JUPITER ACADEMY

FULL TEST 3 PHYSICS

NEET-UG - Physics

Time Allowed: 1 hour **Maximum Marks: 180**

General Instructions:

ANSWER ANY 45 QUESTION

Attempt any 45 questions

1. The dimensions of $\frac{I}{MB}$, where I is the moment of inertia, M is the magnetic moment and B is the magnetic induction respectively, are those of: **[4]**

   a) Time
   b) $(\text{Time})^{1/2}$
   c) $(\text{Time})^{2}$
   d) $(\text{Time})^{3}$

2. In a Screw Gauge, fifth division of the circular scale coincides with the reference line when the ratchet is closed. There are 50 divisions on the circular scale, and the main scale moves by 0.5 mm on a complete rotation. For a particular observation the reading on the main scale is 5 mm and the 20^{th} division of the circular scale coincides with reference line. Calculate the true reading. **[4]**

   a) 5.20 mm
   b) 5.15 mm
   c) 5.25 mm
   d) 5.00 mm

3. A train of 150 m length is going towards north direction at a speed of 10 m s^{-1}. A parrot flies at a speed of 5 m s^{-1} towards south direction parallel to the railway track. The time taken by the parrot to cross the train is equal to: **[4]**

   a) 12 s
   b) 10 s
   c) 15 s
   d) 8 s

4. **Assertion:** The driver in a vehicle moving with a constant speed on a straight road is an inertial frame of reference. **[4]**
   Reason: A reference frame in which Newton's laws of motion are applicable is non-inertial.

   a) If both assertion and reason are true and the reason is the correct explanation of assertion.
   b) If both assertion and reason are true but the reason is not the correct explanation of assertion.
   c) If the assertion is true but the reason is false.
   d) If both assertion and reason are false.

5. Vectors are added by **[4]**

   a) adding the magnitudes of the vectors
   b) adding the angles of the vectors
   c) parallelogram law of addition
   d) translating the two vectors

6. **Assertion (A):** When speed of projection of a body is made n times, its time of flight becomes n times. **[4]**
   Reason (R): At this speed, the range of projectile becomes n^2 times.

   a) Both A and R are true and R is the correct
   b) Both A and R are true but R is not the

explanation of A.

correct explanation of A.

c) A is true but R is false.

d) A is false but R is true.

7. A 2 kg stone tied at the end of 1 m long string is whirled in a vertical circle. At some point, its speed is 5 ms^{-1}. The tension of string is 69.6 N at that instant. The stone, at this instant, is [g = 9.8 m/s^2] **[4]**

a) making an angle of 45^o with vertical.

b) at horizontal position.

c) at the top of the circle.

d) at the bottom of the circle.

8. A mass 3m, initially at rest at the origin, explodes into three fragments of equal mass. Two of the fragments have speed v each and move perpendicular to each other. The third fragment will move with a speed **[4]**

a) v

b) $\frac{v}{\sqrt{2}}$

c) $\frac{v}{2}$

d) $\sqrt{2}$ v

9. **Assertion (A):** A race car travelling around a circular track have a non zero impulse. **[4]**
Reason (R): The impulse is zero only when there is no net change in momentum.

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

b) Both A and R are true but R is not the correct explanation of A.

c) A is true but R is false.

d) Both A and R are false.

10. A flywheel at rest is to reach an angular velocity of 36 rad/sec, in 6 sec, with a constant angular acceleration. The total angle turned during this interval is: **[4]**

a) 108 rad

b) 216 rad

c) 144 rad

d) 72 rad

11. Considering binary (double) stars in our frame of reference, the trajectories of the stars are a combination of **[4]**

a) i. uniform motion in a straight line and
ii. circular orbits of the stars

b) i. uniform motion in a straight line and
ii. elliptical orbits of the stars

c) i. uniform motion in a straight line and
ii. straight line motion of the stars

d) i. uniform motion in a circle and
ii. circular orbits of the stars

12. In the following four periods **[4]**

i. Time of revolution of a satellite just above the earth's surface (T_{st}).

ii. Period of oscillation of mass inside the tunnel bored along the diameter of the earth (T_{ma}).

iii. Period of simple pendulum having a length equal to the earth's radius in a uniform field of 9.8 N/kg (T_{sp}).

iv. Period of an infinite length simple pendulum in the earth's real gravitational field (T_{is}).

a) $T_{st} > T_{ma}$

b) $T_{sp} > T_{is}$

c) $T_{ma} >$ st

d) $T_{st} = T_{ma} = T_{sp} = T_{is}$

13. Two wires having same length and material are stretched by same force. The ratio of strain energy per unit volume for these two wires when stretched is $u_1 : u_2 = 9.25$. Then their diameters $d_1 : d_2$ are in the ratio **[4]**

a) 27 : 1

b) 5 : 3

c) 81 : 1

d) 3 : 1

14. In a hydraulic lift, the force applied on the smaller cylinder of area A_1 is F_1. If the area of the larger cylinder is A_2 the maximum weight that can be lifted is: **[4]**

a) F_1 b) $\frac{A_1}{A_2}F_1$

c) F_1A_2 d) $\frac{A_2}{A_1}F_1$

15. As the temperature is increased, the time period of a pendulum **[4]**

a) increases as its effective length increases even though its centre of mass still remains at the centre of the bob.

b) decreases as its effective length increases even though its centre of mass still remains at the centre of the bob.

c) increases as its effective length increases due to shifting of centre of mass below the centre of the bob.

d) decreases as its effective length remains same but the centre of mass shifts above the centre of the bob.

16. In a thermodynamic process with 2 moles of gas, 30 J of heat is released and 22 J of work is done on the gas. Given that initial internal energy of the sample was 20 J, what will be the final internal energy? **[4]**

a) 72 J b) 32 J

c) 12 J d) 28 J

17. During the melting of a slab of ice at 273 K at atmospheric pressure: **[4]**

i. positive work is done by the ice-water system on the atmosphere
ii. positive work is done on the ice-water system by the atmosphere
iii. the internal energy of the ice-water system decreases
iv. none of these

a) i and ii b) only ii

c) iv and i d) iii and iv

18. Two molecules of a gas have speeds of 9×10^6 m/s and 1×10^6 m/s respectively. What is the root mean square speed of there molecules? **[4]**

a) $\sqrt{21} \times 10^6 \mathrm{ms}^{-1}$ b) $\sqrt{41} \times 10^6 \mathrm{ms}^{-1}$

c) 21×10^6 ms^{-1} d) 40×10^6 ms^{-1}

19. In an artificial satellite, the use of a pendulum watch is discarded because: **[4]**

a) the periodic time of the pendulum watch is reduced

b) the acceleration due to gravity becomes zero in the earth satellite

c) the periodic time of pendulum watch increases

d) the satellite is in a constant state of motion

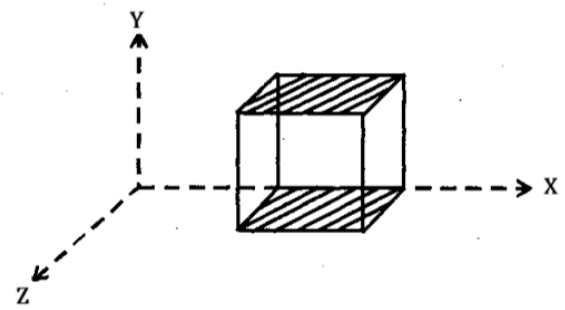
20. Stationary waves of frequency 200Hz are formed in the air. If the velocity of the wave is 360m/s the shortest distance between antinodes will be: **[4]**

a) 2.7 m. b) 1.8 m.

c) 0.9 m. d) 3.6 m.

21. A cube is placed inside an electric field, $\vec{\mathrm{E}} = 150\mathrm{y}^2\hat{\mathrm{j}}$ The side of the cube is 0.5 m and is placed in the field as **[4]**

shown in the given figure. The charge inside the cube is:



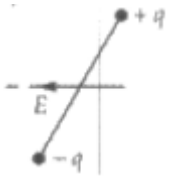
a) 8.3×10^{-12} C

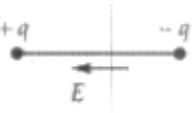
b) 3.8×10^{-12} C

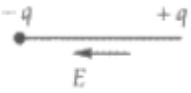
c) 8.3×10^{-11} C

d) 3.8×10^{-11} C

22. In which of the states shown in the figure, is potential energy of an electric dipole maximum? **[4]**

a) 

b) 

c) 

d) 

23. In the process of charging of a capacitor, the current produced between the plates of the capacitor is: **[4]**
where symbols have their usual meanings.

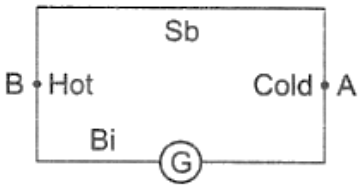
a) $\varepsilon_0 \frac{\mathrm{d}\phi_E}{\mathrm{dt}}$

b) $\mu_0 \frac{\mathrm{d}\phi_E}{\mathrm{dt}}$

c) $\frac{1}{\mu_0} \frac{\mathrm{d}\phi_E}{dt}$

d) $\frac{1}{\varepsilon_0} \frac{\mathrm{d}\phi_E}{\mathrm{dt}}$

24. An antimony-bismuth thermocouple is shown in the figure, where A is the cold junction and B is the hot junction: **[4]**



a) current can flow in any direction

b) current will not flow at all

c) current will flow from B to A via G

d) current flows from A to B via G

25. A copper wire of length l and radius r is nickel-plated till its final radius is R and length l. If the specific resistance of nickel and copper be K_n and K_c, then the conductance of the nickelled wire is: **[4]**

a) $\frac{\pi}{l}\left[\frac{r^2}{K_c} + \frac{R^2 - r^2}{K_n}\right]$

b) $\frac{\pi\left(R^2 - r^2\right)}{lK_n}$

c) $\frac{lK_c}{\pi r^2} + \frac{lK_n}{\pi\left(R^2 - r^2\right)}$

d) $\frac{\pi r^2}{lK_c}$

26. Which statement is true? **[4]**

i. Kirchhoff 's law is not equally applicable to both AC and DC.

ii. Semiconductors have a positive temperature coefficient of resistance.

iii. Meter bridge is least sensitive when the resistance of all the four arms of the bridge are of sartie order.

iv. The emf of a cell depends upon the size and area of electrodes.

a) (ii) and (iv)

b) (iii) and (i)

c) (iii) and (iv)

d) (i) and (iv)

27. **Assertion (A):** If 10 bulbs are connected in series and one bulb fused then the remaining 9 bulbs will not work. **[4]**
Reason (R): Bulb of higher wattage will give less bright light.

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

b) Both A and R are true but R is not the correct explanation of A.

c) A is true but R is false.

d) A is false but R is true.

28. For the magnetic field to be maximum due to a small element of current-carrying conductor at a point, the angle between the element and the line joining the element to the given point must be: **[4]**

a) 90^o

b) 45^o

c) 0^oA

d) 180^oA

29. A beam of ions enters normally into a uniform magnetic field of 4×10^{-2} tesla with velocity of 2×10^5 m/ s If the specific charge of the ion is 5×10^7 C/kg, then the radius of the circular path described will be **[4]**

a) 0.10 m

b) 0.25 m

c) 0.06 m

d) 0.20 m

30. A ferromagnetic material is placed in an external magnetic field. The size of magnetic domains: **[4]**

a) decreases only

b) sometimes increases and sometimes decreases

c) increases only

d) remains unchanged only

31. Eddy currents are favourable in which of the following electrical instruments? **[4]**

a) Transformer

b) AC generator

c) Induction furnace

d) Electric motor

32. A coil of wire of a certain radius has 600 turns and a self-inductance of 108 mH. The self-inductance of a second similar coil of 500 turns will be: **[4]**

a) 76 mH

b) 75 mH

c) 74 mH

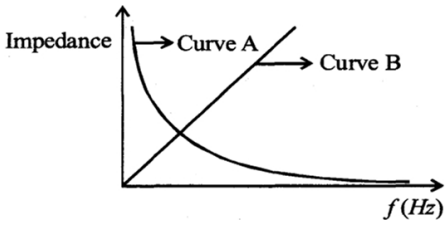
d) 77 mH

33. As per the given graph choose the correct representation for curve A and curve B. **[4]**
{Where X_C = reactance of pure capacitive circuit connected with A.C. source

X_L = reactance of pure inductive circuit connected with A.C. source

R = impedance of pure resistive circuit connected with A.C. source

Z = Impedance of the LCR series circuit}



a) A = X_L, B = Z

b) A = X_C, B = R

c) A = X_L, B = R

d) A = X_C, B = X_L

34. A step-down transformer transforms 220 volt to 11 volt. If the currents in primary and secondary coils are 5A and 90A respectively, efficiency of transformer is: **[4]**

a) 70%

b) 20%

c) 40%

d) 90%

35. State the part of the electromagnetic spectrum to which 21 cm wavelength emitted by atomic hydrogen in interstellar space belongs to? **[4]**

a) Microwave

b) Ultraviolet

c) Visible

d) Radio

36. The energy of the e.m. waves is of the order of 15 keV. To which part of the spectrum does it belong? **[4]**

a) Ultraviolet rays

b) X-rays

c) γ-rays

d) Infrared rays

37. A plane electromagnetic wave of energy U is reflected from the surface. Then the momentum transferred by electromagnetic wave to the surface is **[4]**

a) $\frac{2U}{c}$

b) $\frac{U}{2c}$

c) $\frac{U}{c}$

d) 0

38. Refractive index of water is $\frac{b}{3}$. A light source is placed in water at a depth of 4 m. Then what must be the minimum radius of disc placed at water surface so that the light of source can be stopped **[4]**

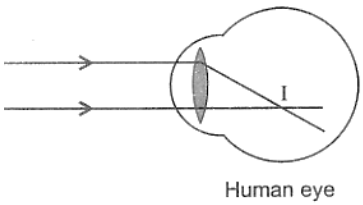
a) 3 m

b) 4 m

c) 5 m

d) infinite

39. In the figure, the image is formed of retina. The eye has: **[4]**



Human eye

a) myopia

b) colour blindness

c) hypermetropia

d) astigmatism

40. In a double-slit experiment, the two slits are 1 mm apart and the screen is placed 1 m away. Monochromatic light of wavelength 500 nm is used. What will be the width of each slit for obtaining ten maxima of double-slit within the central maxima of single-slit pattern? **[4]**

a) 0.1 mm

b) 0.5 mm

c) 0.02 mm

d) 0.2 mm

41. Two slits in Young's experiment have Widths in the ratio 1 : 25. The ratio of intensity at the maxima and minima in the interference pattern, $\frac{I_{max}}{I_{min}}$ is **[4]**

a) $\frac{49}{121}$

b) $\frac{121}{49}$

c) $\frac{4}{9}$

d) $\frac{9}{4}$

42. Two identical metal plates show photoelectric effect by a light of wavelength λ_A falls on plate A and λ_B on plate B $(\lambda_A = 2\lambda_B)$. The maximum kinetic energy is: **[4]**

a) $K_A = 2K_B$

b) $K_A = \frac{K_B}{2}$

c) $K_A < \frac{K_B}{2}$

d) $K_A = K_B$

43. Light of wavelength 500 nm is incident on metal with work function 2.28 eV. The de-Broglie wavelength of the emitted electron is **[4]**

a) $< 2.8 \times 10^{-9}$ m

b) $< 2.8 \times 10^{-10}$ m

c) $\geq 2.8 \times 10^{-9}$ m

d) $\leq 2.8 \times 10^{-12}$ m

44. The binding energy of a H-atom, considering an electron moving around a fixed nuclei (proton), is $B = -\frac{me^4}{8n^2\varepsilon_0^2h^2}$ (m = electron mass). If one decides to work in a frame of reference where the electron is at rest, the proton would be moving around it. By similar arguments, the binding energy would be $B = -\frac{Me^4}{8n^2\varepsilon_0^2h^2}$ (M= proton mass). **[4]**

This last expression is not correct because

a) n would not be integral.

b) Bohr-quantisation applies only to electron.

c) the motion of the proton would not be in circular orbits, even approximately.

d) the frame in which the electron is at rest is not inertial.

45. In nuclear reactor: **[4]**

A. Cadmium rods are used to slow down the neutrons

B. Moderator is used to slow down the neutrons

C. Coolant is used to slow down the neutrons

D. Moderator is used to control the neutrons.

a) (B)

b) (C)

c) (D)

d) (A)

46. The resistivity of a semiconductor at room temperature is in between: **[4]**

a) 10^{-3} to 10^{6} Ω cm

b) 10^{10} to 10^{12} Ω cm

c) 10^{-2} to 10^{-5} Ω cm

d) 10^{6} to 10^{8} Ω cm

47. The output from a full wave rectifier is **[4]**

a) a pulsating unidirectional voltage

b) a dc voltage

c) zero

d) unidirectional voltage having ripples

48. An oscillator is nothing but an amplifier with: **[4]**

a) positive feedback
b) negative feedback
c) large gain
d) no feedback

49. **Assertion (A):** Light Emitting Diode (LED) emit spontaneous radiation. **[4]**
Reason (R): LED are forward-biased p-n junction.

a) Both A and R are true and R is the correct explanation of A.
b) Both A and R are true but R is not the correct explanation of A.
c) A is true but R is false.
d) A is false but R is true.

50. An air column in a pipe, which is closed at one end will be in resonance with a vibrating body of frequency 166 Hz. If the length of the air column is **[4]**

a) 2 m
b) 1 m
c) 0.5 m
d) 1.5 m

JUPITER ACADEMY

Chemistry model paper 3
NEET-UG - CHEMISTRY

Time Allowed : 50 mins **Maximum Marks :** 200

General Instructions:
Answer any 45 questions

Section A

1) $-----\ Ba_3N_2 + -----\ H_2O \rightarrow -----\ - Ba\ (OH)_2 + -----\ NH_3$. This equation can be balanced by inserting the following in blank spaces from left to right. **[4]**
   a) 1,6,3,2 b) 1,3,6,2
   c) 2,6,1,2 d) 1,6,3,6

2) 30 mg is the same mass as: **[4]**
   a) 0.0003 kg b) 0.03 g
   c) 300 decigrams d) 0.3 grams

3) Elements with 4 - 7 valence electrons are referred to as **[4]**
   a) Inert gases b) Transition metals
   c) Metals d) Non - metals

4) Bohr's model of the atom could explain quantitatively the general features of the structure of: **[4]**
   a) Hydrogen atom b) Nitrogen atom
   c) Carbon atom d) Oxygen atom

5) Which of the following is NOT a Dobereiner's triad? **[4]**
   a) Li, Na, K b) Cl, Br, I
   c) P, As, Sb d) Ca, Sr, Ba

6) Which among the following sets of groups consist elements with high chemical reactivity? **[4]**
   a) Groups - 11 and 17 b) Groups - 1 and 11
   c) Groups - 11 and 18 d) Groups - 1 and 17

7) Among the following, the maximum covalent character is shown by the compound is: **[4]**
   a) $AlCl_3$ b) $MgCl_2$
   c) $FeCl_2$ d) $SnCl_2$

8) Which of the following species has tetrahedral geometry? **[4]**
   a) H_3O^+ b) CO_3^{2-}
   c) BH_4^- d) NH_2^-

9) Calculate the difference between $C_p$and $C_v$for 10 moles of an ideal gas. **[4]**
   a) 0.831 J b) 831.4 J
   c) 83.14 J d) 8.314 J

10) Change in entropy of a reversible process can be calculated by: **[4]**
   a) $\Delta S_{sys} = RTq_{sys,rev}$
   b) $\Delta S_{sys} = \frac{q_{sys,rev}}{T}$
   c) $\Delta S_{sys} = \frac{q_{sys,rev}}{2T}$
   d) $\Delta S_{sys} = Tq_{sys,rev}$

11) The ionisation of hydrochloric in water is given below:
HCl (aq) + H_2O (l) $\rightleftharpoons$ $H_3O^+ + Cl^-$
Label two conjugate acid - base pairs respectively in the ionization. **[4]**
   a) HCl, $H_3O^+$and H_3O^+ ,Cl^-
   b) HCl, Cl^- andH_2O, H_3O^+.
   c) H_2O, Cl^- and H_3O^+ ,HCl
   d) H_3O,Cl^- and HCl, H_2O.

12) If in a mixture where Q = k is combined, then what happens? **[4]**
   a) Nothing appears to happen, but forward and reverse are continuing at the same rate
   b) The reaction shift towards products
   c) The reaction shift towards reactants
   d) Nothing happens

13) It has been found that the pH of a 0.01M solution of an organic acid is 4.15. Calculate the ionization constant of the acid, the concentration of the anion, and its pK_a. **[4]**
   a) $K_a = 5.01 \times 10^{-7}$, $[A^-] = 7.08 \times 10^{-5}$and $pK_a = 5.3007$
   b) $K_a = 5.01 \times 10^{-7}$, $[A^-] = 7.08 \times 10^{-5}$ and $pK_a = 6.3001$
   c) $K_a = 5.01 \times 10^{-7}$, $[A^-] = 7.99 \times 10^{-5}$and $pK_a = 7.5009$
   d) $K_a = 5.01 \times 10^{-7}$, $[A^-] = 7.39 \times 10^{-5}$and $pK_a = 6.3001$

14) A bare proton, H^+ is very reactive and cannot exist freely in aqueous solutions. Thus, it bonds to the oxygen atom of a solvent water molecule to give: **[4]**
   a) $H_3O_3^+$ b) $H_3O_2^+$
   c) H_3O^+ d) $H_3O_4^+$

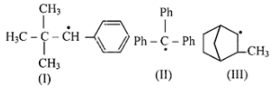
15) Among the following molecules, in which does bromine show the maximum oxidation number? **[4]**
   a) Br_2 b) $Hg_2(BrO_3)_2$
   c) Br - Cl d) $KBrO_4$

16) The inert pair effect of p - block elements is due to the: **[4]**
   a) The most unstable valence number of p - block elements.
   b) The most stable valence number of p - block elements.
   c) The inertness of the inner**ns** electrons because of ineffective shielding.
   d) The group oxidation state of p - block elements.

17) Silicones are a group of organosilicon polymers containing: **[4]**
   a) O - Si - O linkages b) Si - O - Si linkages
   c) Si - C - Si linkages d) Si - Si - O linkages

18) In which of the following compounds the carbon marked with asterisk is expected to have greatest partial positive charge? **[4]**
   a) *CH_3 - CH_2 - Br b) *CH_3 - CH_2 - Cl
   c) *CH_3 - CH_2 - I d) *CH_3 - CH_2 - CH_3

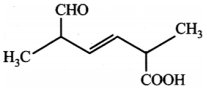
19) Consider the following compounds:



Hyperconjugation occurs in _____. **[4]**

a) I and III
b) II only
c) III only
d) I only

20) The IUPAC name for the following compound is:



[4]

a) 2, 5 - dimethyl - 6 - oxo - hex - 3 - enoic acid
b) 2, 5 - dimethyl - 5 - carboxy - hex - 3 - enal
c) 2, 5 - dimethyl - 6 - carboxy - hex - 3 - enal
d) 6 - formyl - 2 - methyl - hex - 3 - enoic acid

21) The reaction
$CH_3CH = CH_2 + HBr \xrightarrow{Peroxide} CH_3CH_2CH_2Br$
can be explained by **[4]**

a) Carbanion formation
b) Free - radical mechanism
c) Carbocation formation
d) Electrophilic substitution

22) The IUPAC name of  is **[4]**

a) 1,3 - dimethylbenzene
b) Methyltoluene
c) Dimethylbenzene
d) 1,4 - dimethylbenzene

23) Acetylene is prepared by the action of water on: **[4]**

a) All of these
b) CaC_2
c) Silicon carbide
d) Al_4C_3

24) An aqeous solution of compound A gives ethane on electrolysis. The compound A is .....? **[4]**

a) Sodium propionate
b) Sodium acetate
c) Sodium ethoxide
d) Ethyl acetate

25) Which among the following is soluble in n - octane? **[4]**

a) Chloroform
b) Ethylene glycol
c) Methanol
d) Hexane

26) Which of the following has highest boiling point? **[4]**

a) 0.1 molal urea solution
b) 0.1 molal NaCl solution
c) 0.1 molal $BaCl_2$ solution
d) 0.1 molal sugar solution

27) Al_2O_3 is reduced by electrolysis at low potentials and high currents. If 4.0×10^4amperes of current is passed through molten Al_2O_3 for 6 hours, what mass of aluminium is produced? (Assume 100% current efficiency, atomic mass Al = 27 g/mol) **[4]**

a) $9.0 \times 10^3 g$
b) $1.3 \times 10^4 g$
c) $2.4 \times 10^5 g$
d) $8.1 \times 10^4 g$

28) A current of 0.5 ampere when passed through $AgNO_3$ solution for 193 seconds deposited 0.108 g of Ag. The equivalent weight of Ag is: **[4]**

a) 54
b) 10.8
c) 108
d) 1

29) For an endothermic reaction whereΔH represents the enthalpy of the reaction in kJ/mol . The minimum value for the energy of activation will be **[4]**

a) Equal toΔH
b) Zero
c) More thanΔH
d) Less thanΔH

30) When a catalyst increases the rate of a chemical reaction, then the rate constant (k): **[4]**

a) May increase or decrease depending on the order of the reaction
b) Remains constant
c) Decreases
d) Increases

31) Ozone can be detected by using **[4]**

a) Sulphur
b) Sodium
c) Mercury
d) Silver

32) Which colour is given by $CuSO_4$ with ammonia? **[4]**

a) Blue
b) Pink
c) Yellow
d) Orange

33) The magnetic moment is associated with its spin angular momentum and orbital angular momentum. Spin only magnetic moment value of Cr^{3+}ion is _____. **[4]**

a) 2.87 B.M
b) 3.87 B.M
c) 3.57 B.M
d) 3.47 B.M

34) How many d–block elements have the ability to evolve hydrogen gas from 2% nitric acid? **[4]**

a) Many
b) 1
c) 3
d) 2

35) In the complex $Fe(CO)_x$, the value of x is **[4]**

a) 5
b) 2
c) 3
d) 4

36) Which of the following species is not expected to be a ligand? **[4]**

a) NH_4^+
b) $NH_2CH_2NH_2$
c) CO
d) NO

37) C - Cl bond in chlorobenzene in comparison to C - Cl bond in methyl chloride is: **[4]**

a) Longer and stronger
b) Shorter and weaker
c) Longer and weaker
d) Shorter and stronger

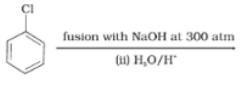
38) Decomposition of benzene diozonium chloride by using Cu_2Cl_2/HCl to form chlorobenzene is: **[4]**

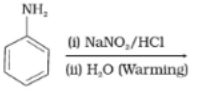
a) Wurtz – Fittig reaction
b) Friedel – Crafts reaction
c) Sandmeyer's reaction
d) Finkelstein reaction

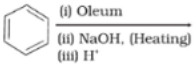
39) Monochlorination of toluene in sunlight followed by hydrolysis by aq. NaOH yields **[4]**

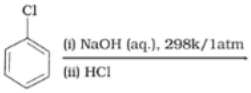
a) Benzyl alcohol
b) O - cresol
c) 2,4 - dihydroxytoluene
d) M - cresol

40) Which of the following reactions will yield phenol?

i. 

ii. 

iii. 

iv. 

[4]

a) I, iii, iv
b) Ii, iii, iv
c) I, ii, iii
d) I, ii, iv

41) Which of the following is most reactive in nucleophilic addition reactions? **[4]**
   a) CH_3CHO b) HCHO
   c) $CH_3COC_2H_5$ d) CH_3COCH_3

42) When ethanal is heated with Fehlings solution, it gives a precipitate of: **[4]**
   a) Cu + Cu_2O + CuO b) CuO
   c) Cu d) Cu_2O

43) Amongst the given set of reactants, the most appropriate for preparing 2^o amine is _____. **[4]**
   a) 1^o R - NH_2 + RCHO followed by H_2 /Pt
   b) 1^o R - Br (2 mol) + potassium phthalimide followed by H_3O^+/heat
   c) 2^o R - Br + NaCN followed by H_2 /Pt
   d) 2^o R - Br + NH_3

44) The correct decreasing order of basic strength of the following species is _____.
   H_2O, NH_3, OH^-, NH_2^- **[4]**
   a) $H_2O > NH_3 > OH^- > NH_2^-$
   b) $OH^- > NH_2^- > H_2O > NH_3$
   c) $NH_2^- > OH^- > NH_3 > H_2O$
   d) $NH_3 > H_2O > NH_2^- > OH^-$

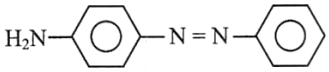
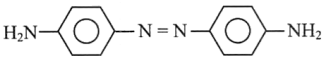
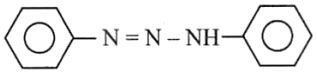
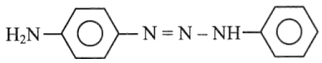
45) The carrier of hereditary character is. **[4]**
   a) Lipids b) Cytochromes
   c) Nucleotides d) Nucleosides

46) Which one is not the essential amino acid in the ones given below? **[4]**
   a) Valine b) Proline
   c) Leucine d) Arginine

47) Which method will be used for separation of a mixture of acetone and ethanol? **[4]**
   a) Fractional distillation
   b) Sublimation
   c) Simple distillation
   d) Crystallisation

48) What is the technological applications of fractional distillation? **[4]**
   a) To separate mixture of amino acids
   b) To separate different fractions of volatile and non - volatile solvents
   c) No technological application of fractional distillation
   d) To separate different fractions of crude oil in petroleum industry

49) Aqueous solution of salt**A** gives white ppt (B) on treatment with dil.HCI. Compound (B) dissolves in hot water and the solution gives yellow ppt. (C) on treatment with K_2CrO_4 solution. Salt (A) gives brown fumes on heating with H_2SO_4.
   Identify (A), (B), and (C) respectively. **[4]**
   a) $Pb(NO_3)_2$, $PbCl_2$, PbO
   b) $PbSO_4$, $PbCl_2$, $PbCrO_4$
   c) $Pb(NO_3)_2$, $PbCl_2$, $PbCrO_4$
   d) $PbCl_2$, Pb_5, $PbCrO_4$

50) Identify the structure of aniline yellow. **[4]**
   a) 
   b) 
   c) 
   d) 

JUPITER ACADEMY

BOTANY MODEL PAPER 3

NEET-UG - Biology

Time Allowed: 1 hour **Maximum Marks: 180**

General Instructions:

- For each correct response, the candidate will get 4 marks.
- For each incorrect response, one mark will be deducted from the total scores.

BOTANY (Section-A)

1. Which one of the following shows heterothallism? **[4]**

   a) Rhizopus b) Cycas

   c) Bacterium d) Ricinus

2. Which of the following is a taxon? **[4]**

   a) Genera b) Class

   c) Family d) All of these

3. Bacteria reproduce mainly by: **[4]**

   a) Spores b) Recombination

   c) Conjugation d) Fission

4. Which is true about virus? **[4]**

   a) They have both DNA and RNA b) These can be facultative parasite also

   c) These lack cell organelle d) All of these

5. Which one of the following statements is wrong? **[4]**

   a) When pollen is shed at two-celled stage, double fertilization does not take place b) Pollen grains in some plants remain viable for months

   c) Intine is made up of cellulose and pectin d) Vegetative cell is larger than generative cell

6. Which of the following gymnosperms have branched stem? **[4]**

   a) Cycas b) Marchantia

   c) Pinus d) Pteris

7. Which one of the following statements about Cycas is incorrect? **[4]**

   a) It does not have a well organized female flower b) Its xylem is mainly composed vessels

   c) It has circinate vernation d) Its roots contain some blue-green algae

8. Transfer of pollen grains from anther to the stigma of a different plant is called **[4]**

   a) xenogamy b) geitonogamy

c) autogamy
d) icliny

9. Proximal end of the filament of stamen is attached to the: **[4]**

a) Thalamus or petal
b) Connective
c) Placenta
d) Anther

10. Which is a modification of root not store food? **[4]**

a) Tuberous root
b) Fusiform root
c) Stilt root
d) Napiform root

11. Raphides are made up of: **[4]**

a) Silica
b) Calcium oxalate
c) Calcium carbonate
d) Starch

12. In between the vascular bundles, there are a few layers of radially placed, parenchymatous cells, which constitute _____. **[4]**

a) Epidermis
b) Medullary rays
c) Cortex
d) Pericycle

13. Red colour (R) of fruits is dominant over white fruit (r); and tallness (7) is dominant over dwarfness (f). If a plant with genotype RRTt is crossed with a plant of genotypes rrtt, what will be the percentage of tall plants with red fruits in the next generation? **[4]**

a) 25%
b) 50%
c) 100%
d) 75%

14. If an albino man marries with a normal woman and 50% offsprings are albino and 50% are normal the woman is: **[4]**

a) Hemizygous normal
b) Homozygous
c) Homozygous normal
d) Heterozygous carrier

15. Which one of the following statements about Histones is wrong? **[4]**

a) The pH of histones is slightly acidic.
b) Histones are organized to form a unit of 8 molecules.
c) Histones carry positive charge in the side chain.
d) Histones are rich in amino acids - Lysine and Arginine.

16. **Statement I:** The codon **AUG** codes for methionine and phenylalanine. **[4]**
Statement II: AAA and **AAG** both codons code for the amino acid lysine.

a) Statement I is incorrect but Statement II is true.
b) Statement I is correct but Statement II is false.
c) Both Statement I and Statement II are true.
d) Both Statement I and Statement II are false.

17. Which of the cell organelle remains enveloped by a single unit membrane? **[4]**

a) Nucleus
b) Mitochondria
c) Chloroplast
d) Lysosome

18. Which of the following was a German botanist, examined a large number of plants and observed that all plants are composed of different kinds of cells which form the tissues of the plant? **[4]**

a) Schleiden and Schwann
b) Virchow
c) Schwann
d) Schleiden

19. Cholera is caused by: **[4]**

a) Protozoan
b) Fungi
c) Bacteria
d) Virus

20. Quartan fever is caused by: **[4]**

a) Plasmodium vivax
b) Plasmodium malariae
c) Plasmodium falciparum
d) Plasmodium ovale

21. Crossing over in diploid organisms is responsible for **[4]**

a) segregation of alleles.
b) dominance of genes.
c) linkage between genes.
d) recombination of alleles

22. Connell's elegant field experiments are related to barnacle, in which superior barnacle Balanus dominates the inter tidal area and excludes the smaller barnacle Chathamalus from that zone. This phenomenon is called **[4]**

a) interspecific competition.
b) competitive exclusion principle.
c) competitive release.
d) Neither (a) nor (b)

23. Identify the incorrect statement. **[4]**

a. Net primary productivity is the available biomass for the consumption to autotrophs.
b. Primary productivity depends on the inhabitating plant species, environmental factors, nutrient availability and photosynthetic capacity of plants.
c. Gross primary productivity minus respiration loss is the Net Primary Productivity (NPP).
d. The annual net primary productivity of the whole biosphere is approx. 170 billiontonnes of organic matter.

a) Statement (b) is incorrect.
b) Statement (a) is incorrect.
c) Statement (d) is incorrect.
d) Statement (c) is incorrect.

24. Which of the following in sewage treatment remove suspended solids? **[4]**

a) Sludge treatment
b) Secondary treatment
c) Tertiary treatment
d) Primary treatment

25. Which group of vertebrates comprises the highest number of endangered species? **[4]**

a) Fishes
b) Mammals
c) Reptiles
d) Birds

26. Communities with high diversity tend to be: **[4]**

a) More resistant to biological invasions
b) Less variabl
c) More productive
d) All are correct

27. Which is the national aquatic animal of India? **[4]**

a) Sea horse
b) Gangetic shark

c) Blue whale
d) River dolphin

28. Which of the following statements is not correct regarding colchicine? **[4]**

a) It is an alkaloid.
b) It inhibits chromosome replication.
c) It is called as mitotic poison.
d) It prevents assembly of microtubules.

29. If you are provided with root-tips of onion in your class and are asked to count the chromosomes, which of the following stages can you most conveniently look into? **[4]**

a) Telophase
b) Prophase
c) Anaphase
d) Metaphase

30. Which one of the following statements correctly describes cyclic photophosphorylation? **[4]**

a) Electrons are cycled in cyclic photophosphorylation
b) Cyclic photophosphorylation produces neither ATP nor NADPH + H^+
c) Cyclic photophosphorylation has both PS-I and PS-II
d) Water is the ultimate source of e-in cyclic photophosphorylation

31. The oxygen evolved from green plants comes from water was proved by using an isotope of **[4]**

a) oxygen in water.
b) hydrogen in water
c) oxygen in carbon dioxide.
d) hydrogen in carbon dioxide.

32. The Z-scheme involves **[4]**

a) All of these
b) PS I and PS II.
c) ATP and NADPH synthesis.
d) splitting of water.

33. The most effective wavelength of visible light in photosynthesis is in the region of: **[4]**

a) Green
b) Violet
c) Yellow
d) Red

34. Which of the following is 5 - carbon compound of Kreb's cycle? **[4]**

a) Fumaric acid
b) α-Ketoglutaric acid
c) Oxalosuccinic acid
d) Citric acid

35. Which one of the following growth regulators is known as 'stress hormone'? **[4]**

a) Indole acetic acid
b) Abscisic acid
c) Ethylene
d) GA_3

BOTANY (Section-B)

Attempt any 10 questions

36. Mango is grouped in which Order? **[4]**

a) Indica
b) Mangifera
c) Anacardiaceae
d) Sapindales

37. Which of the following is used to cure of the bitterness of tea leaves? **[4]**

a) B. megatherium
b) B. mycococcus

c) Bacillus subtilis

d) B. lactis

38. Fusion of two motile gametes which are dissimilar in size is termed as: **[4]**

a) Anisogamy

b) Oogamy

c) Zoogamy

d) Isogamy

39. The given diagram shows different types of pollination marked as X, Y, and Z between two plants (A and B) of the same species. Identify the types of pollination and select the correct option. **[4]**

X	Y	Z
(a) Autogamy	Allogamy	Geitonogamy
(b) Allogamy	Geitonogamy	Autogamy
(c) Geitonogamy	Allogamy	Autogamy
(d) Allogamy	Autogamy	Geitonogamy

a) Option (c) is correct.

b) Option (a) is correct.

c) Option (d) is correct.

d) Option (b) is correct.

40. In conifers fibers are likely to be absent in: **[4]**

a) leaves

b) secondary xylem

c) Primary phloem

d) Secondary phloem

41. Read the following five statements (A - D) and answer as asked next to them. **[4]**

A. In Equisetum the female gametophyte is retained on the parent sporophyte

B. In Ginkgo male gametophyte is not independent

C. The sporophyte in Riccia is more developed than that in Polytrichum

D. Sexual reproduction in volvox is isogamous

a) One

b) Four

c) Two

d) Three

42. In history of biology, the human genome project led to the development of: **[4]**

a) Biosystematics

b) Bioinformatics

c) Biomonitoring

d) Biotechnology

43. Ribosomal RNA is actively synthesised in **[4]**

a) ribosomes

b) nucleoplasm

c) lysosomes

d) nucleolus

44. Which of the following pairs is mismatched? **[4]**

a) VAM - Mycoherbicide
b) Rotenone - natural insecticide
c) Mycorrhiza - Pine
d) Azospirillum - maize

45. Which of the following substrates is used in protoplasmic respiration? **[4]**

a) Protein
b) All of these
c) Carbohydrate
d) Fat

46. Which of the following statements regarding antibiotics is not correct? **[4]**

i. Antibiotics are the attenuated microorganisms which in small concentration can kill or retard the growth of other harmful microorganisms.
ii. Penicillin was the first antibiotic discovered by Alexander Fleming (1928) while working on bacterium Staphylococcus aureus.
iii. The full potential of penicillin as an effective antibiotic was established by Ernest Chain and Howard Florey.
iv. Fleming, Chain and Florey were awarded the Nobel Prize in 1945.

a) (iii) only
b) (i), (iii) and (iv)
c) (ii) and (iv)
d) (i) only

47. Vultures in an ecosystem are: **[4]**

a) Consumers
b) Top carnivores
c) Scavengers
d) Predators

48. Development is a term that includes all changes that an organism goes through during its life cycle from: **[4]**

a) Germination of the seed to flowering
b) Flowering to senescence
c) Germination of the seed to senescence
d) Germination of the seed to maturation

49. Which of the following instruments can be used to record plant growth by seconds, i.e., in fraction of a minute? **[4]**

a) Spacemarker disc
b) Crescograph
c) Arc indicator
d) Arc auxanometer

50. Z-scheme is **[4]**

a) a type of photosynthesis
b) a scheme of transfer of electrons in the light reaction of photosynthesis
c) a biochemical pathway of photosynthesis.
d) a pattern of grana arrangement in chloroplasts of plants

JUPITER ACADEMY

ZOOLOGY MODEL PAPER 3

NEET-UG - Biology

Time Allowed: 1 hour **Maximum Marks: 180**

General Instructions:

- For each correct response, the candidate will get 4 marks.
- For each incorrect response, one mark will be deducted from the total scores.

ZOOLOGY (Section-A)

1. In phylum Platyhelminthes, the excretory organ is: **[4]**

   a) Nephridia b) Green glands

   c) Flame cells d) Malpighian tubules

2. Match the entities in Column I with their character in Column II. **[4]**

Column I	**Column II**
(a) Chameleon	(i) Crow
(b) Hemidactylus	(ii) Pigeon
(c) Corvus	(iii) Garden lizard
(d) Columba	(iv) Tree lizard
(e) Calotes	(v) Wall lizard

   a) (a)-(iv), (b)-(v), (c)-(i), (d)-(iii), (e)-(ii) b) (a)-(ii), (b)-(v), (c)-(iv), (d)-(iii), (e)-(i)

   c) (a)-(iv), (b)-(v), (c)-(i), (d)-(ii), (e)-(iii) d) (a)-(iv), (b)-(v), (c)-(iii), (d)-(ii), (e)-(i)

3. Match the column I with column II and choose the correct option. **[4]**

Column I	**Column II**
(a) Porifera	(i) Canal system
(b) Aschelminthes	(ii) Water vascular system
(c) Annelida	(iii) Muscular pharynx
(d) Arthropoda	(iv) Comb plates
(e) Echinodermata	(v) Metameres
	(vi) Jointed appendages

   a) (a)-(i), (b)-(iii), (c)-(v), (d)-(vi), (e)-(ii) b) (a)-(ii), (b)-(iii), (c)-(v), (d)-(iv), (e)-(i)

   c) (a)-(ii), (b)-(v), (c)-(iii), (d)-(iv), (e)-(ii) d) (a)-(i), (b)-(v), (c)-(iii), (d)-(iv), (e)-(ii)

4. Match the following with reference to cockroach and choose the correct option: **[4]**

(A) Phallomere	(i) Chain of developing ova

(B) Gonopore	(ii) Bundles of sperm
(C) Spermatophore	(iii) Opening of the ejaculatory duct
(D) Ovarioles	(iv) The external genitalia

a) A - (iii), B - (iv), C - (ii), D - (i)
b) A - (iv), B - (ii), C - (iii), D - (i)
c) A - (iv), B - (iii), C - (ii), D - (i)
d) A - (ii),B - (iv),C - (iii),D - (i)

5. Function of lymph is: **[4]**

a) To carry O_2 into the brain
b) To carry CO_2 into the lungs
c) All of these
d) To bring intercellular fluid back into the blood

6. Approximate volume of air a healthy man can expire or inspire per minute is: **[4]**

a) 6000 - 8000 mL
b) 7000 - 9000 mL
c) 6000 - 7000 mL
d) 5000 - 6000 mL

7. What would happen if human blood becomes acidic (low pH)? **[4]**

a) RBCs count decreases
b) Oxygen carrying capacity of haemoglobin increases
c) RBCs count increases
d) Oxygen carrying capacity of haemoglobin decreases

8. Rate of breathing is controlled mainly by **[4]**

a) CO_2 level in blood.
b) O_2 level in blood.
c) O_2 level and pH in blood.
d) pH in blood.

9. Which of the following organ receives electrical messages from the brain for breathing in and out? **[4]**

a) Trachea
b) Diaphragm
c) Bronchioles
d) Alveoli

10. Asthma is caused due to **[4]**

a) Bleeding into pleurai cavity
b) Infection of lungs
c) Infection of trachea
d) Spasm in bronchial muscles

11. What is the correct sequence of reproductive events in humans? **[4]**

a) Gametogenesis - Insemination - Fertilisation - Implantation - Parturition
b) Gametogenesis - Insemination - Implantation - Fertilisation - Parturition
c) Insemination - Gametogenesis - Fertilisation - Implantation - Parturition
d) Gametogenesis - Fertilisation - Insemination - Implantation - Parturition

12. Signals for parturition originate from: **[4]**

a) Fully developed foetus
b) Placenta only
c) both placenta and fully developed foetus.
d) oxytocin released from maternal pituitary.

13. **Match the column:** **[4]**

(A) Leydig cells	(i) Placenta
(B) Bulbo-urethral gland	(ii) Bulbo-vestibular gland
(C) Bartholin gland	(iii) Cowper’s gland
(D) hCG	(iv) ICSH

a) (A)-(iv), (B)-(ii), (C)-(iii), (D)-(i)
b) (A)-(ii), (B)-(iii), (C)-(i), (D)-(iv)
c) (A)-(iv), (B)-(iii), (C)-(ii), (D)-(i)
d) (A)-(i), (B)-(ii), (C)-(iii), (D)-(iv)

14. In the test-tube baby technique embryo at how many blastomere stages is implanted in the uterus? **[4]**

a) 16
b) 4
c) All of these
d) 8

15. Hysterectomy is the surgical removal of: **[4]**

a) Prostate gland
b) Vas-deferens
c) Uterus
d) Mammary glands

16. Initial fossils in the phylogenic history of the horse is: **[4]**

a) Eohippus
b) Equus
c) Mesohippus
d) Merychippus

17. Variation in gene frequencies within populations can occur by chance rather than by natural selection. This is referred to as: **[4]**

a) Genetic load
b) Genetic drift
c) Random mating
d) Genetic flow

18. Which of the following does not favour the formation of large quantities of dilute urine? **[4]**

a) Atrial-natriuretic factor
b) Alcohol
c) Rennin
d) Caffeine

19. The projections of renal pelvis are called: **[4]**

a) Calyces
b) Hiluses
c) Renal columns
d) Medullary pyramids

20. Out of the four parts given below, which parts play significant role in forming concentrated urine in human? **[4]**

I. Loop of Henle
II. Glomerulus
III. Bowman's capsule
IV. Vasa recta

a) III and IV
b) I and IV
c) I and II
d) II and III

21. Which of the following statements are correct regarding muscle proteins? **[4]**

i. Actin is a thin filament and is made up of two F-actins.
ii. The complex protein, tropomyosin is distributed at regular intervals on the troponin.

iii. Myosin is a thick filament which is also a polymerised protein.

iv. The globular head of meromyosin consists of light meromyosin (LMM).

a) (i) and (iii)
b) (i), (ii) and (iii)
c) (i), (ii), and (iv)
d) (ii) and (iv)

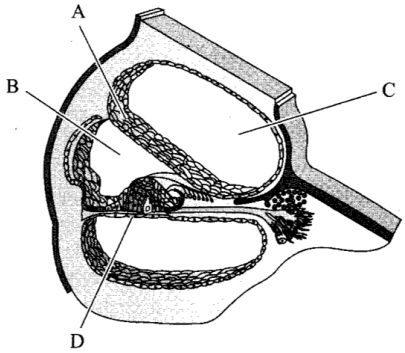
22. Sella tursica is: **[4]**

a) Ridge in the skull over the area of pituitary gland
b) Ridge over a bone
c) Depression of long bone
d) Depression in the skull in the area of the pituitary gland

23. In strained muscle contraction: **[4]**

a) Z-line moves away from A-band
b) H-band is obliterated
c) A-band decreases in length
d) H-band is lengthened

24. The given diagram represents the sectional view of cochlea with few part labelled as A, B, C, and D. **[4]**



The movement of which marked label causes hair cell microvilli to bend back and forth?

a) C
b) D
c) A
d) B

25. The dura mater and pia mater are referred as: **[4]**

a) Endothelium
b) Peritoneal epithelium
c) Meninges
d) Serosa

26. In a medullated nerve fibre, the conduction of impulse is faster due to the presence of: **[4]**

a) endoneurium and epineurium
b) pericytes
c) myelin sheath and nodes of Ranvier
d) Nissl's granules

27. Which of the following glucose transporters is insulin-dependent? **[4]**

a) GLUT IV
b) GLUT II
c) GLUT I
d) GLUT III

28. Which of the hormone is not secreted after puberty? **[4]**

a) Testosterone
b) Erythropoietin
c) Thymosin
d) Estrogen

29. Pulmonary artery arises from: **[4]**

a) Right atrium
b) Left ventricle
c) Right ventricle
d) Left atrium

30. In haemoglobin iron is present in : **[4]**

a) Ferric form
b) Ferrous form
c) Metallic form
d) Any form

31. The muscle of heart is: **[4]**

a) Involuntary and striated
b) Voluntary and striated
c) Involuntary and unstriated
d) Voluntary and unstriated

32. During the purification process for recombinant DNA technology, addition of chilled ethanol precipitates out **[4]**

a) DNA
b) RNA
c) Histones
d) Polysaccharides

33. Agarose extracted from seaweeds is used in **[4]**

a) Gel electrophoresis
b) PCR
c) Tissue culture
d) Spectrophotometry

34. Read the following four statements (A-D) about certain mistakes in two of them: **[4]**

A. The first transgenic buffalo Rosie produced milk which was human alpha-lactalbumin enriched.
B. Restriction enzymes are used in isolation of DNA from other macro-molecules.
C. Downstream processing is one of the steps of R-DNA technology.
D. Disarmed pathogen vectors are also used in transfer of R-DNA into the host. Which are the two statements having mistakes?

a) Statements (C) and (D)
b) Statements (A) and (C)
c) Statements (A) and (B)
d) Statements (B) and (C)

35. The genetically - modified (GM) brinjal in India has been developed for **[4]**

a) insect - resistance
b) enhancing mineral content
c) enhancing shelf life
d) drought - resistance

ZOOLOGY (Section-B)

Attempt any 10 questions

36. The following are found in *Taenia solium*. Which one is the correct sequence? **[4]**

a) Matured proglottid, cysticercus, gravid proglottid, onchosphere
b) Onchosphere, hexacanth, cysticercus, matured proglottid, gravid proglottid
c) Gravid proglottid, onchosphere, cysticercus, hexacanth, matured proglottid
d) Hexacanth, cysticercus, gravid proglottid, onchosphere, matured proglottid

37. What is the function of astrocytes? **[4]**

a) Providing nutrients, maintaining ion balance, getting rid of excess neurotransmitters.
b) Forming the myelin sheath around the axons of certain neurons in the PNS.

c) Phagocytizing pathogens.

d) Forming cerebrospinal fluid and helping it circulate.

38. Which of the following statements is correct regarding veins? **[4]**

a) They are superficially locked under the skin

b) They carry blood from heart towards the organ

c) All veins carry oxygenated blood with single exception.

d) They carry blood from an organ towards the heart.

39. During winter a person died during sleep, the room was closed and a container with burnt charcoal was found in the room. What may be the possible reason of his death? **[4]**

a) Hb has more affinity to combine with carbon monoxide.

b) Combined effect of both Non-availability of oxygen and Hb has more affinity to combine with carbon monoxide.

c) Hb has more affinity to combine with carbon dioxide.

d) Non-availability of oxygen.

40. Polar bodies are produced during the formation of: **[4]**

a) Oogonium

b) Sperms

c) Spermatocytes

d) Secondary oocyte

41. Saheli, a female antifertility pill is used: **[4]**

a) Daily

b) Monthly

c) Quarterly

d) Weekly

42. Which of the following refer to correct example(s) of organisms which have evolved due to changes in the environment brought about by anthropogenic action? **[4]**

i. Darwin’s Finches of Galapagos islands.
ii. Herbicide-resistant weeds.
iii. Drug-resistant eukaryotes.
iv. Man-created breeds of domesticated animals like dogs.

a) (i) and (ii)

b) (iv)

c) (i)

d) (ii), (iii) and (iv)

43. Glomerulus is a tuft of capillaries formed by (A) a fine branch of renal artery. Blood from the glomerulus is carried away by an (B). **[4]**

Select the correct option for (A) and (B).

a) afferent arteriole, efferent arteriole

b) vasa recta, efferent arteriole

c) Bowman's capsule, afferent arteriole

d) vasa recta, afferent arteriole

44. Which of the following is not a function of the skeletal system? **[4]**

a) Production of erythrocytes

b) Locomotion

c) Production of body heat

d) Storage of minerals

45. A polar nerve cells are found in: **[4]**

a) Brain
b) Retina
c) Cochlea
d) Vertebrate's embryo

46. Ovulation in mammals is caused by: **[4]**

a) FSH and LTH
b) FSH and LH
c) FSH and TSH
d) LTH and LH

47. Select the wrong statement from the following: Hypothyroidism during pregnancy causes **[4]**

i. Cretinism in baby
ii. Mental retardation in baby
iii. Low intelligent quotient and deaf-mutism
iv. Abnormal skin in baby
v. Menstrual cycle becomes irregular.

a) Only (iii)
b) (i), (ii) and (iv)
c) (i), (ii) and (iii)
d) Only (v)

48. Coronary artery disease (CAD) is referred to as: **[4]**

a) Heart failure
b) Thrombosis
c) Atherosclerosis
d) Cardiac arrest

49. Palindrome sequences are that read **[4]**

a) opposite on two strands.
b) the same on two strands when orientation of reading is same.
c) opposite on two strands when orientation of reading is same.
d) specific sequence in opposite direction.

50. Consider the following statements. **[4]**

i. Flavrsavr is a genetically modified tomato, which remains fresh and retains its flavour much longer than the normal tomato due to blocking of synthesis of fruit softening enzyme polygalacturonase.
ii. Recently, the US Government has patented the **Indian basmati** rice as rice tee.
iii. VIruses, bacteria and some other harmful organisms can organisms can be used as bioweapons in biological wars.

Which of the above statements are correct?

a) (iii) and (i)
b) (ii) and (iii)
c) (i) and (iii)
d) (i) and (ii)