

JUPITER ACADEMY

FULL TEST 5 PHYSICS

NEET-UG - Physics

Time Allowed: 1 hour

Maximum Marks: 180

General Instructions:

ANSWER ANY 45 QUESTIONS

Attempt any 45 questions

- The speed (v) of ripples on the surface of water depends on surface tension (σ), density (ρ) and wavelength (λ). [4]
The square of speed (v) is proportional to:
 - $\rho\lambda\sigma$
 - $\frac{\lambda}{\sigma\rho}$
 - $\frac{\rho}{\sigma\lambda}$
 - $\frac{\sigma}{\rho\lambda}$
- Using dimensional analysis which of the following is correct (m is relativistic mass, m_0 is rest mass, V is the velocity of particle and c is the velocity of light)? [4]
 - $m = \frac{m_0}{\sqrt{1-\frac{V^2}{c^2}}}$
 - $m = \frac{m_0}{\sqrt{1-V^2}}$
 - $m = \frac{m_0}{\sqrt{1-c^2V^2}}$
 - $m = \frac{m_0}{\sqrt{1-c^2}}$
- What is the number of significant figures in 0.310×10^3 ? [4]
 - 3
 - 4
 - 2
 - 6
- A particle moving with uniform acceleration has velocity 6 m/s at a distance of 5 m from the initial position. After moving another 7 m, the velocity becomes 8 m/sec. The initial velocity and acceleration of the particle are: [4]
 - 4 m/s, 4 m/s²
 - 4 m/s, 2 m/s²
 - 2 m/s, 4 m/s²
 - 6 m/s, 1 m/s²
- A stone falls freely from rest from a height h and it travels a distance $\frac{9h}{25}$ in the last second. The value of h is: [4]
 - 122.5 m
 - 145 m
 - 100 m
 - 200 m
- Assertion (A):** The projection of $(3\hat{i} - 4\hat{k})$ on the y-axis is 3 units. [4]
Reason (R): The projection of \vec{A} along y-axis is $\vec{A} \cdot \hat{j}$.
 - Both A and R are true and R is the correct explanation of A.
 - Both A and R are true but R is not the correct explanation of A.
 - A is true but R is false.
 - A is false but R is true.
- If maximum and minimum values of the resultant of two forces acting at a point are 7 N and 3 N respectively, the smaller force is equal to [4]
 - 4 N
 - 2 N

c) 3 N

d) 5 N

8. Waterfalls from a height of 60 m at the rate $15 \frac{\text{kg}}{\text{s}}$ to operate a turbine. The losses due to frictional forces are 10% of energy. How much power is generated by the turbine? Take $g = 10 \text{ m/s}^2$. [4]

a) 10.2 kW

b) 7.0 kW

c) 8.1 kW

d) 12.3 kW

9. In elastic collision, 100% energy transfer takes place when [4]

a) $m_1 = m_2$

b) $m_1 < m_2$

c) $m_1 = 2 m_2$

d) $m_1 > m_2$

10. Two particles of the same mass m are moving in circular - orbits because of force, given by $F(r) = \frac{-16}{r} - r^3$. [4]
The first particle is at a distance $r = 1$, and the second, at $r = 4$. The best estimate for the ratio of kinetic energies of the first and the second particle is closest to

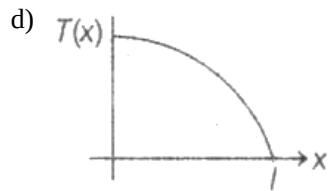
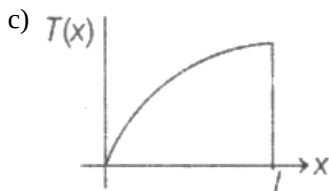
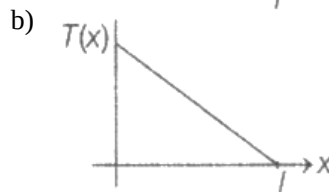
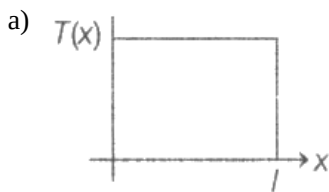
a) 3×10^{-3}

b) 10^{-1}

c) 6×10^{-2}

d) 6×10^2

11. A uniform rod of length l is being rotated in a horizontal plane with a constant angular speed about an axis passing through one of its ends. If the tension generated in the rod due to rotation is $T(x)$ at a distance x from the axis, then which of the following graphs depicts it most closely? [4]



12. A wheel has moment of inertia 5 kg m^2 . If 10^5 J of work is done in producing rotational kinetic energy, then the wheel attains an angular speed equal to [4]

a) 200 rad/s

b) 100 rad/s

c) 20 rad/s

d) 10 rad/s

13. Three identical thin rods each of length l and mass M are joined together to form a letter H. The moment of inertia of the system about the rod joining the outer sides is: [4]

a) $\frac{Ml^2}{4}$

b) $\frac{4Ml^2}{12}$

c) $\frac{Ml^2}{3}$

d) $\frac{2Ml^2}{6}$

14. The time period of a geostationary satellite at a height of 36000 km is 24 hrs. A spy satellite orbits very close to the earth surface ($R = 6400 \text{ km}$). What will be its time period? [4]

a) 1.5 hrs

b) 1 hr

c) 2 hrs

d) 4 hrs

- a) Frequency
c) Velocity
- b) All these depend on each other
d) Wavelength
24. **Assertion (A):** If two spherical conductors of different radii have the same surface charge densities, then their electric field intensities will be equal. [4]
Reason (R): Surface charge density = $\frac{\text{Total charge}}{\text{area}}$.
- a) Both A and R are true and R is the correct explanation of A.
c) A is true but R is false.
- b) Both A and R are true but R is not the correct explanation of A.
d) A is false but R is true.
25. A charge Q is kept at the centre of a circle of radius r. If permittivity of free space is ϵ_0 then the work done in carrying a charge q along the diameter of the circle will be: [4]
- a) $\frac{qQ}{(8\pi\epsilon_0 r)}$
c) $\frac{qQ}{(4\pi\epsilon_0 \epsilon_r r)}$
- b) zero
d) $\frac{qQ}{(2\pi\epsilon_0)}$
26. **Assertion (A):** A parallel plate capacitor is connected across battery through a key. A dielectric slab of dielectric constant K is introduced between the plates. The energy which is stored becomes K times. [4]
Reason (R): The surface density of charge on the plate remains constant or unchanged.
- a) Both A and R are true and R is the correct explanation of A.
c) A is true but R is false.
- b) Both A and R are true but R is not the correct explanation of A.
d) A is false but R is true.
27. **Assertion (A):** The tyres of aircrafts are slightly conducting. [4]
Reason (R): If a conductor is connected to ground, the extra charge induced on conductor will flow to ground.
- a) Both A and R are true and R is the correct explanation of A.
c) A is true but R is false.
- b) Both A and R are true but R is not the correct explanation of A.
d) A is false but R is true.
28. A fuse wire is a wire of: [4]
- a) high resistance and high melting point
c) high resistance and low melting point
- b) low resistance and low melting point
d) low resistance and high melting point
29. A steady current of 1 A is flowing through the conductor. The number of electrons flowing through the cross-section of the conductor in 1 sec is: [4]
- a) 6.25×10^{15}
c) 6.25×10^{17}
- b) 6.25×10^{18}
d) 6.25×10^{19}
30. You are given several identical resistances each of value $R = 10 \Omega$ and each capable of carrying a maximum current of one ampere. It is required to make a suitable combination of these resistances of 5Ω which can carry a current of 4 ampere. The minimum number of resistances of the type R that will be required for this job is: [4]
- a) 10
c) 20
- b) 4
d) 8
31. **Assertion (A):** The internal resistance of a cell is constant. [4]

Reason (R): Ionic concentration of the electrolyte remains same during use of a cell.

- a) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of the Assertion (A). b) Both Assertion (A) and Reason (R) are true, but Reason (R) is **not** the correct explanation of the Assertion (A).
- c) Assertion (A) is true, but Reason (R) is false. d) Assertion (A) is false and Reason (R) is also false.
32. When a current of 5 mA is passed through a galvanometer having a coil of resistance 15Ω , it shows full-scale deflection. The value of the resistance to be put in series with the galvanometer to convert it into a voltmeter of range 0-10 V is: [4]
- a) $1.985 \times 10^3 \Omega$ b) $4.005 \times 10^3 \Omega$
c) $2.535 \times 10^3 \Omega$ d) $2.045 \times 10^3 \Omega$
33. A closely wound solenoid of 2000 turns and area of cross-section $1.6 \times 10^{-4} \text{m}^2$, carrying a current of 4.0 A, is suspended through its centre allowing it to turn in a horizontal plane. What is the magnetic moment associated with the solenoid? [4]
- a) 3.18 Am^2 b) 2.08 Am^2
c) 1.28 Am^2 d) 4.38 Am^2
34. A small coil of radius r is placed at the centre of a large coil of radius R , where $R \gg r$. The two coils are coplanar. The mutual induction of the coils is proportional to [4]
- a) $\frac{r}{R^2}$ b) $\frac{r}{R}$
c) $\frac{r^2}{R}$ d) $\frac{r^2}{R^2}$
35. A 5 cm long solenoid having 10 ohm resistance and 5 mH inductance is joined to a 10 V battery. At steady state, the current through the solenoid (in ampere) will be: [4]
- a) 1 b) 2
c) zero d) 5
36. In a wave $E_0 = 100 \text{ Vm}^{-1}$. Find the magnitude of Poynting's vector: [4]
- a) 26.5 Wm^{-2} b) 13.25 Wm^{-2}
c) 18.25 Wm^{-2} d) 19.7 Wm^{-2}
37. In X-ray tube when the accelerating voltage is halved, the difference between the wavelengths of K_α line and minimum wavelength of continuous X-ray spectrum: [4]
- a) becomes half b) becomes more than two times
c) becomes less than two times d) remains constant
38. Radius of curvature of human eye is 0.78 cm. For an object at infinity, image is formed at 3 cm behind the refracting surface. The refractive index of eye is [4]
- a) 6.2 b) 3
c) 1.35 d) 1

a) None of these



49. **Assertion (A):** In a p-n junction with open ends there is no motion of charge carriers. [4]

Reason (R): In a p-n junction with open ends the electric field is varying.

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.

50. In a screw gauge, the value of one division on the linear scale is 1 mm, while the circular scale have 100 divisions. Without any object for measurement, while the screw touches the stud, the zero on circular scale advances 27 divisions beyond the reference line. What is the type and amount of zero error? [4]

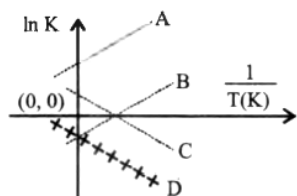
a) Negative, 0.27 mm

b) Positive, 0.27 mm

c) Negative, 0.027 mm

d) Positive, 0.027 mm

an exothermic reaction?



[4]

- a) A and D b) B and C
c) A and B d) C and D
- 16) Balance the following redox reaction occurring in acidic medium and identify the total number of reactant and product species having coefficients which are prime numbers.
 $\text{Fe}^{2+} + \text{Cr}_2\text{O}_7^{2-} \longrightarrow \text{Fe}^{3+} + \text{Cr}^{3+}$ [4]
a) 3 b) 1
c) 4 d) 2
- 17) A sample of H_2O_2 solution labelled as 22.4 volume has density 248 g/litre. Select the correct statements about this fact: [4]
a) Mass of $\text{H}_2\text{O}_2 = 68$ g per litre
b) $M_{\text{H}_2\text{O}_2} = 2$ and $M_{\text{H}_2\text{O}_2} = 1.11$
c) All of these
d) Mole fraction of $\text{H}_2\text{O}_2 = 0.167$

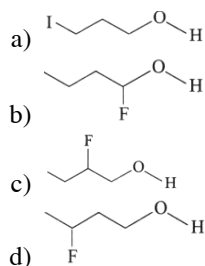
18) Water gas is prepared by _____. [4]

- a) Passing steam over hot coke
b) Passing air over hot coke
c) Heating oxalic acid with concentrated sulphuric acid
d) Dehydration of formic acid in the presence of sulphuric acid

19) Select the correct statement regarding B_2H_6 . [4]

- a) It has only $2c - 2e^-$ bond
b) Hybridisation of boron is sp^3
c) It is planar
d) It does not react with NH_3

20) In which of the following compounds the hydroxylic proton is most acidic? [4]



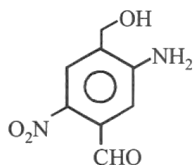
21) Arrange the following carbanions in decreasing order of stability:



[4]

- a) $S > Q > R > P$ b) $S > Q > P > R$
c) $P > Q > R > S$ d) $Q > S > R > P$

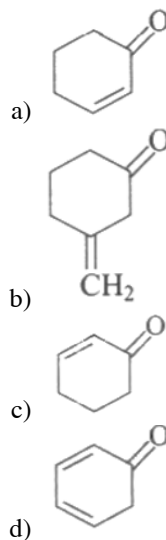
22) The IUPAC name of the following compound is:



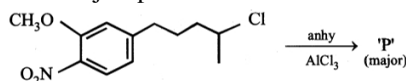
[4]

- a) 2 - nitro - 4 - hydroxymethyl - 5 - amino benzaldehyde
b) 3 - amino - 4 - hydroxymethyl - 5 - nitrobenzaldehyde
c) 4 - amino - 2 - formyl - 5 - hydroxymethyl nitrobenzene
d) 5 - amino - 4 - hydroxymethyl - 2 - nitrobenzaldehyde

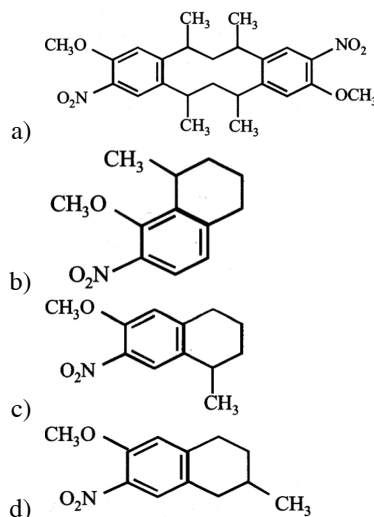
23) Which of the following has longest C — O bond? [4]



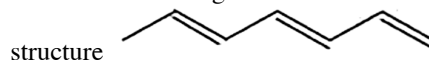
24) The major product 'P' formed in the given reaction is:



[4]



25) The number of geometrical isomers possible with the



is _____. [4]

- a) 4 b) 5
c) 6 d) 8

26) Formation of a solution from two components can be considered as:

- i. Pure solvent \rightarrow separated solvent molecules, ΔH_1
ii. Pure solute \rightarrow separated solute molecules, ΔH_2
iii. Separated solvent and solute molecules \rightarrow solution, ΔH_3

Solution so formed will be ideal if: [4]

- a) $\Delta H_{\text{soln.}} = \Delta H_3 - \Delta H_1 - \Delta H_2$
b) $\Delta H_{\text{soln.}} = \Delta H_1 + \Delta H_2 + \Delta H_3$

- c) $\Delta H_{\text{soln.}} = \Delta H_1 - \Delta H_2 + \Delta H_3$
 d) $\Delta H_{\text{soln.}} = \Delta H_1 + \Delta H_2 - \Delta H_3$

27) An aqueous solution contains 35% acetic acid and 46% ethanol. The mole fractions of acetic acid, ethanol and water are _____, respectively. [4]

- a) 0.22, 0.39, 0.39 b) 0.35, 0.46, 0.19
 c) 0.33, 0.33, 0.33 d) 0.22, 0.22, 0.56

28) A depolariser used in dry cell batteries is: [4]

- a) Sodium phosphate b) Ammonium chloride
 c) Manganese dioxide d) Potassium hydroxide

29) Which of the following complex will show maximum conductance? [4]

- a) $\text{Cr}(\text{NH}_3)_5\text{Cl}] \text{Cl}_2$ b) $[\text{Cr}(\text{NH}_3)_4\text{Cl}_2] \text{Cl}$
 c) $\text{Cr}(\text{NH}_3)_6] \text{Cl}_3$ d) $[\text{Cr}(\text{NH}_3)_3\text{Cl}_3]$

30) The rate equation for the reaction, $2\text{A} + \text{B} \rightarrow \text{C}$ is found to be, rate = $K [\text{A}][\text{B}]$. The correct statement in relation to this reaction is: [4]

- a) K is independent of [A] and [B]
 b) Rate of formation of C is twice the rate of disappearance of A
 c) Unit of K is s^{-1}
 d) $T_{1/2}$ is constant

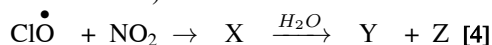
31) Which one of the given statement for order of the reaction is not correct? [4]

- a) Order of reaction is equal to sum of the powers of concentration terms in differential rate law
 b) Order cannot be fractional
 c) Order can be determined experimentally
 d) It is not affected with the stoichiometric coefficient of reactant

32) Which of the following represents the correct order of increasing first ionization enthalpy for Ca, Ba, S, Se and Ar? [4]

- a) $\text{Ca} < \text{Ba} < \text{S} < \text{Se} < \text{Ar}$
 b) $\text{Ca} < \text{S} < \text{Ba} < \text{Se} < \text{Ar}$
 c) $\text{S} < \text{Se} < \text{Ca} < \text{Ba} < \text{Ar}$
 d) $\text{Ba} < \text{Ca} < \text{Se} < \text{S} < \text{Ar}$

33) Identify X, Y and Z in the following reaction. (Equation not balanced)



- a) $\text{X} = \text{ClNO}_3$, $\text{Y} = \text{Cl}_2$, $\text{Z} = \text{NO}_2$
 b) $\text{X} = \text{ClNO}_2$, $\text{Y} = \text{HCl}$, $\text{Z} = \text{HNO}_2$
 c) $\text{X} = \text{ClONO}_2$, $\text{Y} = \text{HOCl}$, $\text{Z} = \text{NO}_2$
 d) $\text{X} = \text{ClONO}_2$, $\text{Y} = \text{HOCl}$, $\text{Z} = \text{HNO}_3$

34) Assuming complete ionization, same moles of which of the following compounds will require the least amount of acidified KMnO_4 for complete oxidation? [4]

- a) FeC_2O_4 b) FeSO_3
 c) FeSO_4 d) $\text{Fe}(\text{NO}_2)_2$

35) Which of the following pair will have effective magnetic moment equal [4]

- a) Cr^{+3} and Mn^{+2} b) Cr^{+2} and Fe^{+2}
 c) Ti^{+2} and V^{+2} d) V^{+2} and Sc^{+3}

36) The number of possible isomers of an octahedral complex $[\text{Co}(\text{C}_2\text{O}_4)_2(\text{NH}_3)_2]^-$ is [4]

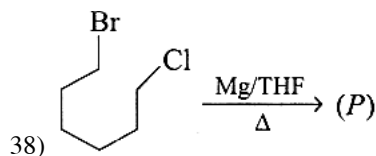
- a) 2 b) 3
 c) 4 d) 1

37) Which will not give test of all the ions present in it?

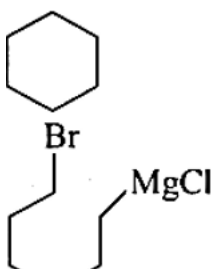
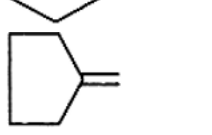
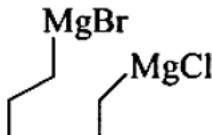

- i. $\text{K}_2\text{Fe}_2(\text{SO}_4)_4 \cdot 24\text{H}_2\text{O}$
 ii. $(\text{NH}_4)_2\text{Fe}(\text{SO}_4)_2 \cdot 6\text{H}_2\text{O}$
 iii. $\text{K}_3[\text{Fe}(\text{CN})_6]$
 iv. $\text{Fe}_2(\text{SO}_4)_3$

[4]

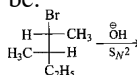
- a) Only (D) b) Only (A)
 c) Only (C) d) Only (B)



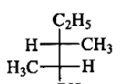
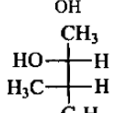
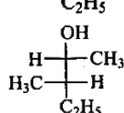
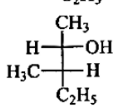
Identify (P): [4]

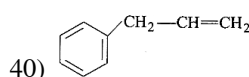
- a) 
 b) 
 c) 
 d) 

39) In the following reaction the most probable product will be:

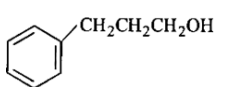
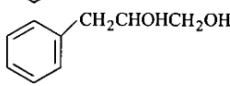
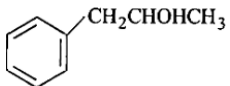


[4]

- a) 
 b) 
 c) 
 d) 



on mercuration demercuration produces: [4]

- a) 
 b) 
 c) 
 d) None of these

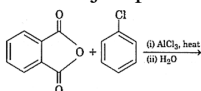
41) On reacting with Na, alcohols give sodium alkoxides and liberate H_2 . In this reaction, alcohols behave as _____.

- [4]
 a) Weak bases b) Strong acids
 c) Weak acids d) Neutral species

- 42) Which one of the following statements is correct?
 i. Nitration of hexamethylenetetramine yields mesityl oxide.
 ii. Acetone forms a cyclic ketal on its treatment with ethyl alcohol.
 iii. Benzophenone reacts with sodium bisulphite to form benzophenone sodium bisulphite.
 iv. Acetaldehyde reacts with benzyl amine to form a Schiff base.

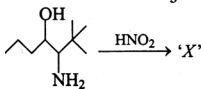
- [4]
 a) Option (iii) b) Option (iv)
 c) Option (i) d) Option (ii)

- 43) The major product of the following reaction is



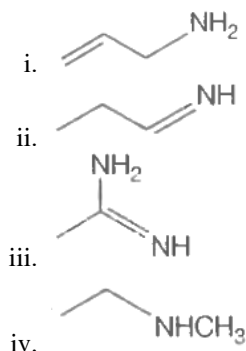
- [4]
 a)
- b)
- c)
- d)

- 44) Predict the major product X in the following reaction:



- [4]
 a)
- b)
- c)
- d)

- 45) The increasing order of basicity of the following compounds is

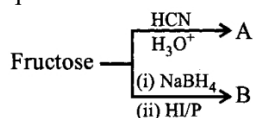


- [4]
 a) (I) < (II) < (III) < (IV)
 b) (II) < (I) < (III) < (IV)
 c) (II) < (I) < (IV) < (III)
 d) (IV) < (II) < (I) < (III)

- 46) Accumulation of which of the following molecules in the muscles occurs as a result of vigorous exercise? [4]

- a) Glucose b) Lactic acid
 c) Glycogen d) Pyruvic acid

- 47) The formulas of A and B for the following reaction sequence



- [4]
 a) A = C₇H₁₄O₈, B = C₆H₁₄
 b) A = C₇H₁₃O₇, B = C₇H₁₄O
 c) A = C₇H₁₄O₈, B = C₆H₁₄O₆
 d) A = C₇H₁₂O₈, B = C₆H₁₄

- 48) Which purification technique is used for high boiling liquid compound (decomposes near its boiling point)? [4]

- a) Fractional distillation
 b) Steam distillation
 c) Reduced pressure distillation
 d) Simple Distillation

- 49) A mixture of o - hydroxyacetophenone and hydroxyacetophenone can be separated by [4]

- a) Sublimation
 b) Steam distillation
 c) Fractional crystallization
 d) Distillation

- 50) Heat absorbed by calorimeter, thermometer and stirrer during measurement of heat in an experiment is called _____. [4]

- a) Enthalpy constant b) Entropy constant
 c) Cryoscopic constant d) Calorimeter constant

JUPITER ACADEMY

BOTANY MODEL PAPER-5

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. Identify the correct sequence of taxa in the hierarchy: [4]
a) Phylum, class, family, species, order b) Species, genus, family, order, class
c) Class, family, species, genus, order d) Species, genus, phylum, family, class
2. Who was Known as The Darwin of the 20th century? [4]
a) Aristotle b) de Candolle
c) Ernst Mayr d) Linnaeus
3. Mumps is a: [4]
a) Fungal disease b) Protozoan disease
c) Viral disease d) Bacterial disease
4. Adhesive pad of fungi penetrates the host with the help of [4]
a) hooks and suckers b) softening by enzymes
c) only by mechanical pressure d) mechanical pressure and enzymes
5. Which of the following is a parthenocarpic fruit? [4]
a) Papaya b) Pomegranate
c) Apple d) Orange
6. Cycas possesses two cotyledons but it is not dicot because of: [4]
a) Naked seeds b) Monocot like stem
c) Circinate ptyxis d) Compound leaves
7. In typological concept of classification: [4]
a) Phylogeny is taken into consideration b) All known characters and evidences are taken into consideration
c) Only plants are classified d) Only a few characters are considered
8. In angiosperms, each pollen grain produces two sperms. What do these sperms do in fertilization of a flower? [4]
A. Each one fertilizes a separate egg cells to give rise to two seeds.
B. One fertilizes an egg cell and the other fertilizes antipodal cell that gives rise to the endocarp of the fruit.
C. Both fertilize a single egg cell.

D. One fertilizes an egg cell and the other fertilizes the polar nuclei that form food reserve tissue.

a) Only B

b) Only C

c) Only A

d) Only D

9. Which one of the following statements is not true? [4]

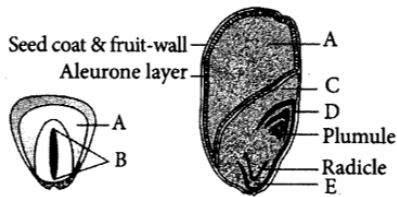
a) Pollen grains are rich in nutrients, and they are used in the form of tablets and syrups.

b) Honey is made by bees by digesting pollen collected from flowers.

c) The flowers pollinated by flies and bats secrete foul odour to attract them.

d) Pollen grains of some plants cause severe allergies and bronchial afflictions in some people.

10. The given figure shows a typical structure of monocotyledonous seeds. Identify A, B, C, D and E parts marked in the given figures. [4]



a) A - Endosperm, B - Embryo, C - Scutellum, D - Coleoptile, E - Coleorhiza

b) A - Embryo, B - Endosperm, C - Scutellum, D - Coleoptile, E - Coleorhiza

c) A - Embryo, B - Endosperm, C - Scutellum, D - Coleorhiza, E - Coleoptile

d) A - Endosperm, B - Embryo, C - Scutellum, D - Coleorhiza, E - Coleoptile

11. Pedicellate flowers arising from a single point form: [4]

a) Umbel

b) Verticillaster

c) Cymose head

d) Capitulum

12. Casparian strips occur in: [4]

a) Endodermis

b) Epidermis

c) Cortex

d) Pericycle

13. Mendel conducted experiments for [4]

a) 4 years

b) 6 years

c) 7 years

d) 5 years

14. Incomplete dominance is found in: [4]

a) *Pisum sativum*

b) Both *Pisum sativum* and *Antirrhinum majus*

c) *Antirrhinum majus*

d) Leguminosae

15. *E. coli* has only 4.6×10^6 base pairs and completes the process of replication within 18 minutes; then the average rate of polymerisation is approximately [4]

a) 1000 base pairs/second

b) 2000 base pairs/second

c) 4000 base pairs/second

d) 3000 base pairs/second

16. Which level of regulation involves controlling the rate at which mRNA is translated into protein? [4]

- a) Birds: Columbia > Greenland > New York b) Entire biodiversity: Norway > Columbia
c) Birds: Amazon Rain forest > India d) Vascular Plant: Midwest USA > Equador
27. Which one of the following pair is correctly matched to the wild life and national park? [4]
a) Periyar-Tiger b) Manas-Elephant
c) Gir forest-Tiger d) Corbett park-Asiatic lion
28. Histone protein and RNA synthesis occur in: [4]
a) G₁ - phase b) G₂ - phase
c) S - phase d) Early anaphase
29. Meiosis results in: [4]
a) All of these b) Reduction in the number of chromosomes
c) Production of gametes d) Introduction of variation
30. Photorespiration is characteristic of: [4]
a) CAM plants b) All of these
c) C₃ plants d) C₄ plants
31. Identify the wrong statement: [4]
A. Carotenoids protect chlorophyll from photo-oxidation
B. Antenna is a system including all pigments except chlorophyll-a
C. Absorption maxima of PS-I and PS-II is 680 nm and 700 nm respectively
D. More than one
a) C b) B
c) D d) A
32. Dark reaction of photosynthesis in C₃ plants helps in synthesis of: [4]
a) O₂ b) ATP
c) NADPH₂ d) PGAL
33. First stable product of Calvin cycle has: [4]
a) 3 carbon atoms b) 6 carbon atoms
c) 2 carbon atoms d) 4 carbon atoms
34. Oxidative phosphorylation is the formation of: [4]
a) ATP in respiration b) ATP in photosynthesis
c) NADPH₂ in respiration d) NADPH₂ in photosynthesis
35. Plant growth is unique because: [4]
a) Plants not retain the capacity for unlimited growth throughout their life b) Plants retain the capacity for limited growth throughout their life
c) Plants retain the capacity for unlimited growth during some part of their life d) Plants retain the capacity for unlimited growth throughout their life

- a) (i) and (iii) only
b) (ii) and (iii) only
c) All of these
d) (i) and (ii) only
45. The organelles involved with photorespiration are: [4]
a) Mitochondria, chloroplasts and ribosomes
b) Mitochondria, peroxisomes and chloroplast
c) Mitochondria, peroxisomes and glyoxysomes
d) Mitochondria, nucleus and ribosomes
46. Which of the followings is mainly produced by the activity of anaerobic bacteria on sewage? [4]
a) Mustard gas
b) Marsh gas
c) Laughing gas
d) Propane
47. The components of ecosystem are seen to function as a unit when you consider the following aspects: [4]
a) Productivity
b) Decomposition
c) All of these
d) Energy flow
48. Dwarfness can be controlled by treating the plant with: [4]
a) Auxin
b) Gibberellic acid
c) Antigibberellin
d) Cytokinin
49. Antigibberellin is: [4]
a) Cycocel
b) Plastoquinone
c) IAA
d) Ubiquinone
50. The difference between C4 and C3 plants lies in [4]
a) Primary carbon dioxide acceptor.
b) type of photophosphorylation.
c) electron carriers involved in light reaction.
d) absence of RuBisCO in C4 plants.

JUPITER ACADEMY

ZOOLOGY MODEL PAPER 5

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 one of the following statements is totally wrong about the occurrence of notochord while the other three are correct? [4]
- a) It is present only in larval tail in Ascidians b) It is replaced by a vertebral column in adult frog
- c) It is present throughout life in Amphioxus d) It is absent throughout life in humans from the very beginning
2. Which of the following is commonly called Pearl oyster? [4]
- a) Limulus b) Chaetopleura
- c) Dentalium d) Pinctada
3. Which of the following organism is correctly matched with its common name? [4]
- a) Aplysia - sea mouse b) Ancylostoma - pinworm
- c) Aurelia - comb jelly d) Adamsia - sea anemone
4. The ciliated epithelial cells are required to move particles or mucus in a specific direction. In humans, these cells are mainly present in: [4]
- a) Eustachian tube and Salivary duct b) Bile duct and Bronchioles
- c) Bronchioles and Fallopian tubes d) Fallopian tubes and Pancreatic duct
5. Choose correct option for i, ii and iii of given paragraph. (i) _____ help is stop substances from leaking across a tissue (ii) _____ perform cementing keep neighbouring cells together (iii) _____ facilitate the cells to communicate with each other by connecting the cytoplasm of adjoining cells. [4]
- a) (i) Gap junctions (ii) Adhering junctions (iii) Tight junctions b) (i) Tight junctions (ii) Gap junctions (iii) Adhering junctions
- c) (i) Adhering junctions (ii) Gap junctions (iii) Tight junctions d) (i) Tight junctions (ii) Adhering junctions (iii) Gap junctions
6. Match the columns and find correct combination: [4]

(A) Earthworm	(i) Pulmonary
(B) Human	(ii) Gills

(C) Prawn	(iii) Tracheal
(D) Insects	(iv) Cutaneous

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

7. Haemoglobin has least affinity for: [4]

- a) Same affinity for all of these b) Carbon monoxide
- c) Carbon dioxide d) Oxygen

8. Match the column I (organs) with column II (functions) and choose the correct option. [4]

Column I (Organs)	Column II (Functions)
A Nose	(i) stops food from going down into lungs.
B Epiglottis	(ii) produces sound.
C Pharynx	(iii) traps bacteria as well as dust.
D Larynx	(iv) allows air to pass from nose to oesophagus.

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

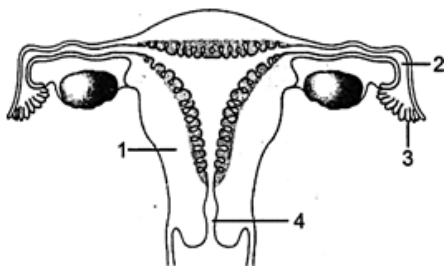
9. Vocal cords are mainly made up of: [4]

- a) Bones b) Collagen fibers
- c) Cartilage d) Elastic fibers

10. Two friends are eating together on a dining table. One of them suddenly starts coughing while swallowing some food. This coughing would have been due to improper movement of [4]

- a) Tongue b) Neck
- c) Epiglottis d) Diaphragm

11. Below given diagram is sectional view of female reproductive system. The labelled part represents: [4]

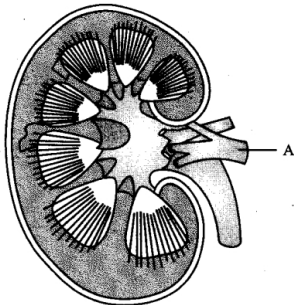


- a) 1-Uterus, 2-Fallopian tube, 3-Fimbriae, 4-Vagina b) 1-Perimetrium, 2-Ampulla, 3-Fimbriae, 4-Cervical canal
- c) 1-Endometrium, 2-Ampulla, 3-Fimbriae, 4-Cervical canal d) 1-Myometrium, 2-Ampulla, 3-Fimbriae, 4-Cervical canal

12. Blastocyst embeds in the endometrium on _____ day after fertilisation. [4]

- a) fifth b) seventh
- c) eighth d) sixth

13. The acrosome plays important role in: [4]
- a) Motility of sperm b) Penetration of ovum by sperm
c) The fusion of pronuclei of the gametes d) Cleavage
14. Which factor is responsible for an explosive impact on the growth of the population? [4]
- a) Decreased maternal mortality rates b) Better detection and cure of STDs
c) Increased health facilities along with better living conditions d) Better awareness about sex related matters
15. Progestogens alone or in combination with estrogens can be used as a contraceptive in the form of [4]
- a) Injections only b) Implants only
c) Pills only d) Pills, injections and implants
16. Earliest reptiles evolved in the period: [4]
- a) Devonian b) Carboniferous
c) Ordovician d) Silurian
17. According to Hugo de Vries, the mechanism of evolution is: [4]
- a) Minor mutations b) Phenotypic variations
c) Saltation d) Multiple step mutations
18. Refer the given figure of the structure of kidney and answer the question. [4]



Identify the marked structure and its function.

- a) Ureter, transmits urine from the kidney to the bladder. b) Renal column, helps the renal cortex to be better anchored.
c) Renal vein, takes the blood they have been purified by the kidneys back to the heart and then further into the circulation. d) Renal artery, supplies the kidneys with blood.
19. The substance which is completely reabsorbed from the filtrate in the renal tubule under normal condition is: [4]
- a) Glucose b) Water
c) Salt d) Ammonia
20. Kidney crystals are solid clusters of: [4]
- a) Calcium nitrate and uric acid b) Calcium carbonate and uric acid
c) Calcium metabisulphite and uric acid d) Phosphate and uric acid
21. An acromian process is characteristically found in mammals in: [4]

- a) Skull
 b) Pectoral girdle
 c) Pelvic girdle
 d) Sternum

22. Match the following and mark the correct option: [4]

Column I	Column II
(A) Fast muscle fibres	(i) Myoglobin
(B) Slow muscle fibres	(ii) Lactic acid
(C) Actin filament	(iii) Contractile unit
(D) Sarcomere	(iv) I-band

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

23. Glenoid cavity articulates: [4]

- a) Scapula with acromion
 b) Clavicle with scapula
 c) Clavicle with acromion
 d) Humerus with scapula

24. Choroid becomes thick in the anterior part of eye to form the: [4]

- a) pupil
 b) iris
 c) lens
 d) ciliary body

25. Which of the following is not a function of hypothalamus? [4]

- a) Thermoregulation
 b) Sex drives or Libido
 c) Creative thinking and consciousness
 d) Hunger and satiety

26. Cell performing diapedesis and phagocytosis: [4]

- a) Neutrophil
 b) RBC
 c) Eosinophil
 d) Basophil

27. Male sex hormone is: [4]

- a) All of these
 b) Progesterone
 c) Testosterone
 d) Adrenaline

28. Action of the peptide hormone on a target cell is mediated by: [4]

- a) Cyclic AMP
 b) ATP
 c) A cytoplasmic receptor
 d) Epinephrine

29. Consider the following three statements and mark the right options. [4]

- i. The plasma without clotting factors is called lymph.
 ii. Thymus is called the graveyard of RBCs.
 iii. Thrombocytes are the cell fragments produced from megakaryocytes.

- a) Both (ii) and (iii) are correct
 b) Both (i) and (iii) are correct
 c) Only (iii) is correct
 d) Only (i) correct

30. Which one of the following statements is correct regarding blood pressure? [4]

- a) 105/50 mm Hg makes one very active b) 100/55 mm Hg is considered an ideal blood pressure
- c) 130/90 mm Hg is considered high and requires treatment d) 190/110 mm Hg may harm vital organs like brain and kidney

31. Blood pressure is measured by [4]

- a) Phonocardiogram b) Electrocardiogram
- c) Stethoscope d) Sphygmomanometer

32. Which of the following contributed in popularising the PCR (POLYmerase chain reactions) technique ? [4]

- a) Availability of cheap deoxyribonucleotides b) Availability of 'Thermostable' DNA polymerase
- c) Availability of synthetic primers d) Easy availability of DNA template

33. Which one of the following is a case of wrong matching? [4]

Option		
(a)	Somatic hybridization	Fusion of two diverse cell
(b)	Vector DNA	Site for tRNA synthesis
(c)	Micro propagation	In vitro production of plants in large numbers
(d)	Callus	Unorganized mass of cells

- a) Option (a) b) Option (d)
- c) Option (b) d) Option (c)

34. An improved variety of transgenic basmati rice [4]

- a) does not require chemical fertilisers and growth hormones. b) gives high yield and is rich in vitamin A.
- c) gives high yield but has no characteristic aroma. d) is completely resistant to all insect pests and diseases of paddy.

35. Probiotics are: [4]

- a) cancer inducing microbes. b) safe antibiotics.
- c) new kind of food allergens. d) live microbial food supplement.

ZOOLOGY (Section-B)

Attempt any 10 questions

36. Which of the following characteristics is correct for reptilia? [4]

- a) Body is covered with moist skin and is devoid of scales, the ear is represented by a tympanum, alimentary canal, urinary, and reproductive tracts open into a common cloaca. b) Fresh water animals with bony endoskeleton and airbladder regulates buoyancy.
- c) Body covered with dry and cornified skin, d) Marine animals with cartilaginous

scales over the body are epidermal; they do not have external ears.

endoskeleton and body are covered with placoid scales.

37. Select the correct sequence of organs in the alimentary canal of cockroach starting from the mouth: [4]
- a) Pharynx → Oesophagus → Gizzard → Crop → Ileum → Colon → Rectum
b) Pharynx → Oesophagus → Gizzard → Ileum → Crop → Colon → Rectum
c) Pharynx → Oesophagus → Crop → Gizzard → Ileum → Crop → Colon → Rectum
d) Pharynx → Oesophagus → Gizzard → Ileum → Crop → Colon → Rectum
38. The blood protein involved in blood coagulation is : [4]
- a) Fibrino protein
b) Prothrombin
c) Thrombin
d) Fibrinogen
39. In man, voice box is known as: [4]
- a) Larynx
b) Syrinx
c) Inhalation and exhalation
d) Bronchus
40. Fertilizers are emitted by: [4]
- a) Polar bodies
b) Mature eggs
c) Sperms
d) Immature eggs
41. Here are unlabelled diagram A, B, C, D of different barrier methods. Select the correct option regarding them : [4]
-
- a) A-Male condom, B-Female condom, C-CuT, D-Implants
b) A-Condom, B-Vaults, C-CuT, D-Implants
c) A-Male condom, B-Cervical cap, C-CuT, D-Vaults
d) A-Condom, B-Female condom, C-CuT, D-Vaults
42. Life is not found on the moon because of: [4]
- a) Absence of carbon
b) Absence of water
c) Absence of nitrogen
d) Absence of oxygen
43. What is the cause that right kidney is at slightly lower level than the left kidney in human being? [4]
- a) Due to improper ascentment of kidney during embryonic life.
b) Presence of colon in right side during I.U.L.
c) Presence of liver in right side therefore kidney does not ascends properly in I.U.L.
d) None of the these
44. Tetanus is a sustained contraction of the muscle is due to: [4]
- a) Auto immune disease
b) Ca⁺⁺ deficiency
c) Parathyroid deficiency
d) Bacterial disease
45. Broca's area is located in: [4]

- a) Ventral part of temporal lobe
b) Dorsal part of optic lobe
c) Lateral part of frontal lobe
d) forward part of temporal lobe
46. The synthesis of ADH is done by: [4]
a) Posterior pituitary
b) Middle pituitary
c) Hypothalamus
d) Anterior pituitary
47. All adrenal cortex hormones are: [4]
a) Peptide
b) Catecholamines
c) Steroid
d) Polypeptide
48. RBC in mammals has no nucleus because: [4]
a) It has degenerated during development
b) Nucleus decreases surface area
c) Nucleus is harmful for RBC
d) They do not have nucleus since early
49. Study the following statements regarding recombinant DNA technology and select the incorrect ones. [4]
i. Taq polymerase extends the primers using the nucleotides provided in the reaction.
ii. Antibiotic resistance genes are considered as desirable genes in recombinant DNA technology.
iii. DNA fragments are separated according to their charge only in agarose gel electrophoresis.
iv. Transformation is a procedure through which a piece of DNA is integrated in to the genome of a host bacterium.
v. To produce higher yields of a desired protein, host cells can be multiplied in a continuous culture.
vi. Downstream processing is one of the steps of polymerase chain reaction.
a) (i), (iii), and (v)
b) (iii) and (vi)
c) (i), (iv), and (v)
d) (ii), (iii), and (vi)
50. First hormone prepared by genetic engineering is [4]
a) thyroxine
b) oxytocin
c) insulin
d) adrenaline