
D. Lactobacillus
iv. Citric acid

A) A-ii, B-iii, C-iv, D-i

B) A-ii, B-iv, C-iii, D-i

C) A-iv, B-iii, C-ii, D-i

D) A-iv, B-i, C-iii, D-ii

5) Given below are two statements;

Statement I: In primary structure of a protein, the left end is represented by the first amino acid and the right end by the last amino acid.

Statement II: In a polysaccharide chain, the right end is called the reducing end and the left end is called the nonreducing end.

Choose the correct answer from the options given below:

A) Statement I is incorrect but Statement II is true

B) Both Statement I and Statement II are true

C) Both Statement I and Statement II are false

D) Statement I is correct but Statement II is false

6) What is the genotypic ratio in test cross for a dihybrid cross if two genes are completely linked?

A) 1:1:1:1

B) 1:1

C) 9:3:3:1

D) 3:1

7) The end products of fermentation is

(1) CO_2

(2) Ethanol

(3) Oxygen

(4) Acetaldehyde

A) (1) only

B) (1) and (2) only

C) (2) and (3) only

D) (3) and (4) only

8) The cutting of DNA at specific locations became possible with the discovery of:

A) Restriction enzymes

B) Probes

C) Selectable markers

D) Ligases

9) Ovary is half-inferior in the flowers of:

A) Cucumber
B) Guava
C) Plum
D) Brinjal

10) A pair of plants which can prevent both autogamy as well as geitonogamy is:

A) Cucurbits and coconut
B) Coconut and papaya
C) Cucurbits and date palm
D) Date palm and papaya

11) Statement I is correct but Statement II is false

A) Bacteria that contain a cytoskeleton and ribosomes
B) Archaebacteria that lack any histones resembling those found in eukaryotes but whose DNA is negatively supercoiled
C) Archaebacteria that contain protein homologous to eukaryotic core histones
D) Bacteria whose DNA is relaxed or positively supercoiled but which have a cytoskeleton as well as mitochondria

12) Given below are two statements: One is labelled as Assertion A and the other is labelled as Reason R.
Assertion A: Biofertilizers primarily consist of bacteria.
Reason R: These bacteria, often nitrogen-fixing strains, form symbiotic relationships with plants, enhancing nutrient availability and promoting plant growth.
In the light of the above statements, choose the most appropriate answer from the options given below:

A) Both A and R are correct but R is NOT the correct explanation of A
B) A is correct but R is not correct
C) A is not correct but R is correct
D) Both A and R are correct and R is the correct explanation of A

13) Which is the basic requirement for any type of ecosystem to function and sustain?

A) Constant output of solar energy
B) Constant input of solar energy
C) Organic substances
D) Organic substances dissolved in water

14) Saccharomyces cerevisiae is used to produce enzyme .....

A) invertase
B) pectinase
C) lipase
D) cellulase

15) Escherichia coli bacteria is grown in a medium that contained ^{15}N and after sometime the cells were transferred into a medium containing ^{14}N. A CsCl density gradient centrifugation of the DNA is done after two rounds of replication. How many bands will be observed in the second round?

A) One
B) Two
C) Three
D) Four

16) Which one of the following statements is correct about Bryophytes?

A) Sporophyte and gametophyte generations are independent
B) Sporophyte is partially dependent upon gametophyte
C) Gametophyte is dependent upon Sporophyte
D) Inconspicuous gametophyte is present

17) Given below are two statements: One is labelled as Assertion A and the other is labelled as Reason R.
Assertion A: Antibiotics are effective against bacterial infections.

Reason R: Antibiotics disrupt bacterial cell wall synthesis, protein synthesis, or other essential processes, leading to the inhibition of bacterial growth and eventual elimination.
In the light of the above statements, choose the most appropriate answer from the options given below:

A) Both A and R are correct but R is NOT the correct explanation of A
B) A is correct but R is not correct
C) A is not correct but R is correct
D) Both A and R are correct and R is the correct explanation of A

18) Which is less general in characters as compared to genus?

A) Family
B) Class
C) Division
D) Species

19) A cell organelle containing hydrolytic enzyme is:

A) Mesosome
B) Lysosome
C) Microsome
D) Ribosome

20) The outermost layer of macromolecules in the prokaryotic cell envelope is

A) cell wall
B) cell membrane
C) glycocalyx
D) peptidoglycan

21) The osmotic expansion of a cells kept in water is chiefly regulated by:

A) Mitochondria
B) Vacuoles
C) Plastids
D) Ribosomes

22) Select the incorrect statement with respect to gymnosperms.

A) Gymnosperms are heterosporous
B) The giant red wood tree Sequoia belongs to gymnosperms
C) The pattern of arrangement of reproductive structures of gymnosperms is spores → sporangia → strobili → sporophylls
D) Ginkgo and Pinus belongs to gymnosperms

23) An organic non-protein substance bound to an enzyme and essential for its activity is:

A) Coenzyme
B) Apoenzyme
C) Holoenzyme
D) Isoenzyme

24) Which one of the following organisms is not a eukaryote?

A) Paramecium caudatum
B) Escherichia coli
C) Euglena viridis
D) Amoeba proteus

25) Chiasmata become clearly visible during stage.

A) diplotene
B) metaphase-I
C) anaphase-I
D) pachytene

26) A typical angiosperm anther has 1200 pollen grains. How many pollen mother cells must have been there to produce them?

A) 200
B) 400
C) 300
D) 600

27) Pteridophytes and Bryophytes differ in having:

A) Spermatozoids
B) Conducting system
C) Separate gametophytes
D) Archegonia

28) Given below are two statements:

Statement I: Maximum species diversity is associated with tropical rainforest.
Statement II: Only biotic factors affect the magnitude of primary productivity.
Choose the correct answer from the options given below:

A) Statement I is incorrect but Statement II is true
B) Both Statement I and Statement II are true
C) Both Statement I and Statement II are false
D) Statement I is correct but statement II is false

29) How many of the codons listed in the box codes for valine?
UUA, CUC, AUU, GUA, UCC, CCU, ACA, GUU

A) 2
B) 3
C) 4
D) 5

30) Feedstock for biodiesel can primarily be obtained from

A) Nymphaea
B) Abelmoschus
C) Triticum
D) Jatropha

31) Which of the following component of phloem is made up of sclerenchymatous cells?

A) Companion cells
B) Bast fiber
C) Sieve tubes
D) Xylem fiber

32) Read the statements given below and fill the blanks with correct option for ' X ' and ' Y'.
(I) During the course of evolution, vascular plants first originated in ' X '_period.
(II)Herbaceous lycopods and arborescent lycopods evolved from Zosterophyllum of 'Y' era.

A) 'X' - Devonian, 'Y' - Palaeozoic
B) ' X ' - Silurian, ' Y ' - Palaeozoic
C) ' X ' - Permian, ' Y ' - Mesozoic
D) 'X' - Cretaceous, ' Y' - Cenozoic

33) Which of the following pairs is incorrectly matched?
(i) Gregor Johann Mendel - Father of genetics
(ii) Reginald-Punnett square
(iii) Walter Sutton and de Vries-Chromosomal theory of inheritance
(iv) Von Tschermak- Linkage in Drosophila

A) (i) and (ii)
B) Both (i) and (iii)
C) Only (ii)
D) Both (iii) and (iv)

34) Which of the given part of oxysome is a peripheral membrane protein and contains the site for ATP synthesis?

A) Headpiece
B) Base
C) Stalk
D) F_0 - part

35) Place the following event of translation in the correct sequence:
(i) Binding of met-tRNA to the start codon.
(ii) Covalent bonding between two amino acids.
(iii) Binding of second tRNA.
(iv) Joining of small and large ribosome subunits.

A) iii, iv, i, ii
B) i, iv, iii, ii
C) iv, iii, ii, i
D) ii, iii, iv, i

36) In which one of the following processes, carbon dioxide is not released?

A) Aerobic respiration in animals
B) Alcoholic fermentation
C) Lactate fermentation
D) Aerobic respiration in plants

37) Plants which produce characteristic pneumatophores and show vivipary belong to:

A) Mesophytes
B) Halophytes
C) Psammophytes
D) Hydrophytes

38) Given below are two statements: One is labelled as Assertion A and the other is labelled as Reason R.
Assertion A: In Bt Cotton, the conversion of Bt toxin present in plant tissue from protoxin to active toxin occurs.
Reason R: This conversion is primarily facilitated by the alkaline pH of the insect gut, allowing the activation of the Bt toxin and enhancing its efficacy against target pests.

In the light of the above statements, choose the most appropriate answer from the options given below:

A) Both A and R are correct but R is NOT the correct explanation of A
B) A is correct but R is not correct
C) A is not correct but R is correct
D) Both A and R are correct and R is the correct explanation of A

39) Vascular bundles in monocotyledons are considered closed because:

A) Xylem is surrounded all around by phloem
B) A bundle sheath surrounds each bundle
C) Cambium is absent
D) There are no vessels with perforations

40) PGA as the first carbon dioxide fixation product was discovered in photosynthesis of

A) Gymnosperm
B) Angiosperm
C) Alga
D) Bryophyte

41) There are three major types of RNAs present in bacteria and each of them has specific functions.
(i) m RNA - Provides the template for translation.
(ii) t RNA - Brings polypeptide chain and reads the transcription unit.
(iii) rRNA - Plays structural and catalytic role during translation.
Identify the type(s) of RNA with its incorrect matching of function

A) (i) and (ii)
B) only (i)
C) (ii) and (iii)
D) only (ii)

42) A template strand of DNA has base sequence CATGATTAC. New strand synthesized on it will be :

A) GATCAUATG
B) GTACTAACG
C) GAACTAATG
D) GTACTAATG

43) The parasitic fungus on mustard plant is

A) Albugo
B) Ustilago
C) Puccinia
D) Colletotrichum

44) Which of the given character of pea plants is seen only in pure lines?

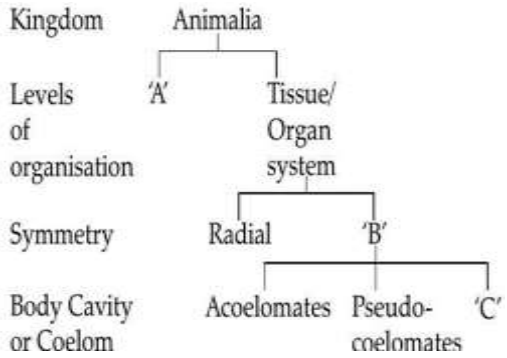
A) Round seeds
B) Yellow pods
C) Full Pods
D) Violet flowers

45) Swiss cheese is ripened with the help of bacterium:

A) Penicillium roqueforti
B) Penicillium camembertii
C) Lactobacillus
D) Propionibacterium sharmanii

Zoology

1) Complete the following chart by choosing correct option for ' A ', 'B' and ' C '.



A) A - Cellular B- Bilateral C - Coelomates

B) A - Cellular B - Asymmetry C - Eucoelomates

C) A - Cellular B - Asymmetry C - Enterocoelomate

D) A - Schiozo cellular B - Biradial C - Coelomates

2) Which one of the following synovial joint is incorrectly matched with its position?

A) Hinge Joint → Knee

B) Pivot Joint → Between Atlas and Axis

C) Gliding Joint → Between Carpal bones

D) Ellipsoid Joint → Between pectoral girdle and head of humerus

3) The genetic disease that transfers from a phenotypically normal but carrier female to only some of the male progenies. The disease is:

A) Autosomal dominant

B) Autosomal recessive

C) Sex-linked dominant

D) Sex-linked recessive

4) Volume of air that will remain in the lungs after a normal expiration is:

A) FRC

B) VC

C) ERV

D) IRV

5) Hypothalmic hormones are transported to neurohypophysis through:

A) Portal vein

B) Portal artery

C) Axons

D) Lymph vessel

6) The most abundant protein in animals is and most abundant protein on Earth is respectively. Choose the option that fills the blanks correctly.

A) RUBisCO and Elastin
B) Collagen and Elastin
C) RuBisCO and Collagen
D) Collagen and RuBisCO

7) MALT is considered as the secondary lymphoid organ which is located within the lining of major tracts in the body. Here, MALT stands for:

A) Metaderm Associated Lymphoid Tissues
B) Medulla Associated Lymphoid Tissues
C) Mucosal Associated Lymphoid Tissues
D) Mucosal Associated Leukemia Tissues

8) Which one of the following hormones maintains the Pregnancy in second trimester?

A) LH (luteinizing hormone)
B) progesterone
C) estrogen
D) hCG (human Chorionic Gonadotropin)

9) Given below are two statements:

Statement I: The earliest organisms that appeared on the earth were non-green and presumably anaerobes.
Statement II: The first autotrophic organisms were the chemoautotrophs that never released oxygen.
Choose the correct answer from the options given below:

A) Statement I is incorrect but Statement II is true
B) Both Statement I and Statement II are true
C) Both Statement I and Statement II are false
D) Statement I is correct but statement II is false

10) Which of the following is correct regarding thrombin?

A) It is a protein of primary structure
B) Converts soluble fibrinogen of plasma into insoluble fibrin
C) Converts insoluble fibrinogen into insoluble fibrin
D) Converts fibrin into fibrinogen

11) Find the odd one out.

A) Sea cucumber
B) Sea urchin
C) Sea anemone
D) Sea lily

12) Given below are two statements:

Statement I: Darwin's variations are small and directional.
Statement II: Adaptive radiations leads to divergent evolution.
Choose the correct answer from the options given below:

A) Statement I is incorrect but Statement II is true

B) Both Statement I and Statement II are true

C) Both Statement I and Statement II are false

D) Statement I is correct but Statement II is false

13) Whose experiments cracked DNA and discovered triplet nature of genetic code?

A) Nirenberg and Mathaei

B) Beadle and Tatum

C) Hershey and Chase

D) Morgan and Sturtevant

14) Given below are two statements: One is labelled as Assertion A and the other is labelled as Reason R.
Assertion A: The Human Genome Project significantly contributed to understanding and mapping the entire human genome.
Reason R: Through massive international collaboration, the project employed advanced DNA sequencing technologies, enabling the identification and characterization of genes, leading to profound insights into human genetics and potential applications in medicine.
In the light of the above statements, choose the most appropriate answer from the options given below:

A) Both A and R are correct but R is NOT the correct explanation of A

B) A is correct but R is not correct

C) A is not correct but R is correct

D) Both A and R are correct and R is the correct explanation of A

15) In Hardy-Weinberg equation, the frequency of heterozygous individual is represented by:

A) p^2

B) $2pq$

C) pq

D) q^2

16) Given below are two statements: One is labelled as Assertion A and the other is labelled as Reason R.
Assertion A: After childbirth, a woman may experience difficulty releasing milk to feed her child
Reason R: This condition, known as lactation failure, can be due to insufficient stimulation of the mammary glands or improper latch during breastfeeding, hindering the milk ejection reflex.
In the light of the above statements, choose the most appropriate answer from the options given below:

A) Both A and R are correct but R is NOT the correct explanation of A

B) A is correct but R is not correct

C) A is not correct but R is correct

D) Both A and R are correct and R is the correct explanation of A

17) Given below are two statements:

Statement I: Blood is a fluid connective tissue.
Statement II: Cells of blood form matrix and structural proteins like other connective tissues.
Choose the correct answer from the options given below:

A) Statement I is incorrect but Statement II is true
B) Both Statement I and Statement II are true
C) Both Statement I and Statement II are false
D) Statement I is correct but statement II is false

18) A plover bird and crocodiles have a particular interaction, that is:

A) Commensalism
B) Protocooperation
C) Mutualism
D) Competition

19) All are functions of Sertoli cells except:

A) Formation of blood testis barrier
B) Secretion of smegma
C) Secretes Anti Mullerian Factor
D) Secretes Androgen Binding Protein

20) How many sperms are formed from a secondary spermatocyte?

A) 4
B) 8
C) 2
D) 1

21) Given below are two statements:

Statement I: The most primitive of all craniates are jawless vertebrates.
Statement II: Cyclostomes have paired appendages and sucking circular mouth.
Choose the correct answer from the options given below:

A) Statement I is incorrect but Statement II is true
B) Both statement I and Statement II are true
C) Both Statement I and Statement II are false
D) Statement I is correct but statement II is false

22) Removal of RNA polymerase III from nucleoplasm will affect the synthesis of:

A) $mRNA$

B) r RNA

C) tRNA

D) $hnRNA$

23) How do parasympathetic neural signals affect the working of the heart?

A) Reduce both heart rate and cardiac output

B) Heart rate is increased without affecting the cardiac output

C) Both heart rate and cardiac output increase

D) Heart rate decreases but cardiac output

24) What is the minimum number of plasma membrane that oxygen has to diffuse across to pass from air in the alveolus to haemoglobin inside a R.B.C.?

A) Two

B) Three

C) Four

D) Five

25) Given below are two statements:

Statement I: The cardiac notch is a concave impression on the left lung that accommodates the apex of the heart.

Statement II: It is located near the mediastinal surface of the left lung and is a significant anatomical feature for understanding the relationship between the heart and the lungs in human anatomy.
Choose the correct answer from the options given below:

A) Statement I is incorrect but Statement II is true

B) Both Statement I and Statement II are true

C) Both Statement I and Statement II are false

D) Statement I is correct but Statement II is false

26) Uricotelic mode of excreting nitrogenous wastes is found in:

A) Reptiles and birds

B) Birds and annelids

C) Amphibians and reptiles

D) Insects and amphibians

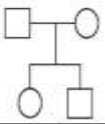
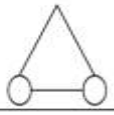
27) When does the Oxygen dissociation curve shift to the right?

A) Decrease in acidity
B) Increase in carbon dioxide concentration
C) Decrease in temperature
D) Decrease in pH

28) Select the Taxon mentioned which represent both marine and fresh water species.

A) Echinoderms
B) Ctenophora
C) Cephalochordata
D) Cnidaria

29) Match the following symbols of the pedigree analysis, with their correct representation:

(A) ◇	(i) Monozygotic Twins
(B) ■□	(ii) Heterozygous Male
(C) 	(iii) Sex unspecified
(D) 	(iv) Parents above and children below

Select the correct option from the following:

A) A - iii, B - ii C - iv D-i
B) A - iii, B - i C - ii D-iv
C) A - iii, B - i C - iv D-ii
D) A - ii, B - iii C - iv D-i

30) Which of the following is not observed during contraction of a muscle fibre?

A) A bands retain the length
B) Shortening of sarcomere
C) I band gets reduced
D) H zone retains the length

31) In mammalian eye, the 'fovea' is the centre of the visual field where:

A) High density of cones occur, but has no rods
B) The optic nerve leaves the eye
C) Only rods are present
D) More rods than cones are found

32) Choose the correct option for ' P ', ' Q ', ' R ' and ' S '

Blood groups	Receive Blood from	Donate Blood to
A	A, O	'P'
B	B, O	' Q '
AB	'R'	AB
O	S '	O, A, B, AB

A) 'P'-A, AB; 'Q'-B, AB; 'R'-AB, A, B, O; 'S'-O

B) 'P'-A; 'Q'-O, A, B, AB; 'R'-AB, A, B, O; 'S'-A, B

C) 'P'-O; 'Q'-B, AB; 'R'-A; 'S'-AB, A, B, O

D) 'P'-O; 'Q'-O, A, B, AB; 'R'-B; 'S'-AB

33) Select the correct match with respect to infection and its causative agent:

A) Gonorrhoea - Trichomonas

B) Genital warts - Treponema

C) Syphilis - Neisseria

D) Tetanus – Clostridium

34) Given below are two statements:

Statement I: Morphine is extracted from the leaves of Cannabis sativa.
Statement II: Chikungunya and amoebic dysentery are both transmitted through mosquito as a vector.
Choose the correct answer from the options given below:

A) Statement I is incorrect but Statement II is true

B) Both Statement I and Statement II are true

C) Both Statement I and Statement II are false

D) Statement I is correct but Statement II is false

35) Which of the following is a non-medicated IUD?

A) Lippe's loop

B) Multiload - 375

C) LNG - 20

D) Progestasert

36) Poikilothermic animals having monocondylic skull and amnion belong to the class:

A) Amphibia
B) Reptilia
C) Aves
D) Mammalia

37) Neoplastic transformation may occur as a result of:

A) Non-ionizing radiation like X-rays
B) Ionizing radiation like UV-rays
C) Non-ionizing gamma rays
D) Both ionizing and non-ionizing radiations

38) Which one of the following organisms is scientifically correctly named, correctly printed according to the International Rules of Zoological Nomenclature and correctly described?

A) Musca domestica - The common house lizard, a reptile
B) Plasmodium falciparum - A protozoan pathogen causing the most serious type of malaria
C) Felis tigris - The Indian tiger, well protected in Gir forests
D) E. coli - Full name Entamoeba coli a commonly occurring bacterium in human intestine

39) Name the cytokines which is released in response to virus infection.

A) Monokines
B) Lymphokines
C) Interleukins
D) Interferons

40) In counter current mechanism, the concentration gradient in the medullary interstitium is mainly maintained by

A) HCO_3^- and K^+
B) NaCl and H_2O
C) NaCl and urea
D) K^+ and H^+

41) Incorrect question formation:

Which of the following is correct in regards to the diluted urine in the excretory system of human beings?

A) Nearly 99% of the glomerular filtrate is reabsorbed by the renal tubules
B) Ascending limb of the loop of Henle is impermeable to electrolytes
C) Descending limb of loop of Henle is impermeable to water
D) Distal convoluted tubule is incapable of reabsorbing HCO_3^-

42) Which one is not a feature of Adamsia?

A) Metagenesis
B) Gastrovascular cavity
C) Diploblastic
D) Cnidoblast

43) Given below are two statements:

Statement I: Sickle-cell anaemia is a sex-linked recessive disease.
Statement II: It is caused by the substitution of Glutamic acid (Glu) by Valine (Val) at eighth position of the beta globin chain of the haemoglobin molecule.
Choose the correct answer from the options given below:

A) Statement I is incorrect but Statement II is true
B) Both Statement I and Statement II are true
C) Both Statement I and Statement II are false
D) Statement I is correct but Statement II is false

44) C-peptide of human insulin is

A) a part of mature insulin molecule
B) responsible for its biological activity
C) responsible for formation of disulphide bridges
D) removed during maturation of pro-insulin to insulin

45) The cartilage generally present on long bone terminals is:

A) Hyaline cartilage
B) Fibrous cartilage
C) Hyaline and calcified cartilage
D) Elastic cartilage