



Aakash

Medical | IIT-JEE | Foundations

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MM : 720

Final Test Series(P1)_NEET2026_Test-01B

Time : 180 Min.

Topics Covered:**Physics:** Units & Measurements, Motion in a Straight Line, Motion in a Plane**Chemistry:** Amines, Biomolecules, Principles Related to Practical Chemistry**Botany:** Ecosystem, Biodiversity and Conservation**Zoology:** Animal Kingdom**General Instructions :**

Duration of Test is 3 hrs.

The Test consists of 180 questions. The maximum marks are 720.

There are four parts in the question paper consisting of Physics, Chemistry, Botany and Zoology having 45 questions in each part of equal weightage.

Each question carries +4 marks. For every wrong response, -1 mark shall be deducted from the total score. Unanswered/unattempted questions will be given no marks.

Use blue/black ballpoint pen only to darken the appropriate circle.

Mark should be dark and completely fill the circle.

Dark only one circle for each entry.

Dark the circle in the space provided only.

Rough work must not be done on the Answer sheet and do not use white fluid or any other rubbing material on the Answer sheet.

Some parts of this question paper have been masked to maintain its integrity. The missing information will be announced during/before the test.**PHYSICS**

- A vector $\vec{A} = \hat{i} + \sqrt{3}\hat{j}$ is rotated clockwise through an angle 15° about origin in x-y plane. The unit vector along the new vector is
 - $\sqrt{2}\hat{i} + \sqrt{2}\hat{j}$
 - $\frac{\hat{i} + \hat{j}}{2}$
 - $\frac{\hat{i}}{\sqrt{2}} + \frac{\hat{j}}{\sqrt{2}}$
 - $\frac{1}{2}\hat{i} - \frac{1}{2}\hat{j}$
- If $y = x^2 + 3x - 2$, find the value of x at which y is minimum.
 - $-\frac{3}{2}$
 - $\frac{3}{2}$
 - $\frac{2}{3}$
 - $-\frac{2}{3}$
- A car moving with speed 20 m/s along a straight line is given uniform retardation 5 m/s^2 . The distance covered by it before stopping is
 - 20 m
 - 25 m
 - 30 m
 - 40 m
- The angle made by the vector $\vec{A} = 7\hat{i} + 8\hat{j}$ with x-axis is
 - $\tan^{-1}\left(\frac{7}{8}\right)$
 - $\tan^{-1}\left(\frac{8}{7}\right)$
 - $\sin^{-1}\left(\frac{7}{8}\right)$
 - $\cos^{-1}\left(\frac{8}{7}\right)$
- In a Vernier Callipers, 50 VSD coincides with 48 MSD and 1 MSD is 0.5 mm. Least count of vernier callipers is
 - 0.01 mm
 - 0.02 mm
 - 0.04 mm
 - 0.05 mm
- Two particles having mass m and $2m$ are moving in a circular path having radius r and $2r$ respectively. If their time periods are same, then the ratio of their angular velocities will be
 - 1 : 2
 - 2 : 1
 - 1 : 1
 - $\sqrt{2} : 1$
- A projectile is projected from ground passes through points (4, 5) m and (5, 4) m during its motion. The range of the projectile will be ($g = 10 \text{ m/s}^2$)
 - $\frac{61}{7} \text{ m}$
 - $\frac{61}{9} \text{ m}$
 - $\frac{31}{7} \text{ m}$
 - $\frac{31}{9} \text{ m}$
- Let \vec{v} and \vec{a} be the instantaneous velocity and acceleration of a particle moving in a plane. Then rate of change of speed $\frac{dv}{dt}$ of the particle is equal to
 - $|\vec{a}|$
 - $\frac{\vec{v} \cdot \vec{a}}{a}$
 - The component of \vec{a} parallel to \vec{v}
 - The component of \vec{a} perpendicular to \vec{v}
- A body moves along x-axis such that its position changes with time as $x = \frac{t^3}{3} - \frac{5t^2}{2} + 6t + 2$ where x is in m, t is in s. Mark the wrong statement.
 - At $t = 2 \text{ s}$, body changes its direction of motion.
 - At $t = 3 \text{ s}$, body changes its direction of motion.
 - Body has non-uniform accelerated motion.
 - Velocity-time graph of the motion is downward parabolic.

10. Which of the following is the most precise measurement?
 (1) 0.001 m^3 (2) 0.010 m^3
 (3) 0.011 m^3 (4) 0.0001 m^3
11. A 300 m long train moving with uniform velocity of 90 km/h. Time taken by it to cross a 700 m long bridge is
 (1) 40 s (2) 60 s
 (3) 80 s (4) 100 s
12. A compressive force $F = (5 \pm 0.005)$ dyne is applied on a rod of cross-sectional radius $r = (2 \pm 0.01)$ cm. The maximum percentage error in stress is
 (1) 1.2% (2) 1.1%
 (3) 1.5% (4) 0.5%
13. Position of a particle moving along x-axis is given by $x = (4 + 3t + 6t^2)$ m. Speed of the particle at time $t = 1$ s is
 (1) 10 m/s (2) 13 m/s
 (3) 12 m/s (4) 15 m/s
14. Equation of a straight line having slope 1 and intercept on y-axis is 2, will be
 (1) $y = x + 2$ (2) $y = 2x + 1$
 (3) $y = x - 2$ (4) $y = 2x + 2$
15. A bullet from a gun is fired towards a wooden block with velocity u . When bullet travels 30 cm through the block along its length horizontally, velocity of bullet becomes $\frac{u}{3}$. Then it further penetrates into the block in the same direction before coming to rest, exactly at 5 cm from the other end of the block. The total length of the block is
 (1) 33.75 cm (2) 38.75 cm
 (3) 42.75 cm (4) 36.25 cm
16. The pair of quantities not having same dimensions is
 (1) Angular momentum and angular impulse
 (2) Work and torque
 (3) Young's modulus and energy density
 (4) Force and surface tension
17. Magnitude of resultant of two vectors of magnitude 3 and 4 cannot be
 (1) 1 (2) 5
 (3) 7 (4) 8
18. Planck's constant (h) has the same dimensions as
 (1) $\frac{\text{Energy}}{\text{Frequency}}$
 (2) Angular momentum
 (3) Power
 (4) Both (1) and (2)
19. A projectile is projected with a velocity $\vec{v} = a\hat{i} + b\hat{j}$. The radius of curvature of the trajectory of the particle at the topmost point of its trajectory is
 (1) $\frac{b}{ag}$ (2) $\frac{ag}{b}$
 (3) $\frac{a^2}{g}$ (4) $\frac{b^2}{ag}$
20. A body is moving with constant acceleration in $x - y$ plane. Then
 (1) Its velocity changes in x-direction only
 (2) Its velocity changes in y-direction only
 (3) Its velocity may change in both x and y direction
 (4) Its velocity must change in both x and y direction
21. Given below are two statements: one is labelled as Assertion (A) and other is labelled as Reason (R).
Assertion (A): Two bodies when projected vertically upward from the ground with different initial speeds, cover same distance in last second of their journey.
Reason (R): For a particle projected vertically upward, the distance travelled in last second before coming to rest does not depend on initial speed (u), where $u > 10 \text{ m s}^{-1}$.
 In the light of above statements, choose the most appropriate answer from the options given below.
 (1) Both A and R are true and R is the correct explanation of A
 (2) Both A and R are true and R is not the correct explanation of A
 (3) A is true but R is false
 (4) A is false but R is true
22. In a screw gauge, the pitch is 1 mm and there are 100 divisions on circular scale. The least count of the screw gauge is
 (1) 0.01 mm (2) 0.02 cm
 (3) 0.1 cm (4) 0.1 mm
23. If u is the speed of projectile fired at an angle 60° with respect to horizontal, then what is its speed at the highest point?
 (1) u (2) $2u$
 (3) $\frac{u}{4}$ (4) $\frac{u}{2}$
24. The resultant of \vec{P} and \vec{Q} is \vec{R} . If \vec{Q} is doubled, then \vec{R} is doubled. When \vec{Q} is reversed, \vec{R} is again doubled. Ratio of $P : Q : R$ is.
 (1) $\sqrt{3} : \sqrt{2} : 1$ (2) $\sqrt{2} : \sqrt{3} : \sqrt{2}$
 (3) $1 : \sqrt{3} : \sqrt{2}$ (4) $2 : 3 : 4$
25. An object travels 40 m in 5 s and then another 40 m in 10 s. Average speed of the object for complete journey is
 (1) 11.44 m/s (2) 5.33 m/s
 (3) 7 m/s (4) 2.45 m/s
26. A particle is projected from the ground with an initial speed of v at an angle θ with horizontal. The average velocity of the particle between its point of projection and highest point of trajectory is,
 (1) $v \cos \theta$ (2) $\frac{v}{2} \sqrt{1 + \cos^2 \theta}$
 (3) $\frac{v}{2} \sqrt{1 + 3 \cos^2 \theta}$ (4) $\frac{v}{2} \sqrt{1 + \sin^2 \theta}$
27. A man swims in a river of width d such that it reaches exactly opposite point on the bank in time t . He covers distance d while swimming downstream in time T . The ratio of man's speed in still water to the speed of river water will be :
 (1) $\frac{T^2 + t^2}{T^2 - t^2}$ (2) $\frac{T^2 - t^2}{T^2 + t^2}$
 (3) $\frac{t^2 + T^2}{t^2 - T^2}$ (4) $\frac{t^2 - T^2}{t^2 + T^2}$

28. If $y = x - x^2$ is the path of a projectile projected from ground. Match column I with column II in S.I units ($g = 10 \text{ m/s}^2$)

Column I	Column II
(A) Speed of projection (u)	(P) 1
(B) Time of flight (T)	(Q) 3.16
(C) Range (R)	(R) 0.25
(D) Maximum height (H)	(S) 0.45

- (1) A(Q); B(S); C(P); D(R) (2) A(Q); B(S); C(R); D(P)
 (3) A(Q); B(P); C(S); D(R) (4) A(P); B(Q); C(R); D(S)

29. Number of significant figures in 0.50300 is

- (1) 5 (2) 4
 (3) 3 (4) 6

30. A particle is dropped from point A at a certain height from ground. It falls freely and passes through three points B, C and D with $BC = CD$. The time taken by the particle to move from B to C is 2 seconds and from C to D is 1 second. The time taken to move from A to B is

- (1) 1 s (2) 0.5 s
 (3) 0.25 s (4) 0.75 s

31. The force acting on a particle depends upon its position (x) and time (t) as $F = A^2 \sin(\sqrt{B}x - ct)$. Select the correct answer from the options given below.

Statement A: Dimensional formula for A is $[M^{1/2} L^{1/2} T^{-1}]$.

Statement B: Dimensional formula for $\frac{\sqrt{B}}{c}$ is $[L^{-1} T^{-1}]$

Statement C: $\sqrt{B}x$ and ct are dimensionless.

Statement D: B and c are dimensionless.

- (1) Only statements A and B are correct
 (2) Only statements B and C are correct
 (3) Only statements C and D are correct
 (4) Only statements A, B and C are correct
32. A new system of units is chosen in which density (ρ), frequency (f) and velocity (V) are taken as fundamental quantities. Column I contains a list of physical quantities and column II list dimensional formula. Match Column I with Column II.

Column I	Column II
(A) Force	(P) $[\rho^1 f^{-4} V^5]$
(B) Angular Momentum	(Q) $[\rho^1 f^{-3} V^3]$
(C) Mass	(R) $[\rho^0 f^{-1} V^1]$
(D) Length	(S) $[\rho^1 f^{-2} V^4]$

- (1) A(S); B(P); C(Q); D(R) (2) A(P); B(Q); C(R); D(S)
 (3) A(S); B(P); C(R); D(Q) (4) A(Q); B(P); C(S); D(R)

33. A park in the form of a square has an area of $(100 \pm 0.4) \text{ m}^2$. The side of the park is

- (1) $(10 \pm 0.02) \text{ m}$ (2) $(10 \pm 0.03) \text{ m}$
 (3) $(10 \pm 0.04) \text{ m}$ (4) $(10 \pm 0.3) \text{ m}$

34. When the number 6.03587 is rounded up to the second place of decimals, it becomes

- (1) 6.035 (2) 6.04
 (3) 6.03 (4) 6.036

35. A body is projected horizontally from top of a tall tower with velocity V_0 . The speed at the moment when magnitude of horizontal and vertical displacements become equal is

- (1) $2V_0$ (2) $\sqrt{3}V_0$
 (3) $\sqrt{5}V_0$ (4) $\sqrt{2}V_0$

36. Initial velocity of a projectile from the horizontal ground is $(\hat{i} + \sqrt{3}\hat{j}) \text{ m/s}$, the equation of its trajectory is ($g = 10 \text{ m/s}^2$)

- (1) $y = x\sqrt{3} - \frac{x^2}{\sqrt{3}}$ (2) $y = \sqrt{3}x - 5x^2$
 (3) $y = 5x - \sqrt{3}x^2$ (4) $y = x - \frac{x^2}{\sqrt{3}}$

37. In a circular motion, the angle between the acceleration and velocity may be

- (1) 90° (2) Acute
 (3) Obtuse (4) All of these

38. Read the given statements and choose the **correct** option.

Statement A: It is not possible to have constant velocity and variable acceleration.

Statement B: If a particle has non-zero acceleration, its velocity has to vary in magnitude only.

- (1) Only statement A is correct
 (2) Only statement B is correct
 (3) Both statements A and B are correct
 (4) Both statements A and B are incorrect

39. Three physical quantities A, B and C are related as $A = B + C$, then

- (1) Dimensions of A, B and C are same
 (2) Dimensions of A, B and C are different
 (3) Dimensions of A and B are same but dimensions of A and C are different
 (4) Dimensions of B and C are same but dimensions of A and C are different

40. A boy completes one round of a circular track of radius 20 m in 50 seconds. The displacement at the end of 4 minute 10 second will be

- (1) 40 m (2) 20 m
 (3) $80\pi \text{ m}$ (4) Zero

41. A person sitting on the top of a tall building is dropping balls at regular intervals of one second. Find ratio of the distance covered by the 3rd, 4th and 5th ball when 6th ball is being dropped. Take $g = 10 \text{ m/s}^2$.

- (1) 1 : 2 : 3 (2) 1 : 3 : 5
 (3) 9 : 4 : 1 (4) 1 : 4 : 9

42. A displacement vector of magnitude 5 m makes an angle 30° with the x-axis. Its rectangular components in x-y plane are (in m)

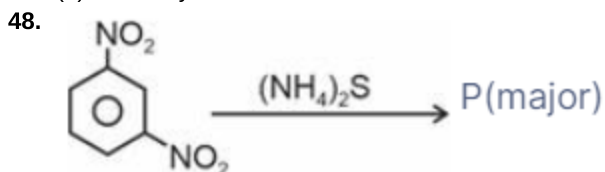
- (1) $5\sqrt{3}, \frac{5}{2}$ (2) $\frac{5\sqrt{3}}{2}, \frac{5}{2}$
 (3) $\frac{5}{\sqrt{3}}, 5\sqrt{2}$ (4) $5\sqrt{3}, \frac{5\sqrt{3}}{2}$

43. The magnitude of displacement of a particle moving in a circle of radius R with constant angular speed ω varies with time t as

- (1) $2R \sin \omega t$ (2) $2R \cos \omega t$
 (3) $2R \sin \frac{\omega t}{2}$ (4) $2R \cos \frac{\omega t}{2}$

44. A motorboat needs to reach a point located upstream at 30° w.r.t. normal (to bank), on the opposite bank of a river flowing at 5 m/s. If the boat's speed relative to water is $5\sqrt{3}$ m/s, then the angle at which the driver should steer the boat is
- (1) 120° with respect to the direction of flow
 - (2) 150° with respect to the direction of flow
 - (3) 90° with respect to the direction of flow
 - (4) Not possible

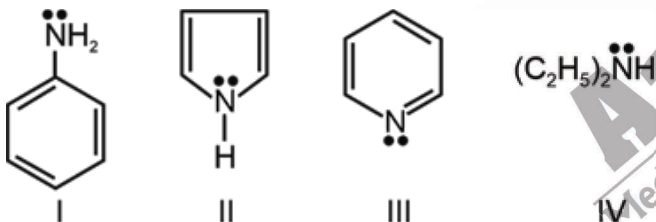
46. The electrolytic reduction of nitrobenzene in strongly acidic medium produces
- (1) Aniline
 - (2) p-Aminophenol
 - (3) Azoxybenzene
 - (4) Azobenzene
47. The correct IUPAC name for the compound $(\text{CH}_3-\text{CH}_2)_2\text{NCH}_3$ is
- (1) N-methyl-N-ethylethanamine
 - (2) N-ethyl-N-methylethanamine
 - (3) N,N-diethylmethanamine
 - (4) N-methylbutanamine



Major product P is

- (1) m-Nitroaniline
- (2) p-Nitroaniline
- (3) Nitrobenzene
- (4) Benzene

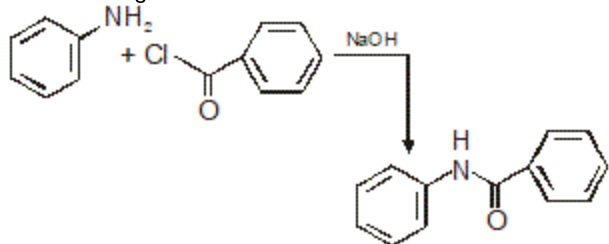
49. The correct order of basicity of



in water is

- (1) $\text{IV} > \text{III} > \text{I} > \text{II}$
- (2) $\text{IV} > \text{I} > \text{III} > \text{II}$
- (3) $\text{IV} > \text{II} > \text{III} > \text{I}$
- (4) $\text{III} > \text{I} > \text{IV} > \text{II}$

50. The following reaction



is known by the name

- (1) Acetylation reaction
- (2) Schotten-Baumen reaction
- (3) Friedel-Craft's reaction
- (4) Perkin's reaction

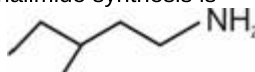
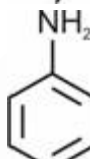
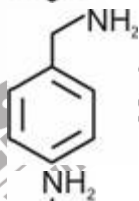
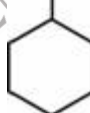
45. In a new system of units, unit of mass is taken as 10 kg, unit of length is taken as 100 m and unit of time is 0.5 minute. Weight of a body in this system, if in S.I system its weight is 10 N.
- (1) 5 units
 - (2) 45 units
 - (3) 9 units
 - (4) 90 units

CHEMISTRY

51. The reaction of Benzenediazonium bromide with $\text{Cu}_2\text{Br}_2/\text{HBr}$ to give bromobenzene is known as

- (1) Gatterman reaction
- (2) Swarts reaction
- (3) Sandmeyer reaction
- (4) Balz-Schiemann reaction

52. The compound which cannot be synthesised by Gabriel phthalimide synthesis is

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

53. Given below are two statements

Statement I: Benzene diazonium chloride reacts with aniline in acidic medium gives p-amino azobenzene (yellow in colour).

Statement II: Reaction of benzenediazonium chloride with aniline in acidic medium is an example of electrophilic substitution reaction.

In the light of above statements, choose the correct answer from the option given below.

- (1) Both statement I and statement II are correct
- (2) Both statement I and statement II are incorrect
- (3) Statement I is correct but statement II is incorrect
- (4) Statement I is incorrect but statement II is correct

54. Which among the following is a cyclic amino acid?

- (1) Proline
- (2) Arginine
- (3) Lysine
- (4) Serine

55. Which of the following nitrogenous base is not common in both DNA and RNA?

- (1) Adenine
- (2) Cytosine
- (3) Thymine
- (4) Guanine

56. Match List-I with List-II.

	List-I		List-II
a.	Glucose $\xrightarrow{\text{NaHSO}_3}$ (i)		Gluconic acid
b.	Glucose $\xrightarrow{\text{HNO}_3}$ (ii)		No reaction
c.	Glucose $\xrightarrow[\text{H}_2\text{O}]{\text{Bromine}}$ (iii)		n-hexane
d.	Glucose $\xrightarrow[\Delta]{\text{HI}}$ (iv)		Saccharic acid

Choose the correct answer from the options given below.

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

57. Given below are the two statements

Statement I: Lactose is a disaccharide and is found in milk.**Statement II:** Lactose is composed of β -D-galactose and β -D-fructose.

In light of the above statements, choose the correct answer.

- (1) Statement I is correct but statement II is incorrect
 (2) Statement I is incorrect but statement II is correct
 (3) Both statement I and statement II are incorrect
 (4) Both statement I and statement II are correct

58. Consider the following statements

- (a) α -form and β -form of glucose are called anomers.
 (b) α -D-(+)-glucopyranose has five chiral centres.
 (c) melting point of α -form of glucose and β -form of glucose is same.

The correct statements are

- (1) (a) and (b) only (2) (b) and (c) only
 (3) (a) and (c) only (4) (a), (b) and (c)

59. In titration of Mohr's salt against KMnO_4 , iron is oxidized.

The oxidation number of iron changes from

- (1) +1 to +3 (2) +2 to +3
 (3) +3 to +4 (4) +1 to +2

60. Colour of phenolphthalein in acidic medium is

- (1) Pink (2) Orange
 (3) Blue (4) Colourless

61. The pair which represents non-essential amino acids is

- (1) Proline and serine
 (2) Lysine and Histidine
 (3) Leucine and Valine
 (4) Methionine and phenylalanine

62. Which of the following is/are incorrect regarding denaturation of proteins?

- (a) Biological activity remains unaltered.
 (b) 2° structure remains unaltered.
 (c) 3° structure remains unaltered.

The correct option is

- (1) (a) only (2) (a) and (b) only
 (3) (b) and (c) only (4) (a), (b) and (c)

63. Which of the following is a neutral amino acid?

- (1) Lysine (2) Histidine
 (3) Leucine (4) Glutamic acid

64. Given below are two statements:

Statement (I) : If adrenal cortex does not function properly then one of the results may be Addison's disease**Statement (II)**: Steroid hormones are produced by adrenal cortex and gonads.

In the light of above statements, choose the correct answer.

- (1) Statement (I) is correct but statement (II) is incorrect.
 (2) Both statement (I) and statement (II) are correct
 (3) Both statement (I) and statement (II) are incorrect
 (4) Statement (I) is incorrect but statement (II) is correct.

65. Prussian blue colour observed during detection of nitrogen is due to the formation of

- (1) $[\text{Fe}(\text{NCS})]^{2+}$ (2) $\text{Fe}_4[\text{Fe}(\text{CN})_6]_3$
 (3) $[\text{Fe}(\text{CN})_6]^{3-}$ (4) $[\text{Fe}(\text{CN})_5\text{NOS}]^{4-}$

66. Given below are the two statements: One is labelled as **Assertion (A)** and other is labelled as **Reason (R)**.**Assertion (A)** : During the neutralisation reaction of acetic acid with sodium hydroxide, the heat released is less than 57 kJ mol^{-1} .**Reason (R)** : During neutralisation of acetic acid with strong base some energy is required for ionisation of acetic acid.

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

- (1) Both (A) and (R) are true and (R) is the correct explanation of (A)
 (2) Both (A) and (R) are true but (R) is not the correct explanation of (A)
 (3) (A) is true but (R) is false
 (4) (A) is false but (R) is true

67. $\text{CH}_3 - \text{C} \equiv \text{N} \xrightarrow{\text{H}_2/\text{Ni}}$ Product

The product is,

- (1) $\text{CH}_3 - \text{NH}_2$
 (2) $\text{CH}_3 - \text{CH}_2 - \text{NH}_2$
 (3) $\begin{array}{c} \text{CH}_3 - \text{N} - \text{CH}_3 \\ | \\ \text{H} \end{array}$
 (4) $\text{CH}_3 - \text{CH}_3$

68. Match List-I with List-II.

List-I	List-II
Cation group number	Group reagent
a. Group-I	(i) H_2S gas in presence of dil.HCl
b. Group-II	(ii) H_2S in presence of NH_4OH
c. Group-III	(iii) Dilute HCl
d. Group-IV	(iv) NH_4OH in presence of NH_4Cl

Choose the correct answer from the options given below.

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

69. Consider the following statements

- (a) Amylopectin is insoluble in water
 (b) Amylopectin is long unbranched chain polymer of α -D-glucose
 (c) Amylose is water soluble component which constitutes about 15-20% of starch.

The correct statements are

- (1) (a) and (b) only (2) (b) and (c) only
 (3) (a) and (c) only (4) (a), (b) and (c)

70. Given below are the two statements

Statement I: A tripeptide contains three amino acids linked by two peptide linkages.**Statement II:** Insulin is an example of globular protein.

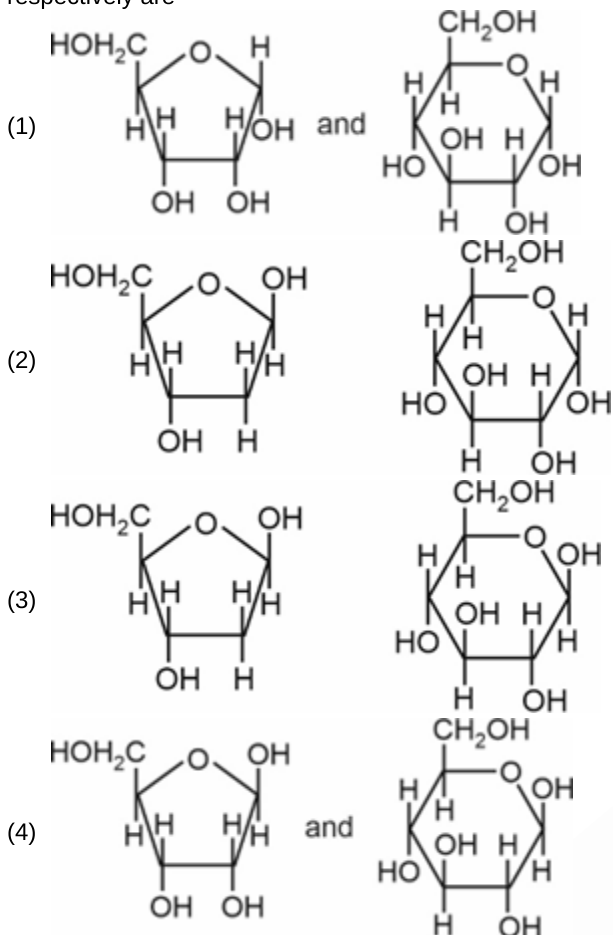
In light of above statements, choose the correct answer

- (1) Statement I is correct but statement II is incorrect
 (2) Both statement I and statement II are correct
 (3) Both statement I and statement II are incorrect
 (4) Statement is incorrect but statement II is correct.

71. Rickets and scurvy are caused by the deficiency of

- (1) Vitamin D and Vitamin C respectively
 (2) Vitamin E and Vitamin B_1 respectively
 (3) Vitamin K and Vitamin B_2 respectively
 (4) Vitamin C and Vitamin B_{12} respectively

72. Correct structures of β -D-ribose and β -D-glucose respectively are



73. Consider the following statements
 (a) Thyroxine is produced in thyroid gland
 (b) Epinephrine and norepinephrine mediate response to external stimuli
 (c) Progesterone is responsible for preparing the uterus for implantation of fertilised egg.

The correct statements are

- (1) (a) and (b) only (2) (b) and (c) only
 (3) (a) and (c) only (4) (a), (b) and (c)
74. Given below are the two statements
Statement I: Cellulose occurs exclusively in plants
Statement II: Cellulose is a straight chain polysaccharide and composed of only α -D-glucose units.
 In light of above statements, choose the correct answer
 (1) Statement I is correct but statement II is incorrect
 (2) Statement I is incorrect but statement II is correct
 (3) Both statement I and statement II are correct
 (4) Both statement I and statement II are incorrect

75. Correct order of pK_b values of the given compounds in aqueous medium is
 (a) Benzenamine
 (b) N, N-Dimethylaniline
 (c) N-methylaniline
 (d) Phenylmethanamine
 Choose the correct option.
 (1) (d) > (b) > (c) > (a) (2) (a) > (c) > (b) > (d)
 (3) (d) > (a) > (c) > (b) (4) (b) > (a) > (d) > (c)

76. Consider the following bases

- (a) Adenine
 (b) Cytosine
 (c) Uracil
 (d) Guanine

Pyrimidine bases are

- (1) (b) and (c) only (2) (a) and (b) only
 (3) (a), (b) and (c) only (4) (c) and (d) only

77. The compound which will not give positive isocyanide test is

- (1) Isopropylamine (2) Aniline
 (3) N, N-Diethylbutylamine (4) n-propylamine

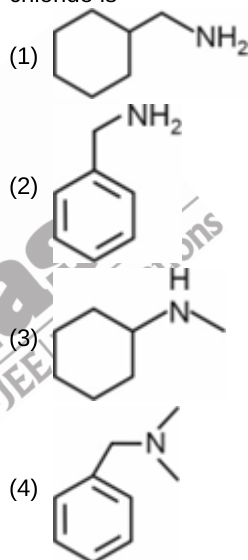
78. Consider the following statements

- (a) p-Nitroacetanilide on reaction with aqueous alkali gives p-nitroaniline.
 (b) Aniline does not undergo Friedel-Crafts reaction
 (c) Aniline reacts with bromine water at room temperature to give a white precipitate of 2, 4, 6-tribromoaniline.

The correct statements are

- (1) (a) and (b) only (2) (b) and (c) only
 (3) (a) and (c) only (4) (a), (b) and (c)

79. Compound which does not react with benzenesulphonyl chloride is



80. Consider the following compounds

- (a) $n\text{-C}_4\text{H}_9\text{OH}$
 (b) $(\text{C}_2\text{H}_5)_2\text{NH}$
 (c) $n\text{-C}_4\text{H}_9\text{NH}_2$
 (d) $\text{C}_2\text{H}_5\text{N}(\text{CH}_3)_2$

The correct order of boiling point is

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

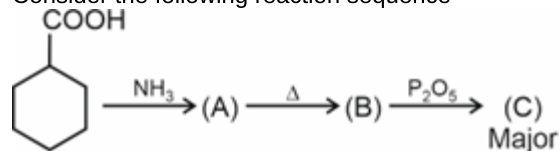
81. Methyl cyanide on reaction with stannous chloride in presence of hydrochloric acid gives compound (A) which on hydrolysis gives compound (B). The compound (B) is

- (1) $\text{CH}_3\text{CH}_2\text{OH}$ (2) CH_3CHO
 (3) CH_3COOH (4) $\text{CH}_3\text{CH}_2\text{NH}_2$

82. Given below are the two statements
Statement I: Benzenediazonium chloride is stable in cold water but reacts with water when warmed.
Statement II: Benzenediazonium fluoroborate on heating gives fluorobenzene
 In light of above statements, choose the correct answer
 (1) Statement I is correct but statement II is incorrect
 (2) Statement I is incorrect but statement II is correct
 (3) Both statement I and statement II are correct
 (4) Both statement I and statement II are incorrect
83. The compound which gives immediate turbidity with $ZnCl_2$ and Conc. HCl is
 (1) 4-Methylhexan-1-ol (2) 4-Methylpentan-1-ol
 (3) 4-Methylpentan-2-ol (4) 2-Methylpentan-2-ol
84. The compound which give positive iodoform test is
 (1) Benzophenone (2) Acetophenone
 (3) Benzaldehyde (4) Isobutyraldehyde
85. Match List-I with List-II.
- | | List-I
(Metal cations) | | List-II
(Colour of the flame observed by naked eye) |
|----|---------------------------|-------|--|
| a. | Ba^{2+} | (i) | Brick red |
| b. | Ca^{2+} | (ii) | Crimson red |
| c. | Cu^{2+} | (iii) | Apple green |
| d. | Sr^{2+} | (iv) | Green flame with blue centre |
- Choose the correct match
 (1) a(i), b(iii), c(iv), d(ii) (2) a(iii), b(i), c(iv), d(ii)
 (3) a(iii), b(i), c(ii), d(iv) (4) a(ii), b(iv), c(i), d(iii)
86. Colour of PbS and $PbCrO_4$ respectively are
 (1) Black and Green (2) Blue and yellow
 (3) Black and Yellow (4) Yellow and Orange
87. Consider the following statements
 (a) $Cu_2[Fe(CN)_6]$ is a chocolate brown colour solid.
 (b) I_2 in starch solution gives blue colour
 (c) Chromate ion on reaction with H_2O_2 forms chromium pentoxide
 The correct statements are
 (1) (a) and (b) only (2) (b) and (c) only
 (3) (a) and (c) only (4) (a), (b) and (c)

88. The pair of compounds which can be distinguished by Tollens' test is
 (1) Benzaldehyde and Acetaldehyde
 (2) Acetone and Benzaldehyde
 (3) Propanal and Acetaldehyde
 (4) Methanol and Ethanol

89. Consider the following reaction sequence



Major product (C) is

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

90. Ethyl isonitrile on hydrolysis with dilute HCl majorly gives
 (1) Ethanamine and methanol
 (2) Ethanamine and Formic acid
 (3) Ethanoic acid and methanamine
 (4) Formic acid and Ethanamide

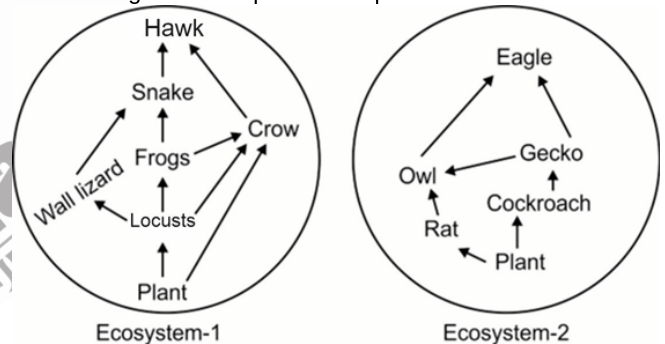
BOTANY

91. The food web
 (1) Is a network of interconnected food chains at different trophic levels
 (2) Is usually unstable and decreases the overall stability of ecosystem
 (3) Can accommodate only a single species
 (4) In an ecosystem is represented in form of ecological pyramids
92. In ecological pyramids,
 (1) The trophic level represents a species as such
 (2) A given species always occupy more than one trophic levels
 (3) Energy at a lower trophic level is always more than that at a higher level
 (4) Decomposers are always kept at bottom trophic level

93. Consider the following food chain.
 Trees \rightarrow Birds \rightarrow Lice \rightarrow Bacteria.
 The above given food chain is an example of
 (1) Predatory food chain (2) Grazing food chain
 (3) Detritus food chain (4) Parasitic food chain
94. Which among the following is the least productive ecosystem?
 (1) Coral reefs (2) Deep sea
 (3) Tropical rain forest (4) Agroecosystem
95. Two main structural features of an ecosystem are
 (1) Standing crop and nutrient cycling
 (2) Productivity and standing state
 (3) Species composition and stratification
 (4) Stratification and energy flow
96. In forest ecosystem, bottom strata or layer is occupied by
 (1) Trees only (2) Herbs only
 (3) Both shrubs and trees (4) Both herbs and grasses

97. Select **incorrect** one w.r.t. humus.
- (1) Highly resistant to microbial activity
 - (2) Decomposed at an extremely slow rate
 - (3) Light coloured amorphous substance
 - (4) Degraded by some microbes and release inorganic substance
98. Which one of the following organisms can be placed at second as well as third trophic levels?
- (1) Sparrow
 - (2) Snake
 - (3) Eagle
 - (4) Jackal
99. Vertical distribution of different species occupying different levels in an ecosystem is called
- (1) Species composition
 - (2) Speciation
 - (3) Energy flow
 - (4) Stratification
100. Major conduit of energy flow in an aquatic ecosystem is
- (1) Detritus food chain
 - (2) Grazing food chain
 - (3) Parasitic food chain
 - (4) Auxiliary food chain
101. Extinction of more than 200 species of Cichlid fish in a lake of East Africa occurred because of introduction of
- (1) Carrot grass
 - (2) *Clarias*
 - (3) Nile Perch
 - (4) *Lantana*
102. There are A wildlife sanctuaries and B biosphere reserves in India. Here, A and B respectively are
- (1) 90 and 448
 - (2) 448 and 14
 - (3) 448 and 90
 - (4) 90 and 14
103. India having more than 50,000 genetically different strains of rice, and 1000 varieties of mango shows
- (1) Species diversity
 - (2) Community diversity
 - (3) Genetic diversity
 - (4) Ecological diversity
104. Which of the following regions is considered as the sacred groves in Meghalaya?
- (1) Khasi and Jaintia Hills
 - (2) Aravalli Hills
 - (3) Chanda and Bastar
 - (4) Sarguja
105. Match the column-I with column-II and choose the **correct** option.
- | Column-I | Column-II |
|----------------------|----------------|
| A. Quagga | (i) Mauritius |
| B. Thylacine | (ii) Africa |
| C. Dodo | (iii) Russia |
| D. Steller's sea cow | (iv) Australia |
- (1) A(ii), B(i), C(iv), D(iii)
 - (2) A(iv), B(iii), C(i), D(ii)
 - (3) A(ii), B(iv), C(i), D(iii)
 - (4) A(iii), B(i), C(iv), D(ii)
106. If we consider the different animals like birds (B), reptiles (R), fishes (F) and mammals (M), the **correct** order for their number of species in Amazonian rain forest will be?
- (1) F > M > R > B
 - (2) B > M > F > R
 - (3) B > F > M > R
 - (4) F > B > M > R
107. If we analyse the species-area relationship among the entire continent, we will find that the regression coefficient (z) values in the range of
- (1) 1.2 to 2.6
 - (2) 0.1 to 0.2
 - (3) 0.6 to 1.2
 - (4) 0.2 to 0.6
108. Which of the following statements is **correct**?
- (1) Passenger pigeon became extinct due to co-extinction
 - (2) Species diversity increases from pole to equator
 - (3) Organisms at high trophic levels in a food chain, are less susceptible to extinction
 - (4) Now the tropical rain forest covers 14% of earth's land area, which was previously only 0.6%

109. As per the Red Data Book of IUCN, a taxon which is facing an extremely high risk of extinction in the wild in the immediate future, is put in the category of
- (1) Critically endangered
 - (2) Endangered
 - (3) Vulnerable
 - (4) Low risk
110. According to David Tilman's outdoor plots experiments, which of the following statements is **true** for a stable community?
- (1) More diverse community will show less year to year variation in total biomass.
 - (2) Increased diversity contributes to lesser productivity.
 - (3) More diverse communities show more year to year variation in total biomass.
 - (4) Decreased diversity contributes to more productivity.
111. When a host fish species becomes extinct, its unique assemblage of parasites also meets the same fate. This exemplifies
- (1) Habitat loss
 - (2) Co-extinctions
 - (3) Over-exploitation
 - (4) Alien-species invasion
112. In Rivet popper hypothesis, the rivets on the wings represents
- (1) Key species that drive major ecosystem function
 - (2) Invasive species that drive major ecosystem function
 - (3) Ecosystem
 - (4) Extinct species of an ecosystem
113. Given below are the representations of two ecosystems, with each having different species composition.



- How many of the given statements are correct for the above ecosystems?
- (a) Ecosystem-2 has more species diversity than the ecosystem-1.
 - (b) Ecosystem-2 can be said less stable than ecosystem-1.
 - (c) The largest food chain in ecosystem-1 has 0.1 kJ for hawk as available energy and in 2nd largest food chain, hawk has 1 kJ of available energy, if plant has 1000 kJ as GPP.
 - (d) Ecosystem-2 has three food chains, of which, two have T₄ trophic level as the highest one, while the other has T₅ as the highest one.
 - (e) Major conduit of energy flow for both the ecosystems is the GFC.
- (1) Two
 - (2) Three
 - (3) Four
 - (4) Five

- 114.** Gross primary productivity minus respiratory losses is equal to
- (1) The rate of formation of new organic matter by consumers
 - (2) The rate of production of organic matter during photosynthesis
 - (3) The available biomass for the consumption to herbivores or decomposers
 - (4) The amount of biomass or organic matter produced per unit area over a time period by plants during photosynthesis

115. Read the following statements (A – D).

- A. The total energy output in the form of heat from an ecosystem should be equal to the solar input.
 - B. There is always unidirectional flow of energy towards the higher trophic levels.
 - C. Energy is created during the process of photosynthesis by producers.
 - D. Detritus, from which DFC starts, can be obtained from the organisms of all the trophic levels in the entire food chain.
- Select the **correct** option.

- (1) Only A and B are correct
- (2) Only A and D are correct
- (3) Only B and D are correct
- (4) Only B and C are correct

116. Select the **correct** pair of characteristics for the given ecosystems from the following options.

	Tree ecosystem	Grassland ecosystem
(1)	Biomass of the top carnivore is lower than the organism at T ₁ level	Biomass at higher trophic level is higher than the lower trophic levels.
(2)	Primary productivity is higher than the secondary productivity	Primary productivity is lower than the secondary productivity
(3)	Pyramid of number can be inverted	Pyramid of number for grazing food chain is always upright
(4)	It is not connected to the DFC at any level	It is connected to the DFC at all levels

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

117. The following data represents the energy flow in a salt marsh ecosystem.

Form of energy	kcal m ⁻² yr ⁻¹
• Solar radiation	600,000
• Gross primary productivity	34,580
• Net primary productivity	6,585
• Gross secondary productivity	305
• Net secondary productivity	81
• Detritus leaving marsh	3,671

Which of the following options is **correct** w.r.t. the above data?

- (1) About 5.8% of solar energy is used in net primary production, and the respiratory loss by the producer is 28,000 kcal m⁻² yr⁻¹
- (2) About 5.8% of solar energy is used in gross primary production, and the respiratory loss by consumer is 224 kcal m⁻² yr⁻¹
- (3) About 0.6% of solar energy is converted into gross primary production and respiratory loss by producer is 27,995 kcal m⁻² yr⁻¹
- (4) About 0.1 % of solar energy is converted into net primary production and detritus accounts for more than 80% of NPP.

118. Read the following Assertion (A) and Reason (R) statements and select the **correct** option.

Assertion (A): With the increase in the depth of the oceans, the intensity of the light decreases, decreasing the rate of photosynthesis.

Reason (R): Despite oceans occupying about 70 percent of the surface of earth, the productivity of the oceans is only 55 billion tons.

- (1) Both (A) and (R) are true and (R) is the correct explanation of (A)
- (2) Both (A) and (R) are true but (R) is not the correct explanation of (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false

119. State the following statements as **true (T)** or **false (F)** and select the **correct** option.

A. Measurement of biomass is expressed in terms of dry weight rather than fresh weight because it eliminates variability caused by moisture content.

B. In a terrestrial ecosystem, major producers are herbaceous and woody plants, while in aquatic ecosystem, producers are planktons, algae and higher plants.

C. Of the incident solar radiation, less than 50% is photosynthetically active radiation and only 1% of PAR results into GPP.

D. Each bar in the ecological pyramid of energy indicates the amount of energy present at each trophic level in a given time or annually, per unit area.

	A	B	C	D
(1)	T	F	T	T
(2)	F	T	T	F
(3)	T	F	F	T
(4)	T	T	F	T

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

120. Select the **correct** option if in an ecosystem, gross primary productivity (GPP) of the first trophic level is $4000x(\text{kcal m}^{-2})\text{yr}^{-1}$.

- (1) Available energy for trophic level where primary consumers are placed will be $40x(\text{k cal m}^{-2})\text{yr}^{-1}$
- (2) The amount of energy fixed at the trophic level where secondary consumers are placed will be $\frac{40x}{10}(\text{k cal m}^{-2})\text{yr}^{-1}$
- (3) Available energy for trophic level where tertiary consumers are placed will be $\frac{4}{10}x(\text{k cal m}^{-2})\text{yr}^{-1}$
- (4) Fixed energy at the trophic level where primary consumer are placed will be $\frac{40}{10} \times (\text{k cal m}^{-2})\text{yr}^{-1}$

121. Read the following statements and select the **correct** option.

Statement A: Warm and moist environment favours decomposition of detritus, whereas low temperature and anaerobiosis inhibit its decomposition, resulting in the build up of organic materials.

Statement B: The standing crop is measured as the mass of living organisms (biomass) or the number in a unit area.

- (1) Both the given statements are correct
- (2) Only statement A is correct
- (3) Both the given statements are incorrect
- (4) Only statements B is correct

122. Correctly match the types of ecological pyramids (Column I) with their food chains (Column II).

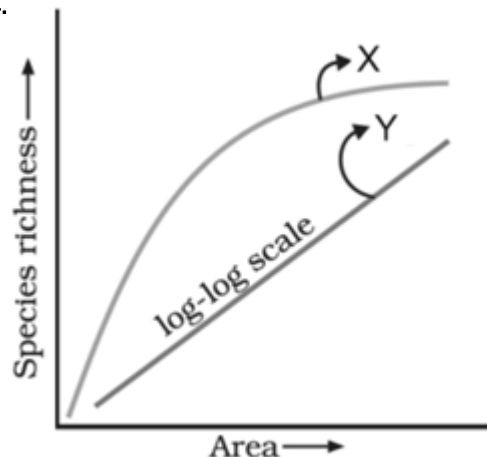
	Column I		Column II
a.	Inverted pyramid of biomass	(i)	Tree → Frugivorous birds → Falcon
b.	Upright pyramid of energy	(ii)	Phytoplankton → Small fishes → Large fishes
c.	Upright pyramid of biomass	(iii)	Grass → Grasshopper → Frog
d.	Spindle-shaped pyramid of number	(iv)	Tree → Insects → Sparrow

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

123. Given below are some statements. Consider these statements and select the option that is **true**.

- P. Speciation is generally a function of time.
 Q. Tropical latitudes have remained relatively undisturbed for millions of years.
 R. Productivity of tropical environments is higher than the temperate environments.
 S. There is more solar energy available in the tropics.
- (1) P and Q are true and Q is the correct reason for P
 - (2) Q and S are true and S is the correct reason for Q
 - (3) R and S are true and S is the correct reason for R
 - (4) P and R are true and P is the correct reason for R

124.



How many of the following statements is/are **correct** w.r.t the given graph.

- (a) This relation between species richness and area was given by the great British naturalist and geographer during his pioneering and extensive explorations in the South American jungles.
- (b) The relation between species richness and area for a wide variety of taxa turns out to be a curve shown by 'X'
- (c) For the latitudinal range of 23.5°N to 23.5° S, the steepness of curve 'Y' is more than the regions located at 71°N or 71°S w.r.t. bird species
- (d) The equation used for 'X' and 'Y' curves, respectively, are $S = CA^Z$ and $\log S = \log C + \log Z$.

- (1) One
- (2) Two
- (3) Three
- (4) Four

125. Match the following columns and select the **correct** option.

	Column I		Column II
a.	Insects	(i)	According to IUCN Red list, this group appears to be more vulnerable to extinction
b.	Reptiles	(ii)	This group makes up more than 70 percent of the total animals
c.	Birds	(iii)	378 species of this group are found in the tropical Amazonian rain forest
d.	Amphibians	(iv)	Nearly 1400 species of this group are present in Colombia

Choose the **correct** option.

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

126. Read the following statements and select the **correct** option.

Statement A: The fast-dwindling Amazon forest is estimated to produce, through photosynthesis, 20% of the total oxygen in the earth's atmosphere.

Statement B: The use of fruits or seeds by us, that are formed by the process of the fusion of male gamete with the egg cell, is considered as a broadly utilitarian service of ecosystem.

- (1) Both the statements are correct
- (2) Both the statement are incorrect
- (3) Only statements B is correct
- (4) Only statements A is correct

127. Certain events are mentioned below:
- The World Summit on sustainable development in Johannesburg.
 - The historical convention on Biological Diversity in Rio de Janeiro, held to call upon all nations, to take appropriate measure for conservation of biodiversity.
 - Documentation of extinction of 784 species in IUCN Red List.
 - IUCN described the total number of plants and animal species, that was slightly more than 1.5 million.
- Select the option that chronologically define the timeline of the above events.
- $b \rightarrow a \rightarrow c$
 - $a \rightarrow b \rightarrow c$
 - $d \rightarrow b \rightarrow c$
 - $d \rightarrow b \rightarrow a$
128. Select the **odd** one w.r.t. zonation in a terrestrial Biosphere Reserve.
- Transition zone is an area of active cooperation between reserve management and the local people.
 - Core zone comprises an undisturbed and legally protected ecosystem.
 - The buffer zone surrounds the transition zone and is managed to accommodate a greater research
 - Core zone is the innermost zone and also termed as the natural zone.
129. Read the following Assertion (A) and Reason (R) statements and select the **correct** option.
- Assertion (A):** Many nations find *in-situ* conservation unrealistic and economically not feasible to conserve all their biological wealth.
- Reason (R):** Invariably, the number of species waiting to be saved from extinction far exceeds the conservation resources available.
- 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
 - Both (A) and (R) are false

136. *Limulus* is an example of living fossil belonging to the phylum
- Arthropoda
 - Mollusca
 - Annelida
 - Hemichordata
137. Complete the analogy by selecting **correct** option.
Internal fertilization : *Culex* :: External fertilization : _____
- Fasciola*
 - Wuchereria*
 - Euspongia*
 - Ctenoplana*
138. All of the salient features of different phyla in the animal kingdom presented in the below given table are generally correct, **except**

	Phylum	Level of organisation	Digestive system	Feature
(1)	Echinodermata	Organ-system	Incomplete	Water vascular system
(2)	Chordata	Organ-system	Complete	Dorsal nerve cord
(3)	Platyhelminthes	Organ level	Incomplete	Flame cells
(4)	Aschelminthes	Organ-system	Complete	Pseudocoelom

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

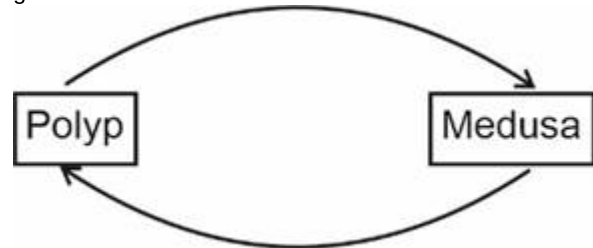
130. *Eichhornia* led to the decline of the indigenous plants in India because
- It requires low area and O_2 for photosynthesis which was provided by aquatic indigenous plants.
 - In the absence of its natural predator, it grows rapidly, competing for resources.
 - Indigenous species created the favourable environment for it
 - It turned invasive and killed its predators
131. Biodiversity hotspots differ from sacred groves, as the
- Former is protected but latter is not
 - Latter has special religious importance to a particular culture
 - Former is a conserved area but latter is not
 - Former has endemic species
 - Latter are conserved through *in-situ* conservation while the former is conserved by *ex-situ* conservation.
- The **correct** one(s) is/are
- Only (b)
 - Only (a) and (b)
 - Only (a), (c) and (e)
 - Only (b), (d) and (e)
132. Select the **incorrectly** matched pair.
- Detritus – Detritivores act over it
 - Fungi – Degrade detritus into simpler inorganic substances
 - Converter – Converts the plant matter into animal matter
 - Transducer – Converts the sunlight energy into chemical energy
133. Select the **odd** one w.r.t. terrestrial ecosystem
- Estuary
 - Grassland
 - Forest
 - Desert
134. Select the **incorrect** one for anthropogenic ecosystem.
- Does not possess self-regulatory mechanism
 - Has little species diversity
 - Considered as stable as natural ecosystem
 - Shows high productivity
135. A total of how many biodiversity hotspots have been identified globally?
- 20
 - 3
 - 34
 - 50

ZOOLOGY

139. Consider the following statements.
- Pharynx is perforated by gill slits in all the members of phylum Chordata from embryonic to adult stages.
 - In all chordates, notochord is replaced by a cartilaginous or bony vertebral column.
 - Central nervous system is hollow and dorsal.
 - In all vertebrates, heart is dorsal and associated with systemic and pulmonary circulation.
 - All vertebrates are chordates.
- Choose the most appropriate answer from the options given below representing only the **incorrect** statements about chordates.
- a, b and c only
 - c and e only
 - a, b and d only
 - b, c and e only
140. All of the following are poikilotherms possessing cornified skin and epidermal scales, **except**
- Chelone*
 - Corvus*
 - Chameleon*
 - Calotes*

141. Which of the following statements are not true about sharks?
 a. Their skin is tough and covered with placoid scales.
 b. They possess a swim bladder which regulates buoyancy.
 c. Their tail is heterocercal.
 d. They possess two-chambered heart.
 e. They have five pairs of gill slits covered by operculum.
 Choose the correct option.
 (1) a, c, d, e (2) b, c, d, e
 (3) b and e (4) c and e
142. The animals included in the largest phylum of the kingdom Animalia have
 (1) Only two germ layers
 (2) Nephridia as their excretory structures
 (3) A segmented body
 (4) Closed circulatory system
143. Mantle cavity is the space between
 (1) Shell and mantle
 (2) Mantle and visceral hump
 (3) Visceral hump and muscular foot
 (4) Mantle and head
144. All of the following statements are correct for poriferans, **except**
 (1) Eggs and sperms are produced by the same individual
 (2) They are generally marine and mostly asymmetrical animals
 (3) They reproduce sexually as well as asexually
 (4) They exhibit extracellular type of digestion
145. *Meandrina* belongs to a group of animals which are best described as
 (1) Unicellular with tissue level of organisation
 (2) Multicellular with radially symmetrical body
 (3) Multicellular with organ level of organisation
 (4) Unicellular with bilaterally symmetrical bodies
146. Read the following carefully
 (a) They show external fertilisation and direct development
 (b) They have moist skin without scales
 (c) Body is divided into head and trunk
 (d) The eyes have eyelids
 Which of the above given statements are correct for frogs?
 (1) b, c and d (2) a, b and c
 (3) a and c only (4) a, b and d
147. The scaly hindlimbs of birds are modified for performing all of the given functions, **except**
 (1) Walking
 (2) Flying
 (3) Swimming
 (4) Clasping the tree branches
148. Which one of the following statements about certain given animals is **incorrect**?
 (1) *Struthio* is a flightless bird.
 (2) *Platypus* is an oviparous mammal.
 (3) Snakes do not have external ear opening.
 (4) Cutaneous respiration occurs in *Carcharodon*.
149. The **correct** classification of *Myxine* is
 (1) Chordata → Vertebrata → Agnatha → Cyclostomata
 (2) Chordata → Acraniata → Protochordata → Cephalochordata
 (3) Chordata → Cephalochordata → Cyclostomata
 (4) Chordata → Tunicata → Vertebrata → Tetrapoda

150. Which of the following statements is **incorrect** about the members of the phylum Annelida?
 (1) They are triploblastic, metamerically segmented coelomate animals
 (2) They possess both longitudinal and circular muscles which help in locomotion
 (3) A closed circulatory system is present
 (4) All are monoecious and reproduction is sexual in them
151. Sea cucumber and sea urchin differ from sea pen and sea fan w.r.t. all the given characters, **except**
 (1) Presence of coelomic cavity
 (2) Marine habitat
 (3) Symmetry of larval form
 (4) Complete digestive system
152. Consider the following.
 (a) Possesses organ system level of organization
 (b) Pseudocoelomate
 (c) Dioecious
 The above mentioned features are true for
 (1) Earthworm (2) Tapeworm
 (3) Silk worm (4) Hookworm
153. Which of the following features is common to *Balanoglossus*, *Anopheles* and *Laccifer*?
 (1) Marine habitat
 (2) Members of the largest phylum of the animal kingdom
 (3) Presence of an open circulatory system
 (4) External fertilisation
154. Select the **odd** member w.r.t. the phylum Coelenterata.
 (1) Sea-pen (2) Sea-anemone
 (3) Sea-hare (4) Sea-fan
155. Presence of which character is mainly responsible for diversification of insects on land?
 (1) Simple eyes (2) Pseudometamerism
 (3) Chitinous exoskeleton (4) Bilateral symmetry
156. Exclusively marine animals with worm-like body and stomochord have
 (1) Closed circulatory system
 (2) Open circulatory system
 (3) Incomplete digestive system
 (4) Endoskeleton of calcareous ossicles
157. Observe the schematic representation of life cycle of *Obelia* given below.



- Select the **incorrect** option w.r.t. it.
 (1) Polyps produce medusae asexually
 (2) This sort of alternation of generation of body forms is feature of some cnidarians
 (3) Polyp is umbrella-shaped and free-swimming form
 (4) Medusa, the umbrella-shaped body form, produces the polyp sexually
158. Which of the following options represents the correct pair of animals that have open and closed type of circulatory system, respectively?
 (1) *Pila*, *Pristis* (2) *Pila*, *Pinctada*
 (3) *Sepia*, *Bombyx* (4) *Dentalium*,
Chaetopleura

159. Malpighian tubules of arthropods are functionally similar to
 (1) Trachea of insects (2) Book gills of prawns
 (3) Nephridia of annelids (4) Gills of hemichordates

160. Choose the option representing the correct combination of features present in *Aurelia*.

- (1) Cellular level of organisation, diploblastic, radial
 (2) Tissue level of organisation, triploblastic, radial
 (3) Organ level of organisation, triploblastic, bilateral
 (4) Tissue level of organisation, diploblastic, radial

161. Which of the following is **not incorrect** w.r.t. ctenophores?

- (1) They possess eight pairs of comb plates on their external body surface
 (2) They do not possess statocyst
 (3) They do not have nematocysts
 (4) They are dioecious and show indirect development via a free-swimming larva

162. Read statements A and B and select the **correct** option.

Statement A: All vertebrates possess a closed circulatory system but all chordates do not.

Statement B: All vertebrates bear jaw, but all true fishes do not.

- (1) Both the statements A and B are correct
 (2) Both the statements A and B are incorrect
 (3) Only statement A is incorrect
 (4) Only statement B is incorrect

163. **Assertion (A):** Reptiles exhibit incomplete double circulation.

Reason (R): Their ventricles are incompletely divided and receive mixed blood from the atria.

In the light of above statements, select the **correct** option.

- (1) Both (A) and (R) are true and (R) is the correct explanation of (A)
 (2) Both (A) and (R) are true but (R) is not the correct explanation of (A)
 (3) (A) is true but (R) is false
 (4) Both (A) and (R) are false

164. Match column I with column II w.r.t. animal class and features of their members.

	Column I		Column II
a.	Amphibia	(i)	Only one pair of walking limbs, air sacs present
b.	Reptilia	(ii)	Cutaneous respiration in addition to pulmonary respiration
c.	Aves	(iii)	Diaphragm and only pulmonary respiration
d.	Mammalia	(iv)	Tympanum represents ear

Choose the **correct** option.

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

165. Which of the following pairs correctly represents an animal with its exclusive feature?

- (1) *Ascaris* – Flame cells for excretion
 (2) *Nereis* – Parapodia for locomotion
 (3) *Euspongia* – Water vascular system
 (4) *Asterias* – Green gland for excretion

166. Select the option representing the **correct** trend w.r.t. the body organisation across the kingdom Animalia from complex to simple forms.

- (1) Porifera → Cnidaria → Platyhelminthes → Annelida → Arthropoda → Mollusca → Echinodermata → Chordata
 (2) Porifera → Cnidaria → Platyhelminthes → Annelida → Mollusca → Arthropoda → Echinodermata → Chordata
 (3) Chordata → Echinodermata → Mollusca → Arthropoda → Annelida → Platyhelminthes → Cnidaria → Porifera
 (4) Chordata → Mollusca → Echinodermata → Arthropoda → Annelida → Platyhelminthes → Cnidaria → Porifera

167. Presence of which of the following features **correctly** differentiates hemichordates from true chordates?

- (1) Bilateral symmetry in latter
 (2) True coelom
 (3) Dorsal heart in former
 (4) Triploblastic condition

168. Select the **incorrect** match.

- (1) Aschelminths – Unsegmented body
 (2) Coelenterates – Cnidocytes present
 (3) Porifers – Ostia and osculum present
 (4) Platyhelminths – Body cavity lined by mesoderm

169. Observe the given diagram and select the **incorrect** option w.r.t. it.



- (1) Shows anadromous migration
 (2) Possesses cartilaginous cranium and vertebral column
 (3) Devoid of scales and unpaired fins
 (4) Circulation is of closed type

170. Which of the following options represents the progressive advancement w.r.t. respiration among chordates?

- (1) Gills → Lungs → Trachea
 (2) Gills → Skin → Lungs
 (3) Skin → Gills → Lungs
 (4) Skin → Lungs → Gills

171. **Assertion (A):** There is a transition from radial to bilateral symmetry across the animal kingdom.

Reason (R): Evolution favoured increase in specialisation from directional mobility to sedentary or passive lifestyle.

In the light of above statements, choose the **correct** option.

- (1) Both (A) and (R) are true and (R) explains (A) correctly
 (2) Both (A) and (R) are true but (R) does not explain (A) correctly
 (3) (A) is true but (R) is false
 (4) (A) is false but (R) is true

172. In chordates, the notochord is located

- (1) Dorsal to nerve cord and ventral to gut
 (2) Dorsal to gut and ventral to nerve cord
 (3) Ventral to both gut and nerve cord
 (4) Dorsal to both nerve cord and gut

173. Diploblastic animals lack

- (1) Mesoglea and bilateral symmetry
 (2) Mesoderm and radial symmetry
 (3) Mesoderm and bilateral symmetry
 (4) Mesoglea and radial symmetry

