JUPITER ACADEMY

FULL TEST 1 PHYSICS

NEET-UG - Physics

Time Allowed: 49 minutes **Maximum Marks: 200**

1. $[ML^2T^{-2}]$ are dimensions of:

   a) moment of force
   b) force
   c) momentum
   d) power

2. A jet plane lands with a speed of 100 m/s and can accelerate at a maximum rate of -5.00 m/s^2 as it comes to rest. From the instant the plane touches the runway, what is the minimum time in seconds before it can come to rest?

   a) 20.0
   b) 10.0
   c) 25.0
   d) 30.0

3. A batter hits a baseball so that it leaves the bat at speed v_0 = 37.0 m/s at an angle a = 53.1°. Find the time when the ball reaches the highest point of its flight, and its height h at this time?

   a) 3.02 s, 44.7 m
   b) 3.32 s, 41.7 m
   c) 3.12 s, 43.7 m
   d) 3.22 s, 42.7 m

4. **Assertion (A):** The scalar product of two vectors can be zero.
   Reason (R): If two vectors are perpendicular to each other, their scalar product will be zero.

   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.

5. A hemispherical bowl of radius r is set rotating about its axis of symmetry in vertical. A small block kept in the bowl rotates with the bowl without slipping on its surface. If the surface of the bowl is smooth and the angle made by the radius through the block with the vertical is θ, then find the angular speed at which the ball is rotating.

   a) $\omega = \sqrt{rg\sin\theta}$
   b) $\omega = \sqrt{\frac{gr}{\tan\theta}}$
   c) $\omega = \sqrt{\frac{gr}{\cos\theta}}$
   d) $\omega = \sqrt{\frac{g}{r}\cos\theta}$

6. A body of mass 0.25 kg is projected with muzzle velocity 100 m/s from a tank of mass 100 kg. What is the recoil velocity of the tank?

   a) 0.25 m/s
   b) 0.5 m/s
   c) 5 m/s
   d) 25 m/s

7. When a spring is stretched by 2 cm, it stores 100 J of energy. If it is stretched further by 2 cm, the stored energy will be increased by

   a) 200 J
   b) 300 J
   c) 400 J
   d) 100 J

8. **Assertion (A):** Water at the foot of the waterfall is always at different temperatures from that at the top.
   Reason (R): The potential energy of water at the top is converted into heat energy during falling.

   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.

9. If a sphere is rolling, the ratio of translational energy to total kinetic energy is given by

   a) 2 : 5
   b) 10 : 7
   c) 7 : 10
   d) 5 : 7

10. **Assertion (A):** It is harder to open and shut the door if we apply force near the hinge.
    Reason (R): Torque is maximum at hinge of the door.

    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.

11. If g is the acceleration due to gravity at the surface of the earth. The force acting on the particle of mass m placed at the surface is

    a) Both mg and $\frac{GmM_e}{R_e^2}$
    b) Data insufficient
    c) $\frac{GmM_e}{R_e^2}$
    d) mg

12. **Assertion:** A particle of mass m dropped into a hole made along the diameter of the earth from one end to the other end possesses simple harmonic motion.
    Reason: Gravitational force between any two particles is inversely proportional to the square of the distance between them.

    a) Assertion and reason both are correct statements and reason is correct explanation for assertion.
    b) Assertion and reason both are correct statements but reason is not correct explanation for assertion.
    c) Assertion is correct statement but reason is wrong statement.
    d) Assertion is wrong statement but reason is correct statement.

13. A wire is stretched to double its length. The strain is

    a) 2
    b) 1
    c) zero
    d) 0.5

14. The Young's modulus of steel is twice that of brass. Two wires of same length and of same area of cross-section, one of steel and another of brass are suspended from the same roof. If we want the lower ends of the wires to be at the same level, then the weights added to the steel and brass wires must be in the ratio of

    a) 1 : 1
    b) 4 : 1
    c) 2 : 1
    d) 1 : 2

15. The velocity of efflux of a liquid through an orifice in the bottom of the tank does not depend upon

    a) acceleration due to Force
    b) acceleration due to gravity
    c) height of liquid
    d) size of orifice

16. A vertical tank with depth H is full with water. A hole is made on one side of the wall at a depth h below the water surface. At what distance from the foot of the wall does the emerging stream of water strike the foot?

a) $\sqrt{\frac{2h}{(H-h)}}$ b) $\sqrt{\frac{h}{(H-h)}}$

c) 2 (H - h) $\sqrt{\frac{h}{(H-h)}}$ d) $2\sqrt{h(H-h)}$

17. The electrical resistance in ohms of a certain thermometer varies with temperature according to the approximate law: R = R_o [1 + α (T – T_o)] The resistance is 101.6 Ω at the triple-point of water 273.16 K, and 165.5 Ω at the normal melting point of lead (600.5 K). What is the temperature when the resistance is 123.4 Ω?

a) 364.8 K b) 384.8 K

c) 404.8 K d) 344.8 K

18. Assuming the sun to have a spherical outer surface of radius R, radiating like a black body at temperature t°C the power received by a unit surface (normal to the incident rays) at a distance r from the centre of the sun is:

a) $\frac{16\pi R^2\sigma t^4}{r^2}$ b) $\frac{4\pi R^2\sigma t^4}{r^2}$

c) $\frac{R^2\sigma(t+273)^4}{r^2}$ d) $\frac{R^2\sigma(t+273)^4}{4\pi r^2}$

19. Two cylinders A and B of equal capacity are connected to each other via a stopcock. A contains a gas at standard temperature and pressure. B is completely evacuated. The entire system is thermally insulated. The stopcock is suddenly opened. What is the final pressure of the gas in A and B?

a) 0.6 atm b) 0.45 atm

c) 0.55 atm d) 0.5 atm

20. **Assertion:** The temperature of a gas rises during an adiabatic compression, although no heat is given from outside.
Reason: During adiabatic compression pressure of gas decreases.

a) Assertion and reason both are correct statements and reason is correct explanation for assertion.

b) Assertion and reason both are correct statements but reason is not correct explanation for assertion.

c) Assertion is correct statement but reason is wrong statement.

d) Assertion is wrong statement but reason is correct statement.

21. Relation between pressure P and average kinetic energy E per unit volume of a gas is

a) P = 3E b) P = $\frac{E}{3}$

c) P = $\frac{2E}{3}$ d) P = $\frac{3E}{2}$

22. The displacement of a particle executing S.H.M is given by y = 0.25 sin 200 t cm. The maximum speed of the particle is:

a) 200 cm/sec b) 0.25 cm/sec

c) 100 cm/sec d) 50 cm/sec

23. The frequency of the third harmonic of a closed organ pipe is equal to which of the overtones?

a) Second b) First

c) Fourth d) Third

24. A charge Q is divided into two parts of q and Q-q. If the coulomb repulsion between them when they are separated is to be maximum, the ratio of $\frac{Q}{q}$ should be

a) $\frac{1}{4}$ b) 2

c) $\frac{1}{2}$ d) 4

25. A charge q is located at the centre of a cube. The electric flux through any face is

a) $\frac{1}{6}\frac{4\pi q}{4\pi\varepsilon_0}$ b) $\frac{2\pi q}{6(4\pi\varepsilon_0)}$

c) $\frac{\pi q}{6(4\pi\varepsilon_0)}$ d) $\frac{q}{6(4\pi\varepsilon_0)}$

26. A capacitor of 20 μF is charged up to 500 V is connected in parallel with another capacitor of 10 μF which is charged up to 200 V. The common potential is:

a) 500 V b) 400 V

c) 300 V d) 200 V

27. **Assertion:** For practical purposes, the earth is used as a reference at zero potential in electrical circuits.

Reason: The electrical potential of a sphere of radius R with charge Q uniformly distributed on the surface is given by $\frac{Q}{4\pi\varepsilon_0 R}$.

a) Assertion and reason both are correct statements and reason is correct explanation for assertion.

b) Assertion and reason both are correct statements but reason is not correct explanation for assertion.

c) Assertion is correct statement but reason is wrong statement.

d) Assertion is wrong statement but reason is correct statement.

28. If the electric current in a lamp decreases by 5%, then the power output decreases by:

a) 20% b) 25%

c) 10% d) 5%

29. Drift is the random motion of the charged particles within a conductor,

a) along with a very slow net motion in the opposite direction of the field

b) along with accelerated motion in the direction of the field

c) along with a decelerated motion in the direction of the field

d) along with zero motion in the direction of the field

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

a) 250 Ω b) 40Ω

c) 25Ω d) 500Ω

31. A voltmeter of range 2V and resistance 300 Ω cannot be converted to an ammeter of range:

a) 8 mA b) 10 A

c) 1 A d) 5 mA

32. The universal property among all substances is

a) ferromagnetism b) non-magnetism

c) diamagnetism d) paramagnetism

33. A magnetic needle is kept in a uniform magnetic field. It experiences

a) a force but not a torque

b) neither a torque nor a force

c) a torque but not a force

d) a force and a torque

34. A dynamo works on the principle of:

a) Induced magnetism

b) Faraday's effect

c) Electromagnetic induction

d) Induced current

35. In an ideal inductor, L = 4H and ω = 100 rad/s. The power developed is:

a) 0

b) $2V_0I_0$

c) V_0I_0

d) $\frac{V_oI_o}{2}$

36. A current $I = I_0 \sin(\omega t + \pi/2)$ flows in a circuit across which an alternating potential $E = E_0 \sin \omega t$ is applied. The power consumed in the circuit is

a) $E_0 I_0 / 2$

b) $E_0 I_0$

c) E

d) zero

37. Light with an energy flux of 25×10^4 Wm^{-2} falls on a perfectly reflecting surface at normal incidence. If the surface area is 15 cm^2, the average force exerted on the surface is

a) 3.0×10^{-6} N

b) 2.50×10^{-6} N

c) 1.25×10^{-6} N

d) 1.20×10^{-6} N

38. If, λ_v, λ_x and λ_m represent the wavelengths of visible light, x-rays and microwaves respectively in the free space then,

a) $\lambda_m > \lambda_v > \lambda_x$

b) $\lambda_v > \lambda_x > \lambda_m$

c) $\lambda_m > \lambda_x > \lambda_v$

d) $\lambda_v > \lambda_m > \lambda_x$

39. To print a photograph from a negative, the time of exposure to light from a lamp placed 60 cm away is 2.5 s. What exposure time is required if the lamp is placed 1.2 m away?

a) 5 s

b) 10 s

c) 15 s

d) 20 s

40. When a ray of light enters a glass slab from air,

a) its wavelength decreases

b) neither wavelength nor frequency changes

c) its wavelength increases

d) its frequency increases

41. Newton gave the corpuscular theory on the basis of:

a) Wavefront

b) Newton's rings

c) Colours of thin films

d) Rectilinear motion

42. Young's double-slit experiment is first performed in air and then in a medium other than air. It is found that the 8th bright fringe in the medium lies where the 5th dark fringe lies in the air. The refractive index of the medium is nearly

a) 1.69

b) 1.78

c) 1.25

d) 1.59

43. If we consider electrons and photons of same wavelength, then they will have same

a) velocity

b) momentum

c) angular momentum

d) energy

44. At stopping potential, the kinetic energy of emitted photoelectron is

a) minimum

b) zero

c) cannot de predicted

d) maximum

45. Consider an electron in the nth orbit of a hydrogen atom in the Bohr model. The circumference of the orbit can be expressed in terms of de Broglie wavelength λ of that electron as

a) $n\lambda$

b) $(0.529)n\lambda$

c) $\sqrt{n}\lambda$

d) $(13.6)\lambda$

46. A nucleus of uranium decays at rest into nuclei of thorium and helium. Then

a) The helium nucleus has more momentum than the thorium nucleus.

b) The helium nucleus has less momentum than the thorium nucleus.

c) The helium nucleus has more kinetic energy than the thorium nucleus.

d) The helium nucleus has less kinetic energy than the thorium nucleus.

47. In a half-wave rectifier, the rms value of the ac component of the wave is

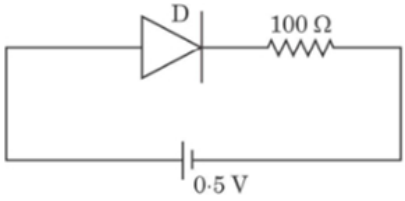
a) more than dc value

b) equal to dc value

c) zero

d) less than dc value

48. The threshold voltage for a p-n junction diode used in the circuit is 0.7 V. The type of biasing and current in the circuit are:



a) Forward biasing, 5 mA

b) Forward biasing, 0 A

c) Reverse biasing, 2 mA

d) Reverse biasing, 0 A

49. Negative zero error in a screw gauge is _____ total reading.

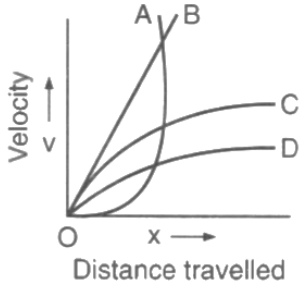
a) divided by

b) multiplied in

c) added in

d) subtracted in

50. A small spherical solid ball is dropped in a viscous liquid. Its journey in the liquid is best described in the figure by:



a) curve C

b) curve A

c) curve D

d) curve B

JUPITER ACADEMY

MODEL QUESTION PAPER 1

NEET-UG - Chemistry

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

General Instructions:

Answer any 45 questions

1. Which one of the following depends upon variations in temperature? **[4]**

   a) Both Normality and Molarity
   b) Normality
   c) Molarity
   d) Molality

2. 30 microliters is the same as: **[4]**

   a) 0.0003 liters
   b) 3000000 liters
   c) 0.03 mL
   d) 0.003 mL

3. Cathode rays or cathode ray particles are: **[4]**

   a) neutrons
   b) protons
   c) electrons
   d) muons

4. In the line spectrum of hydrogen, the lines described by the formula $\bar{v} = 109,677\left(\frac{1}{2^2} - \frac{1}{n^2}\right)\mathrm{cm}^{-1}$ where, n = interger, n $\geq$ 3 constitutes **[4]**

   a) Lyman series
   b) Paschen series
   c) Pfund series
   d) Balmer series

5. S-block elements comprise: **[4]**

   a) Group 4 (alkali metals) and Group 7 (alkaline earth metals)
   b) Group 1 and Group 4
   c) Group-1 (alkali metals) and Group-2 (alkaline earth metals)
   d) Group 3 and Group 2

6. In the modern periodic table, the period indicates the value of: **[4]**

   a) azimuthal quantum number
   b) principal quantum number
   c) mass number
   d) atomic number

7. The species having pyramidal shape is: **[4]**

   a) SF_2O
   b) BrF_3
   c) SiO_3^{2-}
   d) SO_3

8. N_2, CO and NO^+ are isoelectronic molecules. Their respective bond order is : **[4]**

   a) 3,3,3
   b) 2,3,4
   c) 1,1,3
   d) 2,3,3

9. According to Lewis and Kossel approach, which of the following molecule has complete octet of the central atom? **[4]**

a) LiCl
b) BeH_2
c) CO_2
d) BCl_3

10. The equilibrium constant for a reaction is 10. What will be the value of ΔG^0? R = 8.314 JK^{-1}, T= 300 K, T = 300 K? **[4]**

a) -5.744 kJ mol^{-1}
b) -5.456 kJ mol^{-1}
c) -6.132 kJ mol^{-1}
d) -5.978 kJ mol^{-1}

11. By convention, the standard enthalpies of formation of all elements in their most stable states are: **[4]**

a) different for each element
b) zero
c) less than zero
d) unity

12. PCl_5, PCl_3 and Cl_2 are at equilibrium at 500 K in a closed container and their concentrations are 0.8 $\times$ 10^{-3} mol L^{-1}, 1.2 $\times$ 10^{-3} mol L^{-1} and 1.2 $\times$ 10^{-3} mol L^{-1} respectively. The value of K_c for the reaction $PCl_5(g) \rightleftharpoons PCl_3(g) + Cl_2(g)$ will be: **[4]**

a) 1.6×10^3
b) 1.8×10^3
c) 0.55×10^4
d) 1.8×10^{-3}

13. One of the reaction that takes place in producing steel from iron ore is the reduction of iron (II) oxide by carbon monoxide to give iron metal and CO_2. FeO(s) + CO (g) $\rightarrow$ Fe (s) + CO_2 (g) K_p = 0.265 at 1050 K. What are the equilibrium partial pressures of CO and CO_2 at 1050 K if the initial partial pressures are: P_{co} = 1.4 atm and P_{CO_2} = 0.80 atm? **[4]**

a) P_{CO_2} and P_{CO} = 1.557atm and 2.739 atm
b) P_{CO_2} and P_{CO} = 0.461atm and 1.739 atm
c) P_{CO_2} and P_{CO} = 0.416 atm and 1.135 atm
d) P_{CO_2} and P_{CO} = 0.461atm and 0.739 atm

14. Conjugate acid of a weak base is always stronger. What will be the decreasing order of basic strength of the following conjugate bases? OH^-, RO^-, CH_3COO^-, Cl^- **[4]**

a) $CH_3COO^- > Cl^- > RO^- > OH^-$
b) $OH^- > R > CH_3CO >$
c) $RO^- > OH^- > CH_3COO^- > Cl^-$
d) $RO^- > OH^- > Cl^- > CH_3COO^-$

15. At 500 K, equilibrium constant, K_c, for the following reaction is 5.2. $\frac{1}{2}H_2\,(g) + \frac{1}{2}\,I_2\,(g) \rightleftharpoons$ HI (g) What would be the equilibrium constant Kc for the reaction $2HI(g) \rightleftharpoons H_2(g) + I_2(g)$ **[4]**

a) 0.4
b) 0.04
c) 2.5
d) 25

16. If a reaction is carried out in acidic medium then which is used to balance the equation? **[4]**

a) OH^-ions
b) O^{2-}ions
c) H^+ions
d) H^-ions

17. Which of the following compound is an important catalyst as well as a Lewis acid? **[4]**

a) N_2H_4 b) BF_3

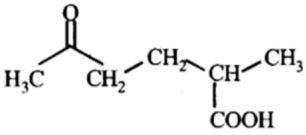
c) Al_2S_2 d) S_4N_4

18. Which type of bond is formed between carbon atom and nitrogen atom? **[4]**

a) Ionic bond b) Dative bond

c) Covalent bond d) Compulsive bond

19. The IUPAC name of the compound is: **[4]**



a) 2-Methyl-5-oxohexanoic acid b) 2-Formyl-5-methylhexan-6-oic acid

c) 5-Methyl-2-oxohexan-6-oic acid d) 5-Formyl-2-methylhexanoic acid

20. The order of decreasing priority for some functional groups in the naming of an organic compound is: **[4]**

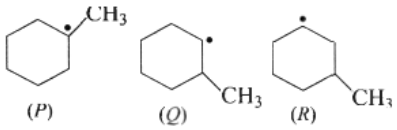
a) - COOR (R = alkyl group right), - COCl, - $CONH_2$, - CN, - HC = O, > C = O, - OH, - H_2

b) - CN, - HC = O, > C = O, - OH, - NH_2, - COOR (R = alkyl group), - COCl, - $CONH_2$

c) - $CONH_2$, - CN, - HC = O, > C = O, - OH, - NH_2, - COOR (R = alkyl group), - COCl

d) - COCl, - $CONH_2$, - CN, - HC = O, > C = O, - OH, - NH_2, - COOR (R = alkyl group)

21. Which of the following orders is correct for hyperconjugation of these radicals? **[4]**



a) Q > P > R b) P > R > Q

c) P > Q > R d) R > Q > P

22. Give the correct order of decreasing acidity : **[4]**

A. C_2H_5SH

B. C_2H_5OH

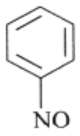
C. $C_2H_5NH_2$

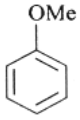
D. $CH_3CH_2CH_3$

a) B > A > C > D b) C > D > B > A

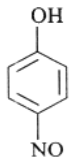
c) A > B > C > D d) C > B > A > D

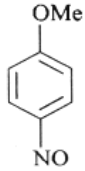
23. Which of the following compounds will exhibit tautomerism? **[4]**

a) 

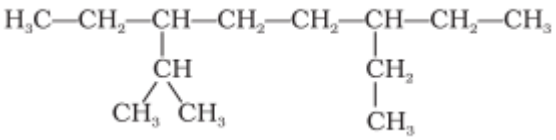
b) 

c) d)





24. The correct IUPAC name of the following alkane is: **[4]**



a) 3 - Isopropyl - 6 - ethyloctane

b) 5 - Isopropyl - 3 - ethyloctane

c) 3,6 - Diethyl - 2 - methyloctane

d) 3 - Ethyl - 5 - isopropyloctane

25. Thus ethyne molecule consists of: **[4]**

a) three C - C σ bond, two C - H σ bonds and three C - C π bonds.

b) one C - C σ bond, two C - H σ bonds and two C - C π bonds.

c) one C - C σ bond, three C - H σ bonds and two C - C π bonds.

d) one C - C σ bond, two C - H σ bonds and three C - C π bonds.

26. The peroxide effect in anti-Markovnikov's addition of HBr to unsymmetrical alkenes involves **[4]**

a) homolytic fission of the double bond

b) a free radical mechanism.

c) heterolytic fission of the double bond

d) an ionic mechanism

27. For dissolution of gases in liquids, the concentration of a gas in a liquid is: **[4]**

a) proportional to the vapour pressure of the gas

b) lower to the pressure of the gas as compared to the liquid

c) proportional to the pressure of the gas over the liquid

d) equal to the pressure of the gas in relation to the liquid

28. Which will form maximum boiling azeotrope? **[4]**

a) $C_2H_5OH + H_2O$

b) $H_3NO_2 + H_2O$

c) $HNO_3 + H_2O$

d) $C_6H_6 + C_6H_5CH_3$

29. The algebraic sum between the electrode potential of two electrodes when no current is drawn through the cell is: **[4]**

a) cell voltage

b) potential difference

c) cell emf

d) cell potential

30. Choose the one which is a secondary cell: **[4]**

a) Leclanche cell

b) Both Laclanche cell and Mercury cell

c) Mercury cell

d) Lead- storage battery cell

31. A first order reaction is 50% completed in 1.26×10^{14} s. How much time would it take for 100% completion? **[4]**

a) infinite

b) 1.26×10^{15} s

c) 2.52×10^{28} s

d) 2.52×10^{14} s

32. The rate law for a particular reaction is given as rate = $k[A][B]^2$. **[4]**

How is the rate of reaction affected if we double the concentration of B?

a) becomes half $(\frac{1}{2})$ b) three times

c) two times d) four times

33. The solubility of iodine in water may be increased by the addition of: **[4]**

a) $Na_2S_2O_3$ b) CS_2

c) KI d) $CHCl_3$

34. How many moles of oxygen are obtained by heating 8 mol of potassium chlorate? **[4]**

a) 28 b) 8

c) 16 d) 12

35. Electronic configuration of a transition element X in +3 oxidation state is $[Ar]3d^5$. What is its atomic number? **[4]**

a) 24 b) 26

c) 27 d) 25

36. Among the following outermost configurations of transition metals which one shows the highest oxidation state? **[4]**

a) $3d^54s^2$ b) $3d^64s^2$

c) $3d^54s^1$ d) $3d^34s^2$

37. Total number of unpaired electrons present in Co^{3+} (Atomic number = 27) is **[4]**

a) 2 b) 4

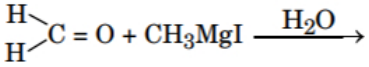
c) 5 d) 3

38. Which of the following is a homoleptic complex? **[4]**

a) $[Cr(NH_3)_3Cl_3]$ b) $[CoCl_2(en)_2]^+$

c) $[Co(NH_3)_4Cl_2]^+$ d) $[Cu(NH_3)_4]^{+2}$

39. What would be the major product of the given reaction? **[4]**



a) Ethanol b) Ethanal

c) Propanol d) Propanal

40. The best method for the conversion of an alcohol into an alkyl chloride is by treating the alcohol with: **[4]**

a) $SOCl_2$ in presence of pyridine b) PCl_3

c) Dry HCl in the presence of anhydrous $ZnCl_2$ d) PCl_5

41. The reaction of an alkyl halide with sodium alkoxide forming ether is known as: **[4]**

a) Wurtz reaction b) Kolbe reaction

c) Williamson synthesis d) Reimer-Tiemann reaction

42. Arrange the following compounds in increasing order of boiling point: Propan-1-ol, butan-1-ol, butan-2-ol, pentan-1-ol **[4]**

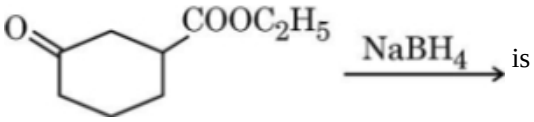
a) Propan-1-ol, butan-2-ol, butan-1-ol, pentan-1-ol

b) Pentan-1-ol, butan-2-ol, butan-1-ol, propan-1-ol

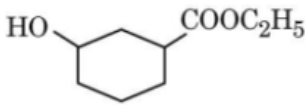
c) Propan-1-ol, butan-1-ol, butan-2-ol, pentan-1-ol

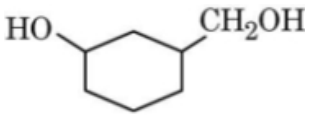
d) Pentan-1-ol, butan-1-ol, butan-2-ol, propan-1-ol

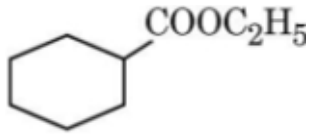
43. The product formed in the reaction: **[4]**

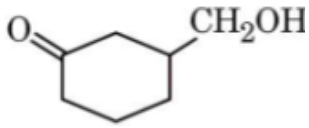


is

a) 

b) 

c) 

d) 

44. The reagent that can be used to distinguish acetophenone and benzophenone is **[4]**

a) aqueous $NaHSO_3$

b) 2, 4-dinitrophenyl hydrazine

c) I_2 and NaOH

d) Fehling solution

45. IUPAC name of product formed by reaction of methyl amine with two moles of ethyl chloride **[4]**

a) N,N-Dimethylethanamine

b) N-Methyl ethanamine

c) N,N-Diethylmethanamine

d) N-Ethyl-N-methylethanamine

46. Aniline does not undergo Friedel – Crafts reaction because: **[4]**

a) Anilium ion deactivates any further reaction

b) Aluminium chloride reacts with Aniline

c) All of these

d) $AlCl_3$ act as a catalyst

47. Which of the following statements is not true about glucose? **[4]**

a) On heating with HI it forms n-hexane.

b) It gives 2, 4 DNP test.

c) It is an aldohexose.

d) It is present in pyranose form.

48. Progesterone is responsible for **[4]**

a) preparing the uterus for implantation of fertilised egg.

b) development of secondary female characteristics.

c) controlling menstrual cycle.

d) development of secondary male characteristics.

49. What is the name of tube in which a known mass of an organic compound is heated for the quantitative analysis of sulphur? **[4]**

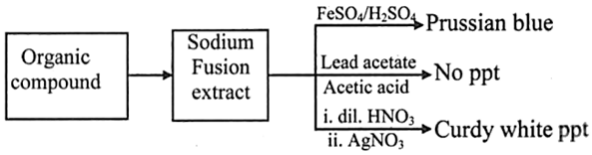
a) Carius tube

b) Borosilustube

c) Kjeldahl tube

d) Borosiltube

50. Given the information below, identify the organic compound. **[4]**



a) 2-bromophenol

b) 1-chloro-2, 4-dinitrobenzene

c) benzene sulphonyl chloride

d) chlorobenzene

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BOTANY MODEL PAPER 1

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.
- Answer any 45 questions

BOTANY (Section-A)

1. In biological names *Mangifera indica* Linn, what is meaning of Linn? **[4]**

   a) Name of the author
   b) Name of the place
   c) Name of the country
   d) All of these

2. Biological name of wheat is: **[4]**

   a) Timarendus indica
   b) Triticum aestivum
   c) Mangifera indica
   d) Mangifera domestica

3. Which statement is wrong for viruses? **[4]**

   a) All are parasites
   b) All of them have helical symmetry
   c) They have ability to synthesise nucleic acids and proteins
   d) Antibiotics have no effect on them

4. Viroids discovered by : **[4]**

   a) W.M. Stanley
   b) M.W. Beijerinck
   c) Ivanowski
   d) T.O. Diener

5. Upon fertilization which structure can develop from a carpel: **[4]**

   a) Testa
   b) Pericarp
   c) Perisperm
   d) Tegmen

6. What is the fate of the male gametes discharged in the synergid? **[4]**

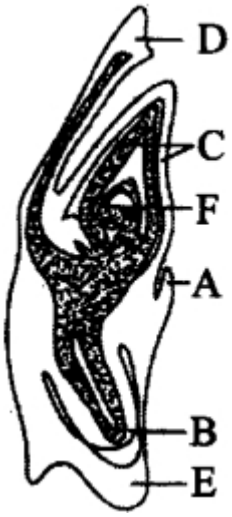
   a) All fuse with the egg
   b) One fuses with the egg and other fuses with central cell nuclei
   c) One fuses with the egg, other(s) fuse(s) with synergid nucleus
   d) One fuses with the egg, other(s) degenerate(s) in the synergid

7. Protonema occurs in the life cycle of **[4]**

   a) Spirogyra
   b) Rhizopus
   c) Funaria
   d) Escherichia

8. The image given below represents the embryo of grasses with its parts labelled from A to F. Identify the parts **[4]**

which depict the coleoptile, shoot apex, and coleorhiza.



a) A, B, and E
b) C, F, and B
c) C, F, and E
d) D, A, and E

9. The stamens represent the **[4]**

a) male gametophyte
b) Male gametes
c) microsporophylls
d) microsporangia

10. Read the following statements and answer the questions. **[4]**

i. It is made up of elongated, tapering cylindrical cells which have dense cytoplasm and nucleus.
ii. The cell wall is composed of cellulose and has pits through which plasmodesmata connections exist between the cells.
iii. It is absent in most of the monocotyledons.

Which part of plant tissue is being described by the above statements?

a) Companion cells
b) Phloem parenchyma
c) Sieve tube elements
d) Phloem fibres

11. The xylem in which protoxylem lies towards periphery and metaxylem lies towards the centre. Such arrangement of primary xylem is called: **[4]**

a) Exarch
b) Endarch
c) Mesarch
d) All of these

12. Schlerenchymatous hypodermis is characteristics of: **[4]**

a) Monocot as well as dicot stem
b) Hydrophytes
c) Dicot stem
d) Monocot stem

13. Which of the following genotype represent intersex Drosophila? **[4]**

a) 3A + XXY
b) 2A + XXY
c) 2A + XXX
d) 2A + XY

14. Non-disjunction may occur due to the failure of _____ chromosomes to separate properly in meiosis I. **[4]**

a) homologous
b) autosomal
c) All of these
d) non-homologous

15. DNA and RNA differ in: **[4]**

a) Phosphate
b) Base
c) Base and Sugar
d) Sugar only

16. The prokaryotic genetic system contains: **[4]**

a) Either DNA or histones
b) Neither DNA nor histones
c) DNA and histones
d) DNA but no histones

17. Mitochondria reproduce by: **[4]**

a) Transformation
b) Fission
c) Fusion
d) Recombination

18. The arrangement of central and outer microtubules in a cilium is called the: **[4]**

a) 2 + 9 pattern
b) 0 + 9 pattern
c) 9 + 2 pattern
d) 9 + 0 pattern

19. Blood cancer is called as: **[4]**

a) Leukocytosis
b) Leukaemia
c) Leukocytopaenia
d) All of these

20. The term Health is defined in many ways. The most accurate definition of the health would be: **[4]**

a) Health is the state of body and mind in a balanced condition.
b) Health is the symbol of economic prosperity.
c) Health is a state of complete physical, mental, and social well-being.
d) Health is the reflection of a smiling face.

21. The members of a homologous pair of chromosomes **[4]**

a) are found only in haploid cells.
b) are identical in size and appearance.
c) contain identical genetic information.
d) separate and move to opposite poles of the cell uring mitosis.

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

i. Thermoregulation energetically least expensive process for many organisms like shrews and humming birds.
ii. 99% animals and nearly all plants cannot maintain their constant internal environment.
iii. During the course of evolution, the costs and heights of maintaining a constant internal environment are discarded.
iv. In aquatic animals, the osmotic concentration of the body fluids changes with that of the ambient water osmotic concentration.

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

23. Productivity is expressed as: **[4]**

a) $g^{-2}\ yr^{-1}$
b) More than one
c) gyr^{-1}
d) $(kcal\ m^{-2})\ yr^{-1}$

24. Why are cyanobacteria considered useful in paddy fields? **[4]**

a) Absorbs phosphorus from soil and passes it to the plant
b) Increase tolerance to salinity and drought
c) All of these
d) Fix atmospheric nitrogen

25. Sacred groves are found in **[4]**

a) Aravalli Hills of Rajasthan.
b) Khasi and Jaintia Hills in Meghalaya.
c) All of these
d) Western ghat regions of Kamataka and Maharashtra and Sarguja, Chanda and Bastar areas of Madhya Pradesh.

26. Alexander Von Humboldt described for the first time: **[4]**

a) Laws of limiting factor
b) Population growth equation
c) Species area relationships
d) Ecological biodiversit

27. Dust, oolong, and brick are varieties of **[4]**

a) Lavang
b) Tea
c) Pepper
d) Coffee

28. In cell division, spindle fibres are made up of protein: **[4]**

a) Tubulin
b) Myoglobin
c) Myosin
d) Albumin

29. Which of the following stop cell division in a cell? **[4]**

a) Gibberellins
b) Cytokinins
c) ABA
d) Auxins

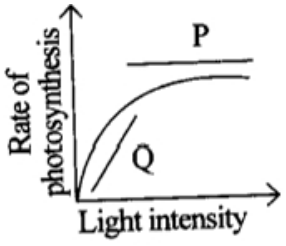
30. During non-cyclic photophosphorylation, electrons lost from the reaction centre of PS II are replaced by the electrons of: **[4]**

a) H_2O
b) O_2
c) CO_2
d) PS I

31. In the leaves of C_4 plants, malic acid formation during CO_2 fixation occurs in the cells of: **[4]**

a) Epidermis
b) Mesophyll
c) Bundle sheath
d) Phloem

32. The effect of light intensity on the rate of photosynthesis is shown as graph below. The limiting factors for photosynthesis at P and Q are **[4]**



a) CO_2 and light, respectively
b) only CO_2

c) only light

d) temperature and light, respectively

33. The molar ratio of chlorophyll and xanthophyll is **[4]**

a) 4 : 1

b) 2 : 1

c) 3: 1

d) 1 : 1

34. In which of the following reactions of glycolysis, oxidation takes place? **[4]**

a) Glyceraldehyde - 3 - phosphate to 1,3 - diphosphoglycerate

b) 1,3 - diphosphoglycerate to 3 - phosphoglycerate

c) 2 - phosphoglycerate to phosphoglycerate

d) Glucose - 6 - PO_4 to fructose - 6 - PO_4

35. Which of the following hormones is responsible for ageing? **[4]**

a) Ethylene

b) IAA

c) ABA

d) NAA

BOTANY (Section-B)

Attempt any 10 questions

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

a) Tautonyms do not occur in plants

b) Tautonyms normally occur in animals and some time occur in plants

c) Tautonyms occur only in bacteria

d) Tautonyms do not occur in animals

37. Choose the correct one for basidiomycetes from given statements. **[4]**

i. They grow in soil, on logs and tree stumps and in living plant bodies as parasites.

ii. The asexual spores are generally found and vegetative reproduction by fragmentation is common.

iii. Sex organs are absent, but plasmogamy is brought about by the fusion of two somatic cells of different strains.

iv. Karyogamy and meiosis take place in the basidium producing eight basidiospores.

v. The basidiospores are exogenously produced on the basidium.

vi. The basidia are arranged in fruiting bodies called basidiocarps.

a) (i) and (iv)

b) (i), (iii) and (v)

c) (i), (iii) and (iv)

d) (i), (ii), (v) and (vi)

38. In gymnosperm pollination is exclusively by: **[4]**

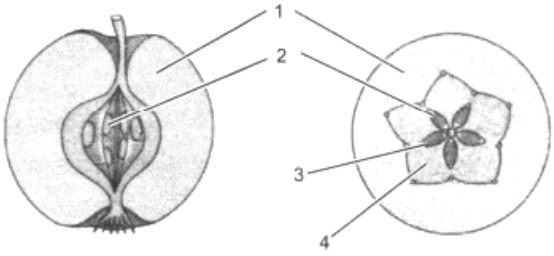
a) Wind

b) Insects

c) Water

d) Animals

39. Identify the part (1, 2, 3 and 4) shown in the diagram of the fruit of apple and strawberry: **[4]**



a) 1-Thalamus, 2-Seed, 3-Endocarp, 4-Epicarp

b) 1-Thalamus, 2-Seed, 3-Epicarp and

Mesocarp, 4-Endocarp

c) 1-Thalamus, 2-Seed, 3-Mesocarp, 4-Endocarp

d) 1-Thalamus, 2-Seed, 3-Endocarp, 4-Mesocarp

40. In candytuft which type of inflorescence is present? **[4]**

a) Capitulum

b) Corymb

c) Cyathium

d) Umbel

41. A cow with red coat is crossed with a bull having white coat. Their offspring produced in F_1 generation showed roan coat. This effect is produced due to juxtaposition of small patches of red and white colour. What can be assumed about the gene controlling coat colour in cattle? **[4]**

a) The alleles of gene controlling coat colour are law recessive realationship.

b) The alleles of gene controlling coat colour show a perfect dominant recessive relationship.

c) The alleles of gene controlling coat colour are codominant.

d) The alleles of gene controlling coat colour are incompletely dominant.

42. DNA is present in: **[4]**

a) Pyrenoids

b) Dictyosomes

c) Mitochondria

d) Chromosomes

43. Which of the following is not related with mesosome? **[4]**

a) This structure also found in eukaryotes

b) They also help in respiration, secretion processes, to increase the surface area of the plasma membrane and enzymatic content.

c) It present in form of vesicles, tubules and lamellae

d) They help in cell wall formation, DNA replication and distribution to daughter cells

44. Biogas can be a good substitute for **[4]**

a) coal

b) petroleum and oil

c) fuel wood

d) charcoal

45. Number of glucose molecule required to produce 38 ATP under anaerobic condition is_____. **[4]**

a) 4

b) 19

c) 2

d) 38

46. Biofertilizers include: **[4]**

a) All of these

b) Nitrogen fixing cyanobacteria

c) Nitrogen fixing bacteria

d) Mycorrhiza

47. Precipitation of water soluble inorganic nutrients from surface of soil to deep horizon is called: **[4]**

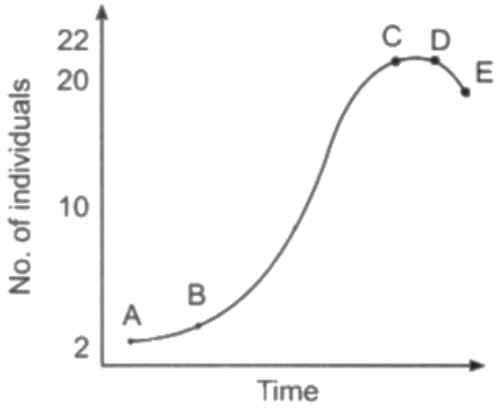
a) Fragmentation

b) Mineralisation

c) Humification

d) Leaching

48. This is the type of growth curve noted for most organisms. The exponential phase of growth is represented by: **[4]**



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

49. Growth is maximum in the zone of: **[4]**

a) Cell elongation
b) Cell maturation
c) All of these
d) Cell division

50. Which fractions of the visible spectrum of solar radiations are primarily absorbed by carotenoids of the higher plants? **[4]**

a) Red and violet
b) Blue and green
c) Violet and blue
d) Green and red

JUPITER ACADEMY

ZOOLOGY MODEL PAPER 1

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. Which of the following is an incorrect statement regarding flatworms? **[4]**

   a. They are acoelomates.
   b. They are bilaterally symmetrical.
   c. They lack a digestive system.
   d. They have a circulatory system.

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

2. Which of the following have electric organs? **[4]**

   a) Torpedo
   b) Carcharodon
   c) Trygon
   d) Scoliodon

3. Digestion in Sycon and other sponges is: **[4]**

   a) First intracellular, then extracellular
   b) Only extracellular
   c) First extracellular, then intracellular
   d) Only intracellular

4. The function of the gap junction is to: **[4]**

   a) Facilitate communication between adjoining cells by connecting the cytoplasm for rapid transfer of ions, small molecules and some large molecules
   b) Separate two cells from each other
   c) Performing cementing to keep neighbouring cells together
   d) Stop substance from leaking across a tissue

5. The body cells in cockroach discharge their nitrogenous waste in the haemolymph mainly in the form of: **[4]**

   a) Calcium carbonate
   b) Potassium urate
   c) Ammonia
   d) Urea

6. Which of the following membranes separates air in pulmonary alveoli from blood capillaries? **[4]**

   a) Alveolar epithelium
   b) Cardiac epithelium
   c) Endothelium blood capillaries
   d) Both Alveolar epithelium and Endothelium

blood capillaries

7. Adam's apple is formed by: **[4]**

a) Arytenoid cartilage which is paired
b) Thyroid cartilage which is unpaired
c) Crecoid cartilage which is ring shaped
d) Crecoid cartilage which is bell shaped

8. Vital capacity is the maximum amount if air which can be breathed out after: **[4]**

a) Exhaling tidal volume
b) Exhaling supplementary air
c) Inhaling tidal volume and complementary air
d) Inhaling tidal volume only

9. Which of the following sequences is correct to initiate inspiration? **[4]**

i. The contraction of external intercostal muscles raises the ribs and sternum.
ii. Volume of thorax increases in the dorsoventral axis.
iii. Intrapulmonary pressure decreases.
iv. Diaphragm contraction.
v. Air rushes into lungs.
vi. Volume of thorax increases in the anterior-posterior axis.

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

10. In breathing movements, air volume can be estimated by : **[4]**

a) Sphygmomanometer
b) Hygrometer
c) Stethoscope
d) Spirometer

11. In human adult females, oxytocin: **[4]**

a) Stimulates pituitary to secrete vasopressin
b) Causes strong uterine contractions during parturition
c) Is secreted by embryo.
d) Stimulates the growth of mammary glands

12. Menstrual cycle is controlled by: **[4]**

a) Estrogen and progesterone
b) LH only
c) Estrogen only
d) FSH only

13. Colostrum, the yellowish fluid, secreted by mother during the initial days of lacation is very essential to impart immunity to the newborn infants because it contains: **[4]**

a) Natural killer cells
b) Monocytes
c) Immunoglobulin A
d) Macrophages

14. Read the following statements. **[4]**

i. Numerous children have been produced by in vitro fertilisation but with some abnormalities.
ii. Inability to conceive or produce children even after 2 years of unprotected sexual co-habitation is called infertility.
iii. Infertility is due to defects in the female partner only.

iv. Assisted reproductive technologies require extremely high precision handling by specialized professionals and expensive instrumentation.

Select the correct statements.

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

15. Diseases or infections which are transmitted through sexual intercourse are collectively called Sexually Transmitted Diseases (STDs), which is not correct for it? **[4]**

a) Genital herpes, genital warts are STD
b) Hepatitis-B can also be transmitted by transfusion of blood, or from an infected mother to the foetus too
c) It is also called Venereal Diseases (VD) or Reproductive Tract Infections (RTI)
d) All STD are completely curable

16. Match the Column I with Column II and select the correct option. **[4]**

Column I	Column II
(A) Mutation	(i) Immigration and emigration change allele frequencies.
(B) Natural selection	(ii) Change in population's allele frequencies due to chance alone.
(C) Genetic drift	(iii) Source of new alleles.
(D) Gene flow	(iv) Differences in survival and reproduction among variant individuals.

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

17. The idea of mutation was brought forth by: **[4]**

a) Gregor Mendel, who worked on Pisum sativum.
b) Charles Darwin, who observed a wide variety of organisms during sea voyage.
c) Hugo de Vries, who worked on evening primrose.
d) Hardy Weinberg, who worked on allele frequencies in a population.

18. In rabbit and humans, the kidney is: **[4]**

a) Metanephric
b) Pronephric
c) Holonephric
d) Mesonephric

19. Antennal glands are excretory organs of: **[4]**

a) Moths
b) Cray fishes
c) Spiders
d) Scorpions

20. Autoregulation of GFR (glomerulus filtration rate) takes place by **[4]**

a) renin angiotensin mechanism.
b) All of these
c) juxta-glomerulus apparatus.
d) vasopressin.

21. Rigor mortis is: **[4]**

a) Contraction of muscles after death
b) Shivering of muscles
c) Expansion of muscles after death
d) Contraction of muscles before death

22. Multiunit smooth muscles are found in the wall of: **[4]**

a) Urinary bladder
b) Stomach
c) Intestine
d) Large blood vessels

23. Knee joint and elbow joints are examples of: **[4]**

a) Pivot joint
b) Ball and socket joint
c) Hinge joint
d) Saddle joint

24. The hindbrain consists of: **[4]**

a) Medulla oblongata + cerebellum
b) Pons + cerebellum
c) Medulla oblongata + cerebellum + pons
d) Hypothalamus + cerebellum

25. Which part of the brain is directly concerned with the control of heart? **[4]**

a) Medulla oblongata
b) Cerebrum
c) Hypothalamus
d) Pons

26. Twilight vision is also called **[4]**

a) scotopic vision and is the function of rods.
b) photopic vision and is the function of rods.
c) scotopic vision and is the function of cones.
d) photopic vision and is the function of cones.

27. Conn’s disease is caused by the over-secretion of **[4]**

a) ATH
b) ADH
c) ACTH
d) Aldosterone

28. Which of the following responsible for fear, anger, pain, etc., and causes rise in blood pressure and rate of heart beat? **[4]**

a) Adrenaline
b) Thyroxine
c) Progesterone
d) Insulin

29. How can the circulatory system promote heat retention/conservation, such as on a cold day? **[4]**

a) Increasing capillary surface area
b) Decreasing tunica media contraction
c) Vasoconstriction
d) Vasodilation

30. The QRS complex wave represents the _____ in ECG. **[4]**

a) Contraction of both the ventricle
b) Depolarisation of ventricles
c) All of these
d) Electrical excitation of the ventricle

31. The cation necessary for coagulation of blood is : **[4]**

a) Cl
b) Na
c) Ca
d) K

32. A gene whose expression helps to identify transformed cell is known as: **[4]**

a) Selectable marker
b) Plasmid

c) Structural gene
d) Vector

33. **Restriction** in Restriction enzyme refers to : **[4]**

a) Cutting of DNA at specific position only
b) Cleaving of phosphodiester bond in DNA by the enzyme
c) Prevention of the multiplication of bacteriophage in bacteria
d) All of these

34. Cry protein is obtained from: **[4]**

a) Clostridium welchi
b) Bacillus subtilis
c) Bacillus thuringiensis
d) E.coli

35. Which part of the tobacco plant is infected by Meloidogyne incognita? **[4]**

a) Root
b) Leaf
c) Stem
d) Flower

ZOOLOGY (Section-B)

Attempt any 10 questions

36. Star fish is a: **[4]**

a) Shark
b) Bony fish
c) Echinoderm
d) Mollusc

37. Uric acid is the chief nitrogenous component of the excretory products of: **[4]**

a) Frog
b) Earthworm
c) Man
d) Cockroach

38. The valves, which allows the blood to flow from the ventricles into the pulmonary arteries and in the opposite direction (right atrium to ventricle) are **[4]**

a) bicuspid and tricuspid valve
b) semilunar and tricuspid valve
c) aortic and mitral valve.
d) AV valve and semilunar valve.

39. Mammalian lungs have an enormous number of minute alveoli (air sacs). This is to allow **[4]**

a) more surface area for diffusion of gases.
b) more spongy texture for keeping lung in proper shape.
c) more nerve supply to keep the lungs working.
d) more space for increasing the volume of inspired air.

40. Choose the correct statement : **[4]**

a) Embryo’s heart is formed by the 1st month of pregnancy
b) HPL plays a major role in parturition
c) Signal for parturition comes from fully developed foetus and placenta
d) Foetus shows movements and body hairs, first, on the 7th month

41. The following statements are given regarding MTP. Choose the correct options given below: **[4]**

i. MTPs are generally advised during first trimester
ii. MTPs are used as a contraceptive method

iii. MTPs are always surgical

iv. MTPs require the assistance of qualified medical personnel

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

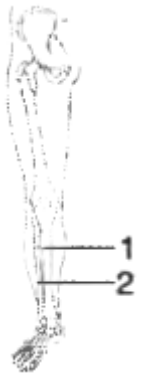
42. Which of the following factor does not affect Hardy-Weinberg's equilibrium? **[4]**

a) Random mating
b) Gene migration
c) Genetic drift
d) Natural selection

43. Which one of the following is the most soluble in water? **[4]**

a) Uric acid
b) Ammonia
c) Urea
d) Amino acid

44. Given diagram shows bone of the right pelvic girdle and lower limb bones in frontal view. Identify 1 and 2 respectively: **[4]**



a) Tarsals and femur
b) Fibula and tibia
c) Tibia and tarsals
d) Tibia and fibula

45. The substance used in synaptic transmission: **[4]**

a) Adrenalin
b) Epinephrin
c) Acetylcholine
d) Acetylcholinesterase

46. Which is gastrointestinal hormone? **[4]**

a) Cholecystokinin
b) GIP
c) Secretin
d) All of these

47. Blood pressure is controlled by: **[4]**

a) Corpus luteum
b) Thyroid gland
c) Thymus
d) Adrenal gland

48. The first heart sound is: **[4]**

a) ‘Lubb’ sound at the end of systole
b) ‘Dubb’ sound at the end of systole
c) ‘Lubb’ sound at the beginning of systole
d) ‘Dubb’ sound at the beginning of systole

49. The colonies of recombinant bacteria appear white in contrast to blue colonies of non-recombinant bacteria because of: **[4]**

a) Non-recombinant bacteria containing beta galactosidase

b) Inactivation of glycosidase enzyme in recombinant bacteria

c) Insertional inactivation of alpha-galactosidase in recombinant bacteria

d) Insertional inactivation of alpha-galactosidase in non-recombinant bacteria

50. Which of the following is commonly used as a vector for introducing a DNA fragment in human lymphocytes? **[4]**

a) Retrovirus

b) Ti plasmid

c) pBR 322

d) λ phage