NEW LIGHT INSTITUTE
Medical | Foundation

• Test ID : 269 (A) • Re-FST : 03

ALL INDIA FULL SYLLABUS TEST SERIES-2023-24

DURATION : 200 Minutes | **DATE : 29-June-2024** | **MARKS : 720**

Topic Covered

Physics	: FULL SYLLABUS
Chemistry	: FULL SYLLABUS
Biology	: FULL SYLLABUS

RE-NEET

(Do not open this Test Booklet until you are asked to do so.)

Please read the instructions carefully :

- The Test pattern of NEET (UG)-2023 comprises of two Sections.

  Each subject will consist of two sections. Section A will consist of 35 Questions and Section B will have 15 questions, out of these 15 Questions, candidates can choose to attempt any 10 Questions.

  The pattern for the NEET (UG)-2023 Examination for admission in the Session 2023-24 is as follows:

Sr. No.	Subject(s)	Section(s)	No. of Question(s)	Mark(s)* *(Each Question Carries 04 (Four) Marks)	Type of Question(s)
1	PHYSICS	SECTION-A	35	140	MCQ (Multiple Choice Questions).
		SECTION-B	15	40	
2	CHEMISTRY	SECTION-A	35	140	
		SECTION-B	15	40	
3	BIOLOGY	SECTION-A	35	140	
		SECTION-B	15	40	
4	BIOLOGY	SECTION-A	35	140	
		SECTION-B	15	40	
			TOTAL MARKS	720	

Note : Correct option marked will be given (4) marks and incorrect option marked will be minus one (-1) marks. Ubittemped / Unanswered Questions will be given no marks.

- The important points to note:

I. Each question carries 04 (four) marks and, for each correct answer candidate will get 04 (four) marks.

II. For each incorrect answer, 01(one) mark will be deducted from the total score.

III. To answer a question, the candidate has to find, for each question, the correct answer/ best option.

IV. However, after the process of the challenge of key, if more than one option is found to be correct then all/any one of the multiple correct/best options marked will be given four marks (+4).

- Any incorrect option marked will be given minus one mark (-1).
- Unanswered/Unattempted questions will be given no marks. In case, a question is dropped/ ignored, all candidates will be given four marks (+4) irrespective of the fact whether the question has been attempted or not attempted by the candidate.

Name of the Student (In CAPITALS) : _____

Candidate ID : _____

Candidate Signature : _____ **Invigilator's Signature :** _____

INSTRUCTION

- The candidates should ensure that the Answer Sheet is not folded. Do not make any stray marks on the Answer Sheet. Do not write your roll no. anywhere else except in the specified space in the Test Booklet/Answer Sheet.
- Before attempting the question paper ensure that it contains all the pages and no question is missing.
- Each candidate must show on demand his/her Admission Card to the Invigilator.
- If any student is found to have occupied the seat of another student, both the students shall be removed from the examination and shall have to accept any other penalty imposed upon them.
- No candidate, without special permission of the Superintendent or Invigilator, would leave his/her seat.
- The candidates should not leave the Examination Hall without handing over their Answer Sheet to the Invigilator on duty and sign the Attendance Sheet twice. Cases where a candidate has not signed the Attendance Sheet second time will be deemed not to have handed over Answer Sheet and dealt with as an unfair means case.
- Use of Electronic/Manual Calculator is prohibited.
- The candidates are governed by all Rules and Regulations of the Board with regard to their conduct in the Examination Hall. All cases of unfair means will be dealt with as per Rules and Regulations of the Board.
- The candidates will write the Correct Test ID Code as given in the Test Booklet/Answer Sheet in the Attendance Sheet.

BEWARE OF NEGATIVE MARKING

TOPIC : FULL SYLLABUS

SECTION-A

Attempt All 35 Questions

1. Find the value of power of 60 J per min on a system that has 100 g, 100 cm and 1 min as the base units.

(1) 2.16×10^4 units

(2) 2.16×10^6 units

(3) 3×10^4 units

(4) 4×10^7 units

2. Choose the incorrect statement.

(1) Change in unit does not change the number of significant figure.

(2) In 4.700 m = 4700mm a change of significant figure occur from 4 to 2 due to change in unit.

(3) In 4.700 m = 4.700×10^3 . cm, there is no change in the number of significant figures.

(4) None of the above

3. The expression for viscous force F acting on a tiny steel ball of radius r moving in a viscous liquid of Coffecient of viscosity η with a constant speed v with the help of the method of dimensional analysis is

(1) $kr\eta v$

(2) $kr^2\eta v$

(3) $kr\eta v^{3/2}$

(4) $kr\eta^2 v$

4. Two persons A and B conduct an experiment to measure reaction time of A. B drops a ruler vertically through the gap between A's thumb and fore finger. After A catches it, the distance d travelled by the ruler is d = 21.0 cm. The reaction time for this particular case is

(1) 0.2 sec

(2) 0.3 sec

(3) 0.4 sec

(4) 0.1 sec

5. A particle moves in a straight line. It can be accelerated,

(1) only if its speed changes by keeping its direction same

(2) only if its direction changes by keeping its speed same

(3) Either by changing its speed or direction

(4) None of the above

6. Two forces P and Q of magnitude 2F and 3F, respectively,are at an angle θ with each other. If magnitude of the force Q is doubled, then their resultant also gets doubled. Then, the angle θ is

(1) 60^0 (2) 120^0

(3) 30^0 (4) 90^0

7. A biker stands on the edge of a cliff 490 m above the ground and throws a stone horizontally with an initial speed of 15 ms $^{-1}$. Which one of the following statement is correct?

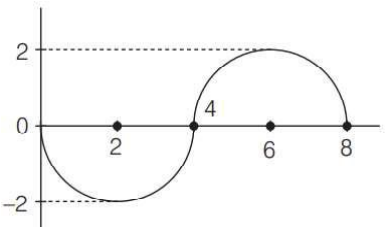
(1) The time taken by the stone to reach the ground is 30 s.

(2) The time taken by the stone to reach the ground is 20 s.

(3) The speed with which it hits the ground is 99 ms^{-1}.

(4) All of these

8. The force-time ( ) F t- graph for linear motion of a body initially at rest is shown in figure. The segments shown are circular, the linear momentum gained in 4 s is



(1) 8 N-s (2) 4π N-s

(3) 2π N-s (d) 8π N-s

9. Which of the following statement is incorrect, when a person walks on a rough surface?

(1) The frictional force exerted by the surface stops him from moving.

(2) The force which the person exerts on the floor keeps him moving.

(3) The reaction of the force which the person exerts on floor keeps him moving.

(4) None of the above

10. A position-dependent force $F=3x^2-2x+7$ acts on a body of mass 7 kg and displaces it from x = 0 m to x = 5 m. The work done on the body is y joule. If both F and x are measured in SI units, the value of y is

(1) 135 (2) 235

(3) 335 (4) 935

11. A force which is inversely proportional to the speed, is acting on a body. The kinetic energy of the body starting from rest is

(1) a constant

(2) inversely proportional to time

(3) directly proportional to time

(4) directly proportional to square of time

12. The ratio of spring constants of two springs is 2 : 3. What is the ratio of their potential energy, if they are stretched by the same force?

(1) 2 : 3 (2) 3 : 2

(3) 4 : 9 (4) 9 : 4

13. When a body is falling from a certain height from the surface of earth, then

(1) its kinetic energy decreases continuously

(2) its potential energy increases continuously

(3) its total mechanical energy remains constant at each point

(4) kinetic energy and potential energy are equal at each point

14. Three bodies having masses 5 kg, 4 kg and 2 kg is moving at the speed of 5 m/s, 4 m/s and 2 m/s, respectively along X -axis. The magnitude of velocity of centre of mass is

(1) 1.0 m/s (2) 4 m/s

(3) 0.9 m/s (4) 1.3 m/s

15. Two discs having mass ratio (1/2) and diameter ratio(2/1), then find ratio of moment of inertia.

(1) 2 : 1

(2) 1 : 1

(3) 1 : 2

(4) 2 : 3

16. If a car is moving in uniform circular motion, then what should be the value of velocity of a car, so that car will not move away from the circle?

(1) $v < \sqrt{\mu_s Rg}$ (2) $v \le \sqrt{\mu_s Rg}$

(3) $v > \sqrt{\mu_k Rg}$ (4) None of the above

17. Assertion : As we go up the surface of the earth, our weight becomes smaller than on the surface of the earth.

Reason The acceleration due to gravity decreases on going up above the surface of the earth.

(1) Both Assertion and Reason are correct and Reason is the correct explanation of Assertion.

(2) Both Assertion and Reason are correct but Reason is not the correct explanation of Assertion.

(3) Assertion is correct but Reason is incorrect

(4) Assertion is incorrect but Reason is correct.

18. Match column I and column II.

Column-I	Column-II
(A) Stoke's law	(1) Pressure energy
(B) Turbulence	(2) Hydraulic lift
(C) Bernoulli's principle	(3) Viscous drag
(D) Pascal's law	(4) Above a certain critical speed

(1) (A) → (3) ; (B) → (4) ; (C) → (1) ; (D) → (2)

(2) (A) → (1) ; (B) → (2) ; (C) → (3) ; (D) → (4)

(3) (A) → (2) ; (B) → (1) ; (C) → (2) ; (D) → (3)

(4) (A) → (3) ; (B) → (4) ; (C) → (2) ; (D) → (1)

19. A wire is stretched to double of its length. The strain is

(1) 2 (2) 1

(3) zero (4) 0.5

20. The value of coefficient of volume expansion of glycerin is 5 ×10^{-4} K^{-1}. The fractional change in the density of glycerin for a rise of 40°C in its temperature is

(1) 0.015 (2) 0.020

(3) 0.025 (4) 0.010

21. The rate of loss of heat depends on

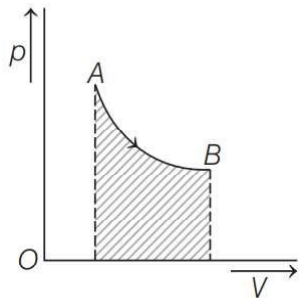
(1) The sum of temperature of the body and its surroundings

(2) The difference in temperature of the body and its surroundings

(3) The product of temperature of the body and its surroundings

(4) The ratio of temperature of the body and its surroundings

22. For the given isothermal process A $\rightarrow$ B of an ideal gas, area under the graph is 20 J, then



(1) $\Delta Q = 0$

(2) $\Delta Q = +20J$

(3) $\Delta U = -20J$

(4) None of the above

23. In collision of a molecule of an ideal gas with the wall of container,

(1) only total kinetic energy remains conserved

(2) only total momentum remains conserved

(3) total kinetic energy and total momentum remains conserved

(4) Neither total kinetic energy nor total momentum is conserved

24. The expression for displacement of an object in SHM is $x = A\cos\omega t$. The potential energy at t =T/4 is

(1) $\frac{1}{2}kA^2$

(2) $\frac{1}{8}kA^2$

(3) $\frac{1}{4}kA^2$

(4) ZERO

25. A transverse wave travels on a taut steel wire with a velocity of v when tension in it is 2.06×10^4N. When the tension is changed to T, the velocity changed to v / 2. The value of T is close to

(1) 10.2 × 10^2 N

(2) 5.15 × 10^3 N

(3) 2.50 × 10^4 N

(4) 30.5 × 10^4 N

26. Two charges 3 × 10^{-8} C and –2 × 10^{-8} C are located 15 cm apart. At what point on the line joining the two charges is the electric potential zero? Take the potential at infinity to be zero.

(1) Electric potential is zero at 5 cm and 35 cm away from the positive charge on the side of the negative charge.

(2) Electric potential is zero at 9 cm and 45 cm away from the positive charge on the side of the negative charge.

(3) Electric potential is zero at 10 cm and 45 cm away from the positive charge on the side of the negative charge.

(4) Electric potential is zero at 9 cm and 30 cm away from the positive charge on the side of the negative charge.

27. The electrostatic potential at a point with position vector r due to a point dipole of dipole moment p placed at the origin is

(1) $V(r)=\frac{1}{4\pi\varepsilon_0}\frac{p.\hat{r}}{r^3}$

(2) $V(r)=\frac{1}{4\pi\varepsilon_0}\frac{p\times\hat{r}}{r^3}$

(3) $V(r)=\frac{1}{4\pi\varepsilon_0}\frac{p.\hat{r}}{r^2}$

(4) $V(r)=\frac{1}{4\pi\varepsilon_0}\frac{p\times\hat{r}}{r^2}$

28. An electric dipole is kept in non-uniform elecric field. it experiences

(1) a force and a torque

(2) a force but not a torque

(3) a torque but not a force

(4) Neither a force nor a torque

29. A storage battery of emf 8.0 V and internal resistance 0.5 Ω is being charged by a 120 V dc supply using a series resistor of 15.5 Ω. What is the terminal voltage of the battery during charging?

(1) 11.5 V

(2) 10V

(3) 12.5V

(4) 8.0V

30. A 600pF capacitor is charged by a 200V supply. It is then disconnected from the supply and is connected to another uncharged 600 pF capacitor. How much electrostatic energy is lost in the process?

(1) 3×10^{-8} J

(2) 6×10^{-7} J

(3) 3×10^{-6} J

(4) 6×10^{-6} J

31. Consider the following statements and select the correct statement(s).

I. A capacitor is a system of two conductors separated by an insulator.

II. Capacitance C is determined purely geometrically, by the shapes, sizes and relative positions of the two conductors.

III. For a parallel plate capacitor (with vacuum between the plates), $C=\varepsilon_0\frac{A}{d}$ where A is the area of each plate and d the separation between them

(1) I only

(2) II only

(3) III only

(4) I ,II, & III

32. A battery of emf 10 V and internal resistance 3 Ω is connected to a resistor. If the current in the circuit is 0.5 A, what is the resistance of the resistor?

(1) 23Ω (2) 20Ω

(3) 17Ω (4) 3Ω

33. A negligibly small current is passed through a wire of length 15 m and uniform cross-section 6.0×10^{-7} m^2, and its resistance is measured to be 5.0 Ω. What is the resistivity of the material at the temperature of the experiment?

(1) $4\times10^{-7}\,\Omega m$

(2) $2\times10^{-7}\,\Omega m$

(3) $6\times10^{-7}\,\Omega m$

(4) $8\times10^{-7}\,\Omega m$

34. If the electron drift speed is so small, and the electron's charge is small, how can we still obtain large amounts of current in a conductor?

(1) Because Electric current does not depends upon Drift velocity

(2) Because the electron number density is small

(3) Because the electron number density is enormous

(4) None of these

35. What is the radius of the path of an electron (mass 9×10^{-31} kg and charge 1.6×10^{-19} C) moving at a speed of 3×10^{7} m/s in a magnetic field of 6×10^{-4} T perpendicular to it?

(1) 40 cm

(2) 18 cm

(3) 14 cm

(4) 28 cm

Part - 1 (SECTION-B)

Attempt any 10 Questions out of these 15 Questions

36. Consider a tightly wound 100 turn coil of radius 10 cm, carrying a current of 1 A. What is the magnitude of the magnetic field at the centre of the coil?

(1) 2×10^{-4} T

(2) 3.14×10^{-4} T

(3) 6.28×10^{-4} T

(4) 10.22×10^{-4} T

37. A short bar magnet placed with its axis at 30°with a uniform external magnetic field of 0.25 T experiences a torque of magnitude equal to 4.5×10^{-2} J. What is the magnitude of magnetic moment of the magnet?

(1) 0.36 J/T

(2) 0.18 J/T

(3) 0.54 J/T

(4) 0.72 J/T

38. Which of the following about magnetic field lines is true?

(1) The magnetic field lines of a magnet (or a solenoid) form continuous closed loops.

(2) The tangent to the field line at a given point represents the direction of the net magnetic field B at that point.

(3) The larger the number of field lines crossing per unit area, the stronger is the magnitude of the magnetic field B.

(4) All of these

39. A square loop of side 10 cm and resistance 0.5 Ω is placed vertically in the east-west plane. A uniform magnetic field of 0.10 T is set up across the plane in the north-east direction. The magnetic field is decreased to zero in 0.70 s at a steady rate. Determine the magnitudes of induced emf and current during this time-interval.

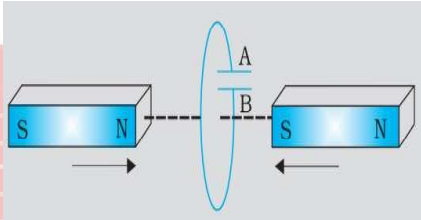
(1)2.0 mV,1mA

(2) 1.0 mV,2mA

(3) 3.0 mV,2mA

(4) 1.0 mV,3mA

40. Predict the polarity of the capacitor in the situation described by



(1) The polarity of plate 'A' will be positive with respect to plate 'B' in the capacitor.

(2) The polarity of plate 'A' will be Zero with respect to plate 'B' in the capacitor.

(3) The polarity of plate 'A' will be negative with respect to plate 'B' in the capacitor.

(4) None of these

41. A pure inductor of 25.0 mH is connected to a source of 220 V. Find rms current in the circuit if the frequency of the source is 50 Hz.

(1) 7.85 A

(2) 25.5 A

(3) 28 A

(4) 20 A

42. The amplitude of the magnetic field part of a harmonic electromagnetic wave in vacuum is B_0= 510 nT. What is the amplitude of the electric field part of the wave?

(1) 170 N/C

(2) $170 \times 10^{-17}\ N/C$

(3) $153 \times 10^{+17}\ N/C$

(4) 153 N/C

43. **At what angle in degrees should a ray of light be incident on the face of a prism of refracting angle 60° so that it just suffers total internal reflection at the other face? The refractive index of the material of the prism is 1.524. Given** $\sin^{-1}(0.66) = 41^0$, $\sin 19^0 = 0.3256$, $\sin^{-1}(0.4962) = 30^0$

(1) 60°

(2) 30°

(3) 45^0

(4) 37^0

44. **Double-convex lenses are to be manufactured from a glass of refractive index 1.55, with both faces of the same radius of curvature. What is the radius of curvature required if the focal length is to be 20cm?**

(1) 20 cm

(2) 40 cm

(3) 60 cm

(4) 22 cm

45. **In a Young's double-slit experiment, the slits are separated by 0.28 mm and the screen is placed 1.4 m away. The distance between the central bright fringe and the fourth bright fringe is measured to be 1.2 cm. Determine the wavelength of light used in the experiment.**

(1) 700 nm

(2) 600 nm

(3) 500 nm

(4) 400 nm

46. **Light of frequency 7.21 × 10^{14} Hz is incident on a metal surface. Electrons with a maximum speed of 6.0 × 10^5 m/s are ejected from the surface. What is the threshold frequency for photoemission of electrons?**

(1) $4.73\times10^{14}\ Hz$

(2) $34\times10^{14}\ Hz$

(3) $8\times10^{14}\ Hz$

(4) $6.73\times10^{14}\ Hz$

47. **A hydrogen atom initially in the ground level absorbs a photon, which excites it to the n = 4 level. Determine the wavelength**

(1) 87 nm

(2) 70 nm

(3) 97 nm

(4) 40 nm

48. **Given the mass of iron nucleus as 55.85u and A=56, find the nuclear density?**

(1) $4.39\times10^{17}\ kgm^{-3}$

(2) $2.29\times10^{17}\ kgm^{-3}$

(3) $4.39\times10^{17}\ g\,cm^{-3}$

(4) $2.29\times10^{17}\ gcm^{-3}$

49. **Suppose a pure Si crystal has 5 × 10^{28} atoms m^{-3}. It is doped by 1 ppm concentration of pentavalent As. Calculate the number of holes. Given that n_i=1.5 × 10^{16} m^{-3}.**

(1) 7.5 × 10^9 m^{-3}

(2) 8 × 10^9 m^{-3}

(3) 4.5 × 10^9 m^{-3}

(4) 2.5 × 10^9 m^{-3}

50. **In an n-type silicon, which of the following statement is true:**

(1) Electrons are majority carriers and trivalent atoms are the dopants.

(2) Electrons are minority carriers and pentavalent atoms are the dopants.

(3) Holes are minority carriers and pentavalent atoms are the dopants.

(4) Holes are majority carriers and trivalent atoms are the dopants

TOPIC : FULL SYLLABUS

Atomic Masses : H=1, He=4, C=12, N=14, O=16, Na=23, Mg=24, P=31, S=32, Cl=35.5, K=39, Ca=40, Fe=56, Cu=63.5, Br=80, Ag=108, I=127, Ba=137, Au=197, Pb=207

SECTION-A

Attempt All 35 Questions

51. Glucose does not react with which of the following reagents?

(1) NH_2OH

(2) Br_2/water

(3) $NaHSO_3$

(4) Acetic anhydride

52. Pair of compounds which cannot be distinguished by I_2/NaOH is

(1) Benzaldehyde and acetaldehyde

(2) Acetone and Ethanol

(3) Benzophenone and Acetophenone

(4) Propan-2-ol and Propan-1-ol

53. If the equilibrium constant for

$$N_{2(g)} + O_{2(g)} \rightleftharpoons 2NO_{(g)} \text{ is K,}$$

the equilibrium constent

$$\frac{1}{2}N_{2(g)} + \frac{1}{2}O_{2(g)} \rightleftharpoons NO_{(g)}$$

will be :

(1) 1/2 K

(2) K

(3) K^2

(4) $K^{1/2}$

54. Which of the following is the correct IUPAC name:

(1) 3-Ethyl-4,4-dimethylheptane

(2) 4,4-dimethyl-3-ethylheptane

(3) 5-ethyl-4,4-dimethylheptane

(4) 4,4-Bis(methyl)-3-ethylheptane

55. pH of 0.2 M sodium phenoxide solution will be (pKa of phenol = 9.95)

(1) 8.2

(2) 9.3

(3) 10.4

(4) 11.6

56. Which among the following is a Lewis base?

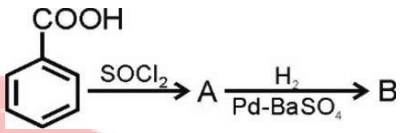
(1) B_2H_6

(2) $AlCl_3$

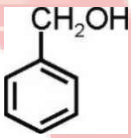
(3) H_2O

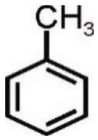
(4) $FeCl_3$

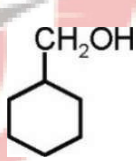
57. Consider the following reaction

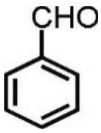


Product B is

(1) 

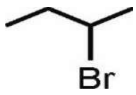
(2) 

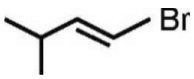
(3) 

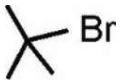
(4) 

58. The alkyl halide which react fastest by S_N1 mechanism is :

(1) 

(2) 

(3) 

(4) 

59. In the Haber process of synthesis of ammonia 28 g of N_2 is mixed with 10 g of hydrogen molecules. Maximum number of moles of ammonia produced in the reaction is

(1) 0.5

(2) 1.5

(3) 3.5

(4) 2

60. **Molality of urea in an aqueous solution is 5. Mass percentage of urea in the solution is**

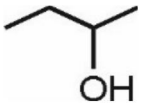
(1) 12.2%

(2) 23%

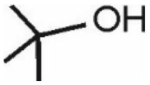
(3) 32.2%

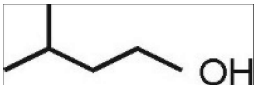
(4) 18%

61. **Which alcohol on reaction with Cu at 573 K gives ketone as major product?**

(1) 

(2) 

(3) 

(4) 

62. **One among the following pairs of compounds is not isomers :**

(1) $(CH_3)_2CH-O-C_2H_5$ and $CH_3(CH_2)_2-O-C_2H_5$

(2) $CH_3CH_2CO_2H$ and $CH_3CO_2CH_3$

(3) CH_3COCH_3 and $CH_3CH_2CH_2OH$

(4) $CH_3CH_2NO_2$ and NH_2CH_2COOH

63. **The IUPAC name of the compound $[CuCl_2(CH_3NH_2)_2]$ is :**

(1) Dichloro bis (dimethyl amine) copper (II)

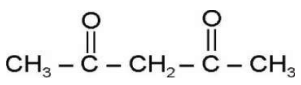
(2) Dichloro bis (methyl amine) copper (II)

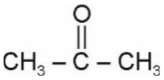
(3) Dimethyl amine copper (II) chloride

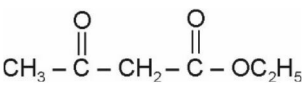
(4) Bis (dimethyl amine) copper (II) chloride

64. **The compound which has maximum enol content is**

(1) CH_3CHO

(2) 

(3) 

(4) 

65. **Aromatic species among the following is**

(1) 

(2) 

(3) 

(4) 

66. **Consider the following reaction**

$$Ph-CH=CH_2 \xrightarrow{H_3O^+} A(Major) \xrightarrow[(ii)\ H_3O^+]{(i)\ I_2/NaOH} B + C$$

Product B and C are

(1) CHI_3 and Ph-COOH

(2) $PhCH_2OH$ and CHI_3

(3) Ph–CHO and CHI_3

(4) $PhCH_2I$ and HCOOH

67. **Oxidation state of phosphorous in hypophosphorous acid is**

(1) +3

(2) +1

(3) +4

(4) +5

68. **Strongest acidic nature among the following is of**

(1) H_2Se

(2) H_2O

(3) H_2S

(4) H_2Te

69. **The optically active co-ordination complex ion among the following is :**

(1) Trans $[Co(en)_2Cl_2]^+$

(2) Cis $[Co(en)(NH_3)_2Cl_2]^+$

(3) $[Co(NH_3)_6]^{3+}$

(4) $[Fe(CN)_6]^{3-}$

70. **Conversion of CH_4 to CH_3Cl is an example of which of the following reaction :**

(1) Electrophilic substitution

(2) Free radical addition

(3) Nucleophilic substitutiton

(4) Free radical substitution

71. For the reaction, $H_2(g) + Br_2(g) \rightarrow 2HBr(g)$, the reaction rate is

$rate = k[H_2][Br_2]^{1/2}$

Which one of the following statements is true for this reaction :

(1) The reaction is of second order

(2) The molecularity of the reaction is 3/2

(3) The unit of k is sec^{-1}

(4) The molecularity of the reaction is two

72. The metal ion which is colourless in aqueous medium is

(1) Sc^{3+}

(2) Cr^{3+}

(3) Fe^{3+}

(4) Co^{3+}

73. Which coordination complex is diamagnetic in nature?

(1) $[Mn(Cl)_6]^{3-}$

(2) $[Fe(CN)_6]^{3-}$

(3) $[Co(C_2O_4)_3]^{3-}$

(4) $[CoF_6]^{3-}$

74. Strongest field ligand among the following is

(1) I^-

(2) $\bar{O}H$

(3) $\bar{C}N$

(4) NH_3

75. Moles of $5C_2O_4^{2-}$ ion oxidised by 2 moles of permanganate ion in acidic medium is

(1) 10

(2) 7

(3) 5

(4) 3

76. Approximate percentage of lanthanoids in mischmetall is

(1) 75% (2) 25%

(3) 50% (4) 95%

77. Correct order of electron affinity of O, S, Se and Te is

(1) O > S > Se > Te

(2) S > Se > Te > O

(3) Te > Se > S > O

(4) S > O > Se > Te

78. 18 g of glucose is dissolved in 250 g of water. The freezing point of the solution will be (K_f of water = 1.86 K kg mol^{-1})

(1) –1.8°C

(2) –0.6°C

(3) –1.2°C

(4) –0.74°C

79. The reaction of $CH_3CH = CH$–C$_6$H$_4$–OH with HBr gives:

(1) $CH_3CHBrCH_2$–C$_6$H$_4$–OH

(2) CH_3CH_2CHBr–C$_6$H$_4$–OH

(3) $CH_3CHBrCH_2$–C$_6$H$_4$–Br

(4) CH_3CH_2CHBr–C$_6$H$_4$–Br

80. If conductivity of 0.01 M KCl solution is 0.0015 S cm^{-1} then the molar conductivity of the solution will be

(1) 15 S cm^2 mol^{-1}

(2) 150 S cm^2 mol^{-1}

(3) 1.5 × 103 S cm^2 mol^{-1}

(4) 1.5 S cm^2 mol^{-1}

81. Which metal will not liberate hydrogen when reacted with dilute H_2SO_4

(1) Zn (2) Al

(3) Ca (4) Au

82. If Rate constant of a chemical reaction is 4.606×10^{-3} s^{-1} then the time required for the completion of 90% of the reaction is :

(1) 200 s

(2) 300 s

(3) 400 s

(4) 500 s

83. **Incorrect statement among the following is**

(1) A catalyst does not change the equilibrium constant of a reaction

(2) A catalyst alters Gibbs energy, ΔG of a reaction

(3) Order of a reaction is an experimental quantity

(4) For complex reaction molecularity has no meaning

84. $RCH_2CH_2OH \xrightarrow{?} RCH_2CH_2CH_2NH_2$

Identify the sequence of the reagents in order ro carry out the above conversion :

(1) (i) PBr_3 (ii) KCN (iii) $LiAlH_4$

(2) (i) PBr_3 (ii) KCN (iii) H_2

(3) (i) HCN (ii) PBr_3 (iii) $LiAlH_4$

(4) (i) HCN (ii) $LiAlH_4$

85. **The reaction,**

$$2C_6H_5CHO + \text{conc. NaOH} \xrightarrow{\Delta} C_6H_5CH_2OH + C_6H_5COONa$$

is called :

(1) Benzoin condensation

(2) Claisen condensation

(3) Perkin reaction

(4) Cannizzaro's reaction

SECTION-B

This section will have 15 questions. Candidate can choose to attempt any 10 questions out of these 15 questions. In case if candidate attempts more than 10 questions, first 10 attempted questions will be considered for marking.

86. **Which of the following diseases is not correctly matched with the vitamins mentioned with it :**

(1) Vitamin B_2 – Cracking of lips

(2) Vitamin C – Bone deformities

(3) Vitamin D – Osteomalacia

(4) Vitamin A – Night blindness

87. **Electron affinity can be defined as :**

(1) Energy needed for the change

$M^-(g) \rightarrow M(g) + 1e^-$

(2) Energy change in the reaction

$M(g) + e^- \rightarrow M^-(g)$

(3) The capacity of the atom to attract the electron pair through which it is bonded to another atom

(4) Energy required for the change

$M(s) \rightarrow M(g)$

88. **The correct geometry and hybridisation for XeF_4 are :**

(1) Octahedral , sp^3d^2

(2) Trigonal bipyramidal, sp^3d

(3) Planar triangular, sp^3d^3

(4) Square planar, sp^3d^2

89. **2 mole of an ideal gas undergo isothermal and reversible expansion from 2 litre to 20 liltre at 127°C the work done by the gas is**

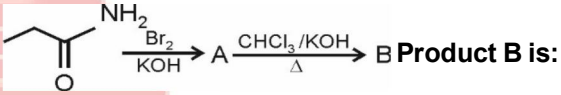
(1) –25.2 kJ

(2) –15.3 kJ

(3) –7.5 kJ

(4) –35.1 kJ

90. **Consider the following reaction sequence**



Product B is:

(1) CH_3CH_2CN

(2) $CH_3CH_2CH_2CN$

(3) CH_3CH_2NC

(4) $CH_3CH_2CH_2NC$

91. **Which among the following species is pyramidal in shape?**

(1) BCl_3 (2) ClF_3

(3) PCl_3 (4) SF_4

92. **If a particle of mass 500 mg is moving with a velocity of 100 m/s then the de-Broglie wavelength of the particle will be ($h = 6.625 \times 10^{-34}$ Js)**

(1) 1.325×10^{-35} m

(2) 1.325×10^{-32} m

(3) 1.32×10^{-34} m

(4) 1.32×10^{-31} m

93. **Which among the following elements shows diagonal relationship with beryllium?**

(1) Na

(2) Li

(3) Al

(4) Si

94. Maximum number of electrons present in d subshell is

(1) 2

(2) 6

(3) 10

(4) 5

95. The species which does not exist is

(1) H_2^+

(2) Be_2

(3) O_2^-

(4) N_2^+

96. Which of the following relations is incorrect for solutions?

(1) $3N\ Al_2(SO_4)_3 = 0.5M\ Al_2(SO_4)_3$

(2) $3M\ H_2SO_4 = 6N\ H_2SO_4$

(3) $1M\ H_3PO_4 = 1/3N\ H_3PO_4$

(4) $1M\ Al_2(SO_4)_3 = 6N\ Al_2(SO_4)_3$

97. The first (Δ_iH_1) and second (Δ_iH_2) ionization enthalpies (kJ/mol) of element are given the correct match is :

	Element		Δ_iH_1	Δ_iH_2
(i)	A reactive metal	(p)	2372	5251
(ii)	A reactive non metal	(q)	520	7300
(iii)	A noble gas	(r)	900	1760
(iv)	A metal which give stable binary halide	(s)	1680	3380

(1) i-p, ii-q, iii-r, iv-s

(2) i-q, ii-s, iii-p, iv-r

(3) i-p, ii-r, iii-s, iv-q

(4) i-q, ii-p, iii-s, iv-r

98. The given reaction is an example of

$C_2H_5Br + KCN(aq.) \rightarrow C_2H_5CN + KBr$

(1) Elimination

(2) Nucleophilic substitution

(3) Electrophilic substitution

(4) Redox change

99. Match the column

Column-I	Column-II
Type of amine	Reaction
(a) 1^0 Amine	(P) gives yellow oily liquid with HNO_2
(b) 2^0 Amine	(Q) gives isocyanide test
(c) 3^0 Amine	(R) not reacts with Hinsberg reagent

Correct match is -

(1) (a) → (P), (b) → (Q), (c) → (R)

(2) (a) → (R), (b) → (P), (c) → (Q)

(3) (a) → (Q), (b) → (P), (c) → (R)

(4) (a) → (Q), (b) → (R), (c) → (P)

100. Match the column

Column I (Molecule)	Column II (Bond order)
(i) NO	(a) 1.5
(ii) CO	(b) 2.0
(iii) O_2^-	(c) 2.5
(iv) O_2	(d) 3.0

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

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

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

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

TOPIC : FULL SYLLABUS

PART-1 (SECTION-A)

Attempt All 35 Questions

101. Match the following correctly

(a)	**Chromosomes are moved to spindle equator**	**i.**	**Anaphase**
(b)	**Centromere splits**	**ii.**	**Metaphase**
(c)	**Pairing between homologous chromosomes**	**iii.**	**Pachytene**
(d)	**Crossing over between homologous chromosomes**	**iv.**	**Zygotene**

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

102. Given below are two statements

Statement I:

In human breathing involves two stages : Inspiration and expiration

Statement II :

External Intercostal muscles involved in breathing.

Choose the correct answer from the option given below:

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

103. Given below are two statements

Statement I:

The incomplete double circulation present in human

Statement II :

The incomplete double circulation present in frog.

Choose the correct answer from the option given below:

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

104. Match List-I with List-II :

	List-I		**List- II**
(a)	Adenine	(i)	Pigment
(b)	Anthocyanin	(ii)	Polysaccharide
(c)	Chitin	(iii)	Alkaloid
(d)	Codeine	(iv)	Purine

Choose the correct answer from the options given below:

	(a)	**(b)**	**(c)**	**(d)**
(1)	(iv)	(i)	(ii)	(iii)
(2)	(iv)	(iii)	(ii)	(i)
(3)	(iii)	(i)	(iv)	(il)
(4)	(i)	(iv)	(iii)	(ii)

105. Given below are two statements

Statement I:

Ammonia is the least toxic form and requires large amount of water for its elimination.

Statement II :

Many reptiles, terrrestrial insects and many bony fishes are ammonotelic.

Choose the correct answer from the option given below:

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

106. Given below are two statements

Statement I:

Movement of our limbs, Jaws Tongue etc require muscular movement.

Statement II :

Locomotion requires no coordinated activity of muscular, skeletal and neural system.

Choose the correct answer from the option given below:

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

107. Given below are two statements

Statement I:

Skeletal muscles are not associated with skeletal components of the body.

Statement II :

Visceral muscles are located in the innerwalls of hollow visceral organs of the body like the alimentary canal, reproductive tract etc.

Choose the correct answer from the option given below:

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

108. Match List-I with List-II :

	List-I		**List- II**
(a)	Sacred groves	(i)	Alien species
(b)	Zoological park	(ii)	Release of large quantity of oxygen
(c)	Nile perch	(iii)	Ex-situ conservation
(d)	Amazon forest	(iv)	Khasi Hills in Meghalaya

Choose the correct answer from the options given below:

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

109. Given below are two statements : one is labelled as Assertion (A) and the other is labelled as Reason (R).

Assertion (A):

In five kingdom classification *Chlorella* and *Chlamydomonas* are placed in kingdom protista

Reason (R) :

Chlorella and Chlamydomonas are multicellular eukaryotes.

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

(1) Both (A) and (R) are correct but (R) is not the correct explanation of (A)

(2) (A) is correct but (R) is not correct

(3) (A) is not correct but (R) is correct

(4) Both (A) and (R) are correct and (R) is the correct explanation of (A)

110. Which is a incorrect match :

(1) Glandular epithelium – Goblet cells

(2) Exocrine gland – With duct

(3) Endocrine gland – With duct

(4) Compound epithelium – Skin

111. Which is the correct statement regarding cockroach:

(a) Hepatic caeca are 6-8 in number and help in digestion

(b) Gizzard is also called as gonapophysis

(c) Hindgut is narrower than midgut

(d) Spiracles help in respiration

(1) a & b

(2) b & c

(3) a, d

(4) c, d

112. Given below are two statements : one is labelled as Assertion (A) and the other is labelled as Reason (R).

Assertion (A):

Members of chondrichthyes swim constantly to avoid sinking.

Reason (R) :

In members of chondrichthyes air bladder present.

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

(1) Both (A) and (R) are correct but (R) is not the correct explanation of (A)

(2) (A) is correct but (R) is not correct

(3) (A) is not correct but (R) is correct

(4) Both (A) and (R) are correct and (R) is the correct explanation of (A)

113. Which is a correct matching set :

Column I	Column II
(a) Digestive system with one opening	(i) Sinuses
(b) Digestive system with two opening	(ii) Blood vessels
(c) Closed vascular system	(iii) Incomplete
(d) Open vascular system	(iv) Complete

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

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

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

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

114. Match the following

a. Polyadelphous	i. Brinjal
b. Epipetalous	ii. Citrus
c. Epiphyllous	iii. Lily
d. Perigynous	iv. Peach

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

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

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

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

115. Which of the following pair is correctly matched

(1) Squamous epithelium – Ducts of glands

(2) Cuboidal epithelium – Blood vessels and air sacs of lungs.

(3) Ciliated epithelium – Bronchioles and fallopian tubes

(4) Both 1 and 2

116. Out of the four components of xylem which components is/are living :

(1) Companion cell

(2) Xylem fiber

(3) Xylem parenchyma

(4) All

117. The hypodermis in monocot stem are made up of:

(1) Collenchyma (2) Sclerenchyma

(3) Parenchyma (4) Cuticle

118. Which is the incorrect statement about mutualism

(a) One species is harmed and other is unaffected

(b) Both species are benefitted

(c) One species in benefitted and other is neither benefitted nor harmed

(d) One species is harmed and other is partially benefitted.

(1) a,b

(2) c,d

(3) a,b,c

(4) a,c,d

119. Match List-I with List-II :

List-I	List- II
(a) *Volvox*	(i) Moss
(b) *Cycas*	(ii) Pteridophyte
(c) *Selaginella*	(iii) Algae
(d) *Sphagnum*	(iv) Gymnosperm

Choose the correct answer from the options given below:

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

120. In a population, unrestricted reproductive capacity is called as :

(1) Biotic potential
(2) Immigration
(3) Carrying capacity
(4) Both (2) and (3)

121. Match List-I with List-II :

List-I	List- II
(a) Imbricate	(i) *Calotropis*
(b) Valvate	(ii) *Cassia*
(c) Vexillary	(iii) *Cotton*
(d) Twisted	(iv) *Bean*

Choose the correct answer from the options given below:

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

122. Given below are two statements :

Statement I:

The ethical argument for conserving biodiversity relates to what we owe to millions of plant, animal and microbe species with whom we share this planet.

Statement II :

Philosphically or spiritually, we need to realise that every species has an Intrinsic value, even if it may not be of current or any economic value to us.

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

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

123. Which type of ecological pyramid would be obtained with the following data –

Secondary consumer – 2500 Jule
Primary consumer – 4500 Jule
Primary producer – 5000 Jule
Tertiary consumer – 1000 Jule

(1) Upright pyramid of energy
(2) Inverted pyramid of energy
(3) Upright pyramid of number
(4) This pyramid is not possible.

124. A Individual has certain attributes. This attributes are :

a. Death
b. Birth
c. Death rate
d. Birth rate
e. Sex ratio

(1) a, b
(2) c, d, e
(3) Only e
(4) Only c, d

125. According to the IUCN List (2004) document of the extinction of _____ plants species has been:

(1) 784
(2) 270
(3) 87
(4) 54

126. The Evil Quartet term are related with :

(1) Over exploitation
(2) Coextinction
(3) Habitat loss and fragmentation
(4) All

127. The pectoral girdle consists of :

(1) Two scapula and one clavicle
(2) Two scapula and two clavicle
(3) One scapula and two clavicle
(4) One scapula and one clavicle

128. Which one of the following is correct match :

(1) Male human – Tubectomy
(2) Female human – Vasectomy
(3) ZIFT, GIFT – ART
(4) All of these

129. How many matching are incorrect:

Column I	Column II
(a) Non-medicated IUDs	**– Progestasert**
(b) Copper releasing IUDs	**– Lippes loop**
(c) Hormone releasing IUDs	**– Multiload 375**
(d) IUDs	**–Emergency contraceptives**

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

130. The exaggerated response of the immune system to certain antigens present in the environment is called

(1) Immunity (2) Passive immunity
(3) Innate immunity (4) Allergy

131. Satellite DNA is important because it:

(1) Does not code for proteins and is same in all members of the population
(2) Codes for enzymes needed for DNA replication
(3) Code for proteins needed in cell cycle
(4) Shows high degree of polymorphism in population and also the same degree of polymorphism in an individual, which is heritable from parents to children

132. Which is the correct statement for prokaryotic genetic material :

(a) Both DNA and histones present
(b) Either DNA or histone
(c) Both DNA and histone absent
(d) DNA but no histones

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

133. Some amino acids are coded by more than one codon hence the code is :

(1) Unambiguous (2) Degenerate
(3) Universal (4) Non-overlapping

134. In E. coli, during lactose metabolism, in absence of inducer, repressor protein binds to :

(1) Regulator gene (2) Operator
(3) Structural gene (4) Promoter

135. Which of the following is not a nucleotide

(1) Cytidylate
(2) Deoxyguanosine
(3) Deoxythymidine
(4) Adenosine

PART-1 (SECTION-B)

This section will have 15 questions. Candidate can choose to attempt any 10 question out of these 15 question. In case if candiate attempts more than 10 question, first 10 attempted question will be considered for marking.

136. In the given figure identify A and B and also identify the process :

(1) A-RNA polymerase, B-Rho factor & process is Initiation
(2) A-RNA polymerase, B-Rho factor & process is Termination
(3) A-RNA polymerase, B-Sigma factor & process is Initiation
(4) A-RNA polymerase, B-Sigma factor & process is Termination

137. Assertion (A) : Bt toxin protein does kill the Bacillus bacteria.

Reasons (R) : In Bacillus bacteria Bt toxin protein exist as inactive protoxins.

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

138. Which one of the following is the correct match:

(1) PCR – Invitro DNA synthesis
(2) Selectable marker – Antibiotics Resistance gene
(3) Bacteria – *Thermus aquaticus*
(4) All of these

139. How many matching are incorrect :

(a) Molecular glue – DNA Ligase
(b) Molecular glue – DNA polymerase
(c) Molecular scissors – DNA polymerase
(d) Molecular glue – RNA polymerase

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

140. How many matching are incorrect :

(a) Natural Genetic Engineer – E.coli
(b) Natural Genetic Engineer – Salmonella typhi
(c) Plasmid – Extra chromosomal DNA
(d) Acidic pH – Required for activation of Bt Toxin

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

141. How many matching are incorrect :

(a) ELi Lilly – British company
(b) ELi Lilly – Formation of Human insulin
(c) Pro-Insulin – C - Peptide
(d) Pro-Insulin – B - Peptide

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

142. Statement -I- Animals that have had their DNA manipulated to posses and express an extra (foreign) gene are known as transgenic animals.

Statement-II-Presence of pathogen (bacteria, viruses etc) is normally suspected only when the pathogen has produced a disease symptom.

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

143. Given below are two statements :

Statement I:

In Downstram processing strict quality control testing for each product is also required.

Statement II :

The downstream processing and Quality control testing vary from product to product.

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

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

144. Given below are two statements :

Statement I:

Restriction endonucleases are used in genetic engineering to Form recombinant molecules of DNA, which are composed of DNA from different sources/genomes

Statement II :

When cut by the same restriction enzyme, the resultant DNA fragments have the same Kind of sticky-ends and these can be joined together (end to end) using DNA ligases.

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

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

145. Which stage of meiosis can last for months or years in the oocytes of some vertebrates?

(1) Leptotene
(2) Pachytene
(3) Diplotene
(4) Diakinesis

146. In C_4 plants

(1) Photorespiration takes place in mesophyll cells
(2) Photorespiration takes place in bundle sheath cells
(3) Photorespiration takes place due to maintainance of high CO_2 concentration at enzyme active site
(4) Primary CO_2 accepted by PEP

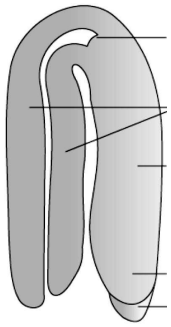
147. Which of the following statement is true for photosynthesis

(1) Several factors interact and simultaneously effect photosynthesis
(2) Usually one factor is the major cause and limit the rate
(3) At any point the rate will be determined by the factor available at suboptimal levels
(4) All of these are true

148. Which of the following statement is not true about bundle sheath cells of maize:

(1) They have numerous chloroplast
(2) Intercellular spaces absent
(3) Their walls are not impervious to gaseous exchange
(4) Their walls are thick

149. Select the incorrect option for the given diagram



(1) False fruit
(2) A typical monocot embryo
(3) L.S. of an embryo of Cycas
(4) All of these

150. Which one of the following is incorrect match :

(1) Unisexual flowers – Emasculation
(2) Unisexual flowers – Bagging
(3) Bisexual flowers – Bagging
(4) Bisexual flowers – Emasculation

PART-2 (SECTION-A)

Attempt All 35 Questions

151. Which one of the following is not a important goal of HGP :

(1) Identify all the approximately 20,000-25,000 genes in human DNA
(2) Determine the sequences of the 5 billion chemical base pairs that make up human DNA
(3) Store this information in databases
(4) Improve tools for data analysis

152. Which of the following statements are true

(a) smoking increases carbon monoxide in blood
(b) smoking decreases carbon monoxide in blood
(c) smoking increases concentration of haembound oxygen in blood
(d) Smoking causes oxygen deficiency in body.

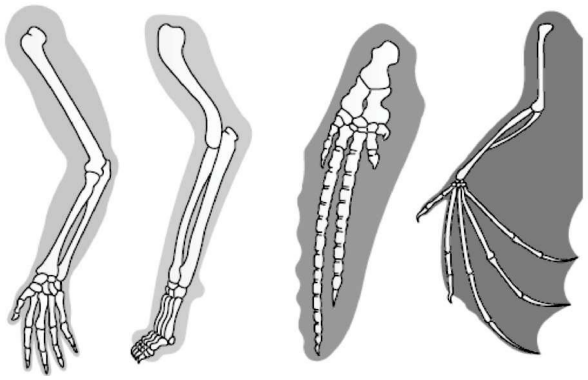
(1) a,c,d (2) b,c,d
(3) c and d (4) a and d

153. In which of the following animal true placenta is absent:

(a) Koala
(b) Sugar glider
(c) Numbat
(d) Lemur
(e) Flying squirrel

(1) Only a, b, c (2) Only a, b
(3) a, b, e (4) a, c, d

154. Select the correct option for the given diagram



(1) Examples of homologous organ
(2) Examples of Analogous organ
(3) Examples of Hind limb bones
(4) Industrial melanism

155. Which one of the following hormones is not involved in sugar metabolism?

(1) Insulin (2) Glucagon
(3) Cortisone (4) Aldosterone

156. How many statements are incorrect according to given type of cross:

Aa Bb Cc DD X Aa Bb Cc DD

a. It is trihybrid cross
b. It is tetrahybrid cross
c. 8 Types of gametes are formed
d. 27 types of genotypes are formed

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

157. For Turner's syndrome correct option :

i. Aneuploidy
ii. Monosomy
iii. Chromosome 45 with XO
iv. It is due to non proper disjunction of chromosome

(1) Only i and ii
(2) Only ii and iii
(3) i, ii, iii and iv
(4) only i and iv

158. Out of a population of 1600 individuals in F_2 generation of a cross between yellow round and green wrinkled seeds of pea plants, what would be the number of green wrinkled seeds:

(1) 100
(2) 200
(3) 50
(4) 25

159. In F_2 generation, a phenotypic ratio 1 :1 :1 :1 exihibit:

(1) Back cross
(2) Monohybrid test cross
(3) Dihybrid test cross
(4) Trihybrid test cross

160. The amino acid phenylalanine is converted into tyrosine with help of enzyme :

(1) Tyrosinase
(2) Protease
(3) Tyrosine hydroxylase
(4) Phenyl alanine hydroxylase

161. In each pregnancy probability of a male child is:

(1) 50 %
(2) 25 %
(3) 75 %
(4) 100 %

162. Assertion (A): Calcium ions play a very important role in blood clotting

Reason (R): Calcium ions help in conversion of prothrombrin to thrombin

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

163. Assertion (A) : The human heart is myogenic type

Reason (R): In human heart intercalated disc are present

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

164. Lack of menstruation due to

(1) Poor health
(2) Stress
(3) Pregnancy
(4) All of these

165. Which one of the following is correct match for Human

(1) mammary lobes - 10 - 12
(2) menstrual cycle - 20 - 24 days
(3) menstrual flow - 3 - 5 days
(4) ovulation - 10^{Th} day

166. In tissue pO_2 and pCO_2 are respectively:

(1) 45 mmHg and 40 mmHg
(2) 40 mmHg and 45 mmHg
(3) 40 mmHg and 40 mmHg
(4) 45 mmHg and 45 mmHg

167. Which one of the following is incorrect match :

(1) Ammonotelic – Aquatic insect
(2) Ureotelic – Frog
(3) Uricotelic – Cockroach
(4) Ureotelic – Birds

168. How many matching are correct

a. Relaxin - Ovary
b. Estrogens - Placenta
c. Estrogens - Graafian Follicle
d. Follicular phase - secretory phase

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

169. How do parasympathetic neural signals affect the working of the heart :

(1) Reduce both heart rate and cardiac output
(2) Heart rate is increases without affecting the cardiac output
(3) Both heart rate and cardiac output increases
(4) heart rate decreases but cardiac output increases.

170. 8-16 cell stage of embryo is called

(1) blastocyst
(2) morula
(3) trophoblast
(4) none of these

171. Which of the following is not a paired structure in human male:

(1) Urethra
(2) Vas deferens
(3) Epididymis
(4) Ejaculatory duct

172. Recombination is completed in which phase of meiosis:

(1) Leptotene
(2) Zygotene
(3) Pachytene
(4) Diakinesis

173. What will be the number of the chromosomes in human in S-phase if the number of chromosomes in G_2-phase is 46 :

(1) 44 (2) 23
(3) 46 (4) 92

174. In oocytes of some vertebrates which stage can last for months or years

(1) Diplotene (2) Pachytene
(3) Diakinesis (4) Leptotene

175. Match the following and choose the correct combination from the option given below

Column – I (Organic compound)	Column –II (Example)
(a) Fatty acid	(i) Glutamic acid
(b) Phospholipid	(ii) Tryptophan
(c) Aromatic amino acid	(iii) Lecithin
(d) Acidic amino acid	(iv) Palmitic acid

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

176. Which cell organelles principally perform the function of packaging materials

(1) Lysosome
(2) Vacuole
(3) Golgi apparatus
(4) Plastid

177. Given below are two statements : one is labelled as Assertion (A) and the other is labelled as Reason (R).

Assertion (A):

All enzyme are proteins.

Reason (R) :

There are some nucleic acids that behave like enzyme.

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

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

178. Which of the following cells do not have nucleus at maturity :

(1) Mature erythrocytes
(2) Sieve tube cells
(3) Both 1 and 2
(4) Lysosome

179. The coconut water and the edible part of coconut are equivalent to :

(1) Mesocarp
(2) Embryo
(3) Endosperm
(4) Endocarp

180. Generally after fertilisation the sepals, petals and stamens of the flower :

(1) Wither and fall off
(2) Grow and become enlarged
(3) No clear idea about this
(4) Colour become changed

181. Given below are two statements : one is labelled as Assertion (A) and the other is labelled as Reason (R).

Assertion (A):

Xylem and phloem are a type of complex tissue

Reason (R) :

Xylem and phloem are made of more than one type of cells and these work together as a unit.

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

(1) Both (A) and (R) are correct but (R) is not the correct explanation of (A)

(2) (A) is correct but (R) is not correct

(3) (A) is not correct but (R) is correct

(4) Both (A) and (R) are correct and (R) is the correct explanation of (A)

182. In which of the following groups of plants seed formation not takes place:

a. Pteridophytes

b. Gymnosperm

c. Angiosperm

d. Bryophytes

(1) a, b, c

(2) b, c

(3) All

(4) a, d

183. Which one of the following statements are corrects:

a. Male and female strobili are present on the same tree of *Pinus*

b. Male and female strobili are separately present on the different tree of *Cycas*

c. In *Cycas* megasporophylls are associate to form compact structure female cone

d. *Marchantia* and *Pinus* are monoecious plant

(1) a, b, c

(2) a, b

(3) b, c

(4) only a

184. Match the following

a. Lycopsida	**i) *Adiantum***
b. Pteropsida	**ii) *Selaginella***
c. Sphenopsida	**iii) *Psilotum***
d. Psilopsida	**iv) *Equisetum***

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

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

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

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

185. Which of the following statements are true

a. Dinoflagellates are mostly marine and photosynthetic

b. They appear yellow, green , brown , blue or red depending on the main pigments present in their cells

c. The cell wall has stiff cellulose plates on their outer surface

d. Most of them have two flagella , one lies longitudinally and the other transversely in the furrow between the wall plates

(1) all of these

(2) Only a,b,d

(3) Only b,c,d

(4) Only a,c,d

PART-2 (SECTION-B)

This section will have 15 questions. Candidate can choose to attempt any 10 question out of these 15 question. In case if candiate attempts more than 10 question, first 10 attempted question will be considered for marking.

186. *Eucalyptus, Sphagnum, Ginkgo, Sequoia, Polysiphonia, Selaginella, Pteris.*

How many members have vascular tissue :

(1) 6

(2) 4

(3) 5

(4) 3

187. Given below are two statements , one is labelled as Assertion (A) and the other is labelled as Reason (R).

Assertion (A):

Prop roots are a type of adventitious root.

Reason (R) :

Prop root are formed by the direct elongation of radicle

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

(1) Both (A) and (R) are correct but (R) is not the correct explanation of (A)

(2) (A) is correct but (R) is not correct

(3) (A) is not correct but (R) is correct

(4) Both (A) and (R) are correct and (R) is the correct explanation of (A)

188. Match List-I with List-II :

	List-I	List- II
(a)	Gene gun	(i) Replacement of a faulty gene by a normal healthy gene
(b)	Gene therapy	(ii) Used for transfer of gene
(c)	Gene cloning	(iii) Total DNA in the haploid cells of an organism
(d)	Genome	(iv) To obtain indentical copies of a particular DNA molecule

Choose the correct answer from the options given below:

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

189. Match List-I with List-II :

	List-I	List- II
(a)	Bacteriophage ϕ ×174	(i) 48502 base pairs
(b)	Bacteriophage lambda	(ii) 5386 nucleotides
(c)	Escherichia coli	(iii) 3.3×10^9 base pairs
(d)	Haploid content of human DNA	(iv) 4.6×10^6 base pairs of

Choose the correct answer from the options given below:

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

190. The 5-C compound formed during TCA cycle is :

(1) α – ketoglutaric acid
(2) Oxalosuccinic acid
(3) Succinic acid
(4) Fumaric acid

191. The chromosomal theory of inheritance was proposed by :

(1) Thomas Morgan
(2) Sutton and Boveri
(3) Gregor Mendel
(4) Robert Brown

192. Given below are two statements :

Statement I :

The green revolution succeeded in tripling the food supply.

Statement II :

'GMO' stands for genetically modified organisms.

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

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

193. Flocs are related with :

(1) Sewage treatment
(2) Aerobic microbes
(3) Masses of bacteria with fungal filaments
(4) All

194. Which of the following alcoholic beverages is/are produced by distillation of the fermented broth:

(1) Brandy and beer (2) Wine and rum
(3) Whisky and brandy (4) Wine and beer

195. When a flower divided into two equal vertical halves only in one particular vertical plane:

(1) Actinomorphic
(2) Zygomorphic
(3) Heteromorphic
(4) Cyclic

196. Paper made from plant pulp and cotton fibre are :

(1) Chitin
(2) Starch
(3) Glycogen
(4) Cellulose

197. Serum is

(1) plasma with clotting factors
(2) plasma without clotting factors
(3) plasma without globulin
(4) plasma without albumin

198. Leucocytes are

(1) white in colour
(2) nucleated
(3) without haemoglobin
(4) all of these

199. The descending limb of loop of Henle is permeable to :

(1) Na_2CO_3
(2) H_2O
(3) KCl
(4) Both 1 and 3

200. Golgi body is associated with :

(1) Secretion of different substances
(2) Formation of Glycoprotein and glycolipid
(3) Packaging and storage of material
(4) All of the above

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