# Resonance®
Educating for better tomorrow

**DIVISION:** PRE-MEDICAL

**Academic Session: 2023-24**

# PERIODIC ASSESSMENT TEST (PAT)

## PAPER BOOKLET

### PERIODIC ASSESSMENT TEST (PAT) DETAILS

| | |
|---|---|
| TARGET EXAMINATION | NEET (UG) |
| TARGET YEAR | 2024 |
| PAPER NO. | ONE |
| PAPER CODE | 1 |
| CLASS | XIII |
| COURSE NAME | SAARANSH |
| COURSE CODE | MER |
| PHASE CODE(S) | MER |
| BATCH CODE(S) | MER |

### PERIODIC ASSESSMENT TEST (PAT) SCHEDULE

| | |
|---|---|
| TEST PATTERN | NEET |
| TEST TYPE | PART TEST |
| TEST CODE & SEQUENCE | PT-2 |
| MAX. MARKS | 720 |
| TEST DURATION | 3 Hrs. 20 Min. |
| TEST DATE | 31th March 2024 |
| TEST DAY | Sunday |
| TEST TIME | Start: 02:30 PM End : 5:50 PM |
| TOTAL NO. OF PAGES IN PAPER BOOKLET | 28 |

### PERIODIC ASSESSMENT TEST (PAT) PAPER BOOKLET INOFRMATION

| | TEST PAPER DETAILS | | | | MARKING SCHEME | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Qs. No. | Section No. | Subject Sequence | Type of Qs.* | No. of Qs. | Full Marks Per Qs. | If No Option Chosen | (−)ve Marks | Total Marks | Subject Total |
| 1 to 35 | 1 | Physics | MCQ | 35 | 4 | 0 | −1 | 140 | 180 |
| 36 to 50 | 2 | | MCQ | 15** | 4 | 0 | −1 | 40 | |
| 51 to 85 | 1 | Chemistry | MCQ | 35 | 4 | 0 | −1 | 140 | 180 |
| 86 to 100 | 2 | | MCQ | 15** | 4 | 0 | −1 | 40 | |
| 101 to 135 | 1 | Biology (Botany) | MCQ | 35 | 4 | 0 | −1 | 140 | 180 |
| 136 to 150 | 2 | | MCQ | 15** | 4 | 0 | −1 | 40 | |
| 151 to 185 | 1 | Biology (Zoology) | MCQ | 35 | 4 | 0 | −1 | 140 | 180 |
| 186 to 200 | 2 | | MCQ | 15** | 4 | 0 | −1 | 40 | |
| TOTAL Qs. | | | | 200 | MAXIMUM MARKS | | | | 720 |

* Please turn overleaf to understand the meaning of coding for types of Questions.
**you have attempt any 10 Questions. If a student attempts more than 10 questions, then only first 10 questions which he has attempted will be checked.

Please read all the information & instructions related to Test Paper & OMR Sheet before attempting the test paper.

NAME OF THE CANDIDATE: _____ Roll No.: ☐☐☐☐☐☐☐☐

I have read all the instructions and shall abide by them.

_____
(Signature of the Candidate)

I have verified the identity, name and roll number of the candidate.

_____
(Signature of the Invigilator)

# INSTRUCTIONS FOR OPTICAL RESPONSE SHEET (ORS)

## A. GENERAL INSTRUCTIONS

1. Darken the appropriate bubbles on the original by applying sufficient pressure.

2. The original is machine-gradable and will be collected by the invigilator at the end of the examination.

3. Do not tamper with or mutilate the ORS.

4. Write your name, roll number and the name of the examination centre and sign with pen in the space provided for this purpose on the original. **Do not write any of these details anywhere else**. Darken the appropriate bubble under each digit of your roll number.

## B. DARKENING THE BUBBLES ON THE ORS :

5. Use a **BLACK BALL POINT** to darken the bubbles in the upper sheet.

6. Darken the bubble **COMPLETELY.**

7. Darken the bubble **ONLY** if you are sure of the answer.

8. The correct way of darkening a bubble is as shown here : ●

9. There is **NO** way to erase or "un-darkened bubble.

10. The marking scheme given at the beginning of each section gives details of how darkened and **not darkened** bubbles are evaluated.

## A. सामान्य निर्देश

1. ऊपरी मूल पृष्ठ के अनुरूप बुलबुलों (BUBBLES) को पर्याप्त दबाव डालकर काला करें।

2. मूल पृष्ठ मशीन–जाँच है तथा यह परीक्षा के समापन पर निरीक्षक के द्वारा एकत्र कर लिया जायेगा।

3. ओ.आर.एस. को हेर–फेर/विकृति न करें।

4. अपना नाम, रोल नं. और परीक्षा केंद्र का नाम मूल पृष्ठ में दिए गए खानों में कलम से भरें और अपने हस्ताक्षर करें। इनमें से कोई भी जानकारी कहीं और न लिखें। रोल नम्बर के हर अंक के नीचे अनुरूप बुलबुले को काला करें।

## B. ORS पर बुलबुलों को काला करने की विधि :

5. ऊपरी मूल पृष्ठ के बुलबुलों को काले बॉल पाइन्ट कलम से काला करें।

6. बुलबुले को पूर्ण रूप से काला करें।

7. बुलबुलों को तभी काला करें जब आपका उत्तर निश्चित हो।

8. बुलबुलों को काला करने का उपयुक्त तरीका यहाँ दर्शाया गया है : ●

9. काले किये हुये बुलबुले को मिटाने का कोई तरीका नहीं है।

10. हर खण्ड के प्रारम्भ में दी गयी अंकन योजना में काले किये गये तथा काले न किये गये बुलबुलों को मूल्यांकित करने का तरीका दिया गया है।

## TYPE WISE CODES FOR QUESTIONS

| SR# | QUESTION TYPE | CODE |
|---|---|---|
| 1 | MULTIPLE CHOICE QUESTION (ONLY ONE CORRECT OPTION) | MCQ |
| 6 | COLUMN MATCH QUESTION | CMQ |
| 9 | ASSERTION & REASON / STATEMENT TYPE QUESTION | ARQ |

# PART-A
## Physics

1. The initial velocity of a body moving along a straight line is 7 m/s. It has a uniform acceleration of $4\,m/s^2$. The distance covered by the body in the $5^{th}$ second of its motion is
   (1) 25 m　　　　　(2) 35 m
   (3) 50 m　　　　　(4) 85 m

2. The moment of inertia of a metre scale of mass 0.6 kg about an axis perpendicular to the scale and located at the 20 cm position on the scale in kg $m^2$ is (Breadth of the scale is negligible)
   (1) 0.074　　　　　(2) 0.104
   (3) 0.148　　　　　(4) 0.208

3. A force $\vec{F} = 4\hat{i} - 5\hat{j} + 3\hat{k}$ is acting a point $\vec{r}_1 = \hat{i} + 2\hat{j} + 3\hat{k}$. The torque acting about a point $\vec{r}_2 = 3\hat{i} - 2\hat{j} - 3\hat{k}$ is
   (1) Zero
   (2) $42\hat{i} - 30\hat{j} + 6\hat{k}$
   (3) $42\hat{i} + 30\hat{j} + 6\hat{k}$
   (4) $42\hat{i} + 30\hat{j} - 6\hat{k}$

4. If the magnitude of sum of two vectors is equal to the magnitude of difference of the two vectors, the angle between these vectors is :
   (1) 180°　　　　　(2) 0°
   (3) 90°　　　　　(4) 45°

5. At what height from the surface of earth the gravitational potential and the value of g are $-5.4 \times 10^7$ J $kg^{-2}$ and 6.0 $ms^{-2}$ respectively ? Take the radius of earth as 6400 km.
   (1) 2000 km　　　　　(2) 2600 km
   (3) 1600 km　　　　　(4) 1400 km

6. Referring to the figure below, the effective resistance of the network is
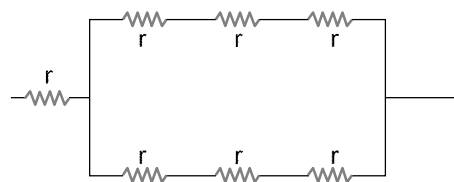


   (1) 2 r　　　　　(2) 4 r
   (3) 10 r　　　　　(4) 5r / 2

7. Radius of gyration of a body depends on
   (1) Mass and size of body
   (2) Mass distribution and axis of rotation
   (3) Size of body
   (4) Mass of body

8. Two identical charged spheres suspended from a common point by two mass less strings of lengths $\ell$, are initially at a distance d(d << $\ell$) a part because of their mutual repulsion. The charges begin to leak from both the spheres at a constant rate. As a result, the spheres approach each other with a velocity v. Then v varies as a function of the distance x between the spheres, as :
   (1) v $\propto$ $x^{-1}$　　　　　(2) v $\propto$ $x^{1/2}$
   (3) v $\propto$ x　　　　　(4) v $\propto$ $x^{-1/2}$

**Space for Rough Work**

**9.** The radius (r), length ($\ell$) and resistance (R) of a metal wire was measured in the laboratory as

r = (0.35 ± 0.05) cm

R = (100 ± 10) ohm

$\ell$ = (15 ± 0.2) cm

The percentage error in resistivity of the material of the wire is :

(1) 25.6%  (2) 39.9%

(3) 37.3 %  (4) 35.6 %

**10.** A body starts to fall freely under gravity. The distances covered by it in first, second and third second are in ratio

(1) 1 : 3 : 5  (2) 1 : 2 : 3

(3) 1 : 4 : 9  (4) 1 : 5 : 6

**11.** From a disc of radius R and mass M, a circular hole of diameter R, whose rim passes through the centre is cut. What is the moment of inertia of the remaining part of the disc about at perpendicular axis, passing through the centre ?

(1) $9MR^2/32$  (2) $15MR^2/32$

(3) $13MR^2/32$  (4) $11MR^2/32$

**12.** The ratio of escape velocity at earth ($v_e$) to the escape velocity at a planet ($v_p$) whose radius and mean density are twice as that of earth is :

(1) $1 : \sqrt{2}$  (2) 1 : 2

(3) $1 : 2\sqrt{2}$  (4) 1 : 4

**13.** As per given figure to complete the circular loop what should be the radius if initial height is 5 m



(1) 4 m  (2) 3 m

(3) 2.5 m  (4) 2 m
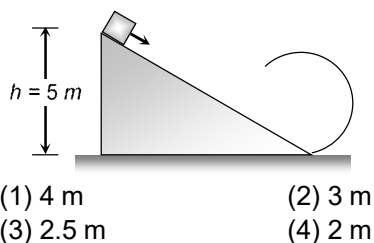
**14.** A weightless thread can support tension upto 30 N. A stone of mass 0.5 kg is tied to it and is revolved in a circular path of radius 2 m in a vertical plane. If $g = 10\,m/s^2$, then the maximum angular velocity of the stone will be

(1) 5 rad/s  (2) $\sqrt{30}$ rad/s

(3) $\sqrt{60}$ rad/s  (4) 10 rad/s

**15.** A thin and circular disc of mass M and radius R is rotating in a horizontal plane about an axis passing through its centre and perpendicular to its plane with an angular velocity $\omega$. If another disc of same dimensions but of mass M/4 is placed gently on the first disc co-axially, then the new angular velocity of the system is

(1) $\dfrac{5}{4}\omega$  (2) $\dfrac{2}{3}\omega$

(3) $\dfrac{4}{5}\omega$  (4) $\dfrac{3}{2}\omega$

**16.** When an $\alpha$-particle of mass 'm' moving with velocity 'v' bombards on a heavy nucleus of charge 'Ze' its distance of closet approach from the nucleus depends on m as :

(1) m  (2) $\dfrac{1}{m}$

(3) $\dfrac{1}{\sqrt{m}}$  (4) $\dfrac{1}{m^2}$

**17.** A cell of constant e.m.f. first connected to a resistance $R_1$ and then connected to a resistance $R_2$. If power delivered in both cases is then the internal resistance of the cell is

(1) $\sqrt{R_1 R_2}$  (2) $\sqrt{\dfrac{R_1}{R_2}}$

(3) $\dfrac{R_1 - R_2}{2}$  (4) $\dfrac{R_1 + R_2}{2}$

**Space for Rough Work**

**18.** A particle of mass 10 g moves along a circle of radius 6.4 cm with a constant tangential acceleration. What is the magnitude of this acceleration if the kinetic energy of the particle becomes equal to $8 \times 10^{-4}$ J by the end of the second revolution after the beginning of the motion ?
(1) 0.2 m/s$^2$  (2) 0.1 m/s$^2$
(3) 0.15 m/s$^2$  (4) 0.18 m/s$^2$

**19.** The drift velocity does not depend upon
(1) Cross-section of the wire
(2) Length of the wire
(3) Number of free electrons
(4) Magnitude of the current

**20.** A copper wire has a square cross-section, 2.0 mm on a side. It carries a current of 8 A and the density of free electrons is $8 \times 10^{28}$ m$^{-3}$. The drift speed of electrons is equal to
(1) $0.156 \times 10^{-3}$ m.s$^{-1}$
(2) $0.156 \times 10^{-2}$ m.s$^{-1}$
(3) $3.12 \times 10^{-3}$ m.s$^{-1}$
(4) $3.12 \times 10^{-2}$ m.s$^{-1}$

**21.** The magnitude and direction of the current in the circuit shown will be
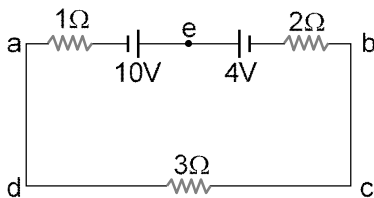


(1) $\frac{7}{3}$ A from a to b through e

(2) $\frac{7}{3}$ A from b to a through e

(3) 1A from b to a through e
(4) 1A from a to b through e

**22.** Three rings each of mass M and radius R are arranged as shown in the figure. The moment of inertia of the system about YY' will be
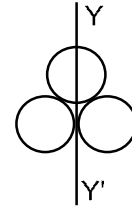


(1) 3 MR$^2$  (2) $\frac{3}{2}$MR$^2$

(3) 5 MR$^2$  (4) $\frac{7}{2}$MR$^2$

**23.** A bomb of mass 9kg explodes into 2 pieces of mass 3kg and 6kg. The velocity of mass 3kg is 1.6 m/s, the K.E. of mass 6kg is
(1) 3.84 J  (2) 9.6 J
(3) 1.92 J  (4) 2.92 J

**24.** What is the minimum velocity with which a body of mass m must enter a vertical loop of radius R so that it can complete the loop ?
(1) $\sqrt{5gR}$  (2) $\sqrt{gR}$
(3) $\sqrt{2gR}$  (4) $\sqrt{3gR}$

**25.** The electrostatic potential due to an electric dipole at a distance 'r' varies as :
(1) r  (2) $\frac{1}{r^2}$

(3) $\frac{1}{r}$  (4) $\frac{1}{r^3}$

**Space for Rough Work**

**26.** curve shown, four points J, K, L, M are marked on the curve. Column II gives different type of equilibrium for the particle at different positions. Column I gives certain positions on the force position graphs. Match the positions in Column-I with the corresponding nature of equilibrium at these positions.
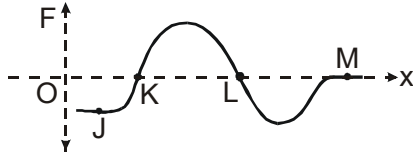


| Column-I | | Column-II | |
|---|---|---|---|
| (A) | Point J is position of | (p) | Neutral equilibrium |
| (B) | Point K is position of | (q) | Unstable equilibrium |
| (C) | Point L is position of | (r) | Stable equilibrium |
| (D) | Point M is position of | (s) | No equilibrium |

(1) A→ (r), B→ (s), C→ (p), D→ (q)
(2) A→ (r), B→ (s), C→ (p), D→ (q)
(3) A →(s) B →(q) C → (r) D → (p)
(4) A→ (s), B→ (p), C→ (r), D→ (q)

**27.** Two identical solid copper spheres of radius R placed in contact with each other. The gravitational attracton between them is proportional to
(1) $R^2$    (2) $R^{-2}$
(3) $R^4$    (4) $R^{-4}$

**28.** A sphere of mass m, moving with velocity V, enters a hanging bag of sand and stops. If the mass of the bag is M and it is raised by height h, then the velocity of the sphere was
(1) $\dfrac{M+m}{m}\sqrt{2gh}$    (2) $\dfrac{M}{m}\sqrt{2gh}$
(3) $\dfrac{m}{M+m}\sqrt{2gh}$    (4) $\dfrac{m}{M}\sqrt{2gh}$

**29.** A light planet is revolving around a massive star in a circular orbit of radius R with a period of revolution T. If the force of attraction between planet and star is proportional to $R^{-3/2}$ then choose the correct option:
(1) $T^2 \propto R^{7/2}$    (2) $T^2 \propto R^3$
(3) $T^2 \propto R^{5/2}$    (4) $T^2 \propto R^{3/2}$

**30.** Train A is moving along two parallel rail tracks towards north with speed 72 km/h and train B is moving towards south with speed 108 km/h. Velocity of train B with respect to A and velocity of ground with respect to B are (in ms$^{-1}$) :
(1) –50 and –30    (2) –50 and 30
(3) –30 and 50    (4) 50 and –30

**31.** Radius of earth is around 6000 km. The weight of body at height of 6000 km from earth surface becomes
(1) Half    (2) One-fourth
(3) One third    (4) No change

**32.** If the velocity of a particle is $\upsilon = At + Bt^2$, where A and B are constants, then the distance travelled by it between 1s and 2s is
(1) $\dfrac{A}{2}+\dfrac{B}{3}$    (2) $\dfrac{3}{2}A+B$
(3) $3A + 7B$    (4) $\dfrac{3}{2}A+\dfrac{7}{3}B$

**33.** The current in a conductor is expressed as $I = 3t^2 + 4t^3$, where I is in Ampere and t is in second. The amount of electric charge that flows through a section of the conductor during t = 1 sec to t = 2 sec is _____C.
(1) 21 C    (2) 22 C
(3) 23 C    (4) 24 C

**Space for Rough Work**

**34.** **Assertion** : Mass and energy are not conserved separately, but are conserved as a single entity called mass-energy.

**Reason** : Mass and energy conservation can be obtained by Einstein equation for energy.

Read the **Assertion** and **Reason** carefully to mark the correct option out of the options given below:

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

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

(3) **Assertion** is true but **Reason** is false.

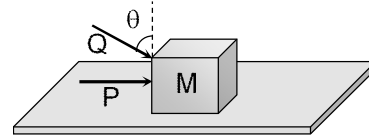(4) **Assertion** is false but **Reason** is true.

**35.** The gravitational potential energy of a body of mass 'm' at the earth's surface $-mgR_e$. Its gravitational potential energy at a height $R_e$ from the earth's surface will be (Here $R_e$ is the radius of the earth)

(1) $-2mgR_e$         (2) $2mgR_e$

(3) $\dfrac{1}{2}mgR_e$         (4) $-\dfrac{1}{2}mgR_e$

---

**SECTION – B : (Maximum Marks : 40)**

❖ This section contains **FIFTEEN (15)** questions. **You have attempt any 10 Questions. If a student attempts more than 10 questions, then only first 10 questions which he has attempted will be checked.**

❖ Each question has **FOUR** options (1), (2), (3) and (4) **ONLY ONE** of these four option is correct

❖ Marking scheme :

➢ Full Marks : **+4** If ONLY the correct option is chosen.

➢ Zero Marks : **0** If none of the options is chosen (i.e. the question is unanswered).

➢ Negative Marks : **–1** In all other cases

**36.** A block of mass m lying on a rough horizontal plane is acted upon by a horizontal force P and another force Q inclined at an angle $\theta$ to the vertical. The block will remain in equilibrium, if the coefficient of friction between it and the surface is



(1) $\dfrac{(P+Q\sin\theta)}{(mg+Q\cos\theta)}$    (2) $\dfrac{(P\cos\theta+Q)}{(mg-Q\sin\theta)}$

(3) $\dfrac{(P+Q\cos\theta)}{(mg+Q\sin\theta)}$    (4) $\dfrac{(P\sin\theta-Q)}{(mg-Q\cos\theta)}$

**37.** **Assertion** : A planet moves faster, when it is closer to the sun in its orbit and vice versa.

**Reason** : Orbital velocity in orbital of planet is constant.

Read the **Assertion** and **Reason** carefully to mark the correct option out of the options given below:

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

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

(3) **Assertion** is true but **Reason** is false.

(4) **Assertion** is false but **Reason** is true.

**38.** A body of mass 1 kg begins to move under the action of a time dependent force $\vec{F} = (2t\hat{i} + 3t^2\hat{j})N$, when $\hat{i}$ and $\hat{j}$ are unit vectors along x and y axis. What power will be developed by the force at the time t ?

(1) $(2t^3 + 3t^5)W$    (2) $(2t^2 + 3t^3)W$

(3) $(2t^2 + 4t^4)W$    (4) $(2t^3 + 3t^4)W$

**Space for Rough Work**

**39.** The charge flowing through a resistance R varies with time t as $Q = at - bt^2$, where a and b are positive constants. The total heat produced in R is :

(1) $\dfrac{a^3 R}{b}$  (2) $\dfrac{a^3 R}{6b}$

(3) $\dfrac{a^3 R}{3b}$  (4) $\dfrac{a^3 R}{2b}$

**40.** A particle moving in a circle of radius R with uniform speed takes time T to complete one revolution. If this particle is projected with the same sped at an angle $\theta$ to the horizontal, the maximum height attained by it is equal to 4R. The angle of projection $\theta$ is then given by :

(1) $\sin^{-1} \left[ \dfrac{2gT^2}{\pi^2 R} \right]^{\frac{1}{2}}$

(2) $\sin^{-1} \left[ \dfrac{\pi^2 R}{2gT^2} \right]^{\frac{1}{2}}$

(3) $\cos^{-1} \left[ \dfrac{2gT^2}{\pi^2 R} \right]^{\frac{1}{2}}$

(4) $\cos^{-1} \left[ \dfrac{\pi^2 R}{2gT^2} \right]^{\frac{1}{2}}$

**41.** The escape velocity for a rocket from earth is 11.2 km/sec. Its value on a planet where acceleration due to gravity is double that on the earth and diameter of the planet is twice that of earth will be in km/sec

(1) 11.2  (2) 5.6
(3) 22.4  (4) 53.6

**42.** How many times is escape velocity $(V_e)$, of orbital velocity $(V_0)$ for a satellite revolving near earth
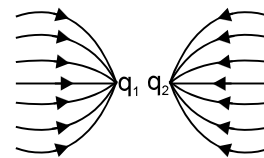
(1) $\sqrt{2}$ times  (2) 2 times

(3) 3 times  (4) 4 times

**43.** ABC is an equilateral triangle. Charges $+q$ are placed at each corner. The electric intensity at O will be
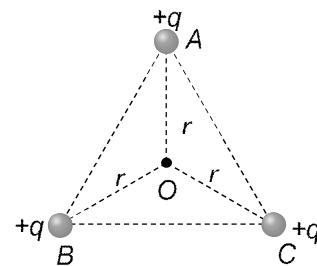


(1) $\dfrac{1}{4\pi\varepsilon_0} \dfrac{q}{r^2}$  (2) $\dfrac{1}{4\pi\varepsilon_0} \dfrac{q}{r}$

(3) Zero  (4) $\dfrac{1}{4\pi\varepsilon_0} \dfrac{3q}{r^2}$

**44.** The given figure gives electric lines of force due to two charges $q_1$ and $q_2$. What are the signs of the two charges?



(1) Both are negative
(2) Both are positive
(3) $q_1$ is positive but $q_2$ is negative
(4) $q_1$ is negative but $q_2$ is positive

**Space for Rough Work**

**45.** Three positive charges of equal value q are placed at the vertices of an equilateral triangle. The resulting lines of force should be sketched as in :

(1)    (2)

(3)    (4)
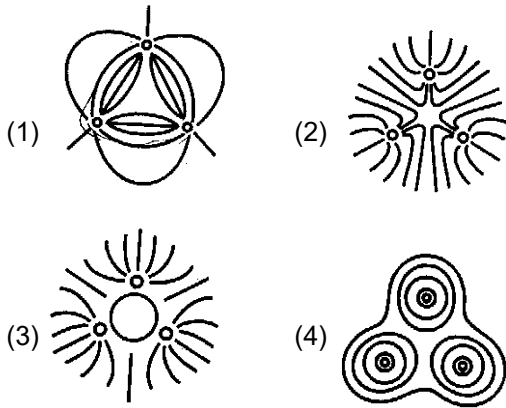
**46.** Statement 1 : For a charged particle moving from point P to point Q, the net work done by an electrostatic field on the particle is independent of the path connecting point P to point Q.

Statement 2 : The net work done by a conservative force on an object moving along a closed loop is zero.

(1) Statement-1 is true, Statement-2 is true; Statement-2 is the correct explanation of Statement-1.

(2) Statement-1 is true, Statement-2 is true; Statement-2 is not the correct explanation of Statement-1.

(3) Statement-1 is false, Statement-2 is true.
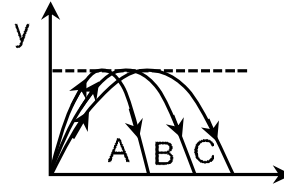
(4) Statement-1 is true, Statement-2 is false.

**47.** The value of electric potential at any point due to any electric dipole is

(1) $k.\dfrac{\vec{p}\times\vec{r}}{r^2}$  (2) $k.\dfrac{\vec{p}\times\vec{r}}{r^3}$

(3) $k.\dfrac{\vec{p}\cdot\vec{r}}{r^2}$  (4) $k.\dfrac{\vec{p}\cdot\vec{r}}{r^3}$

**48.** If speed V, time T and force F are chosen as fundamental quantities, then the dimensional formula for mass is

(1) $F\,T\,V^{-1}$  (2) $F\,T\,V^{-2}$

(3) $FTV$  (4) $F\,T^{-1}V$

**49.** The trajectories of the motion of three particles are shown the figure.

| | Column-I | | Column-II |
|---|---|---|---|
| (a) | Time of flight is | (i) | A |
| (b) | Vertical component of the velocity is greatest for | (ii) | B |
| (c) | Horizontal component of the velocity is greatest for | (iii) | C |
| (d) | Launch speed is least for | (iv) | same for all |

    (a)  (b)  (c)  (d)

(1) (iv) (iv) (iii) (i)

(2) (iv) (iii) (i) (ii)

(3) (i) (iii) (iv) (iv)

(4) (ii) (i) (iii) (i)

**50.** Equal charges q are placed at the vertices A and B of an equilateral triangle ABC of side a. The magnitude of electric field at the point C is

(1) $\dfrac{q}{4\pi\varepsilon_0 a^2}$  (2) $\dfrac{\sqrt{2}\,q}{4\pi\varepsilon_0 a^2}$

(3) $\dfrac{\sqrt{3}\,q}{4\pi\varepsilon_0 a^2}$  (4) $\dfrac{q}{2\pi\varepsilon_0 a^2}$

**Space for Rough Work**

# PART – B

**Atomic masses :** [H = 1, D = 2, Li = 7, C = 12, N = 14, O = 16, F = 19, Na = 23, Mg = 24, Al = 27, Si = 28, P = 31, S = 32, Cl = 35.5, K = 39, Ca = 40, Cr = 52, Mn = 55, Fe = 56, Cu = 63.5, Zn = 65, As = 75, Br = 80, Ag = 108, I = 127, Ba = 137, Hg = 200, Pb = 207]

## SECTION – A : (Maximum Marks : 140)

❖ This section contains **THIRTY FIVE (35)** questions.

❖ Each question has **FOUR** options (1), (2), (3) and (4) **ONLY ONE** of these four option is correct

➢ Marking scheme :

➢ Full Marks : **+4** If ONLY the correct option is chosen.

➢ Zero Marks : **0** If none of the options is chosen (i.e. the question is unanswered).

➢ Negative Marks : **–1** In all other cases

**51.** **Statement I :** According to Kohlrausch law the molar conductivity of any electrolyte at infinite dilution is sum of molar conductivities of its ions.

**Statement II :** At infinite dilution molar conductivity of an electrolyte is least.

(1) Statement I and II both are correct.

(2) Statement I incorrect and II is correct.

(3) Statement I and II both are incorrect.

(4) Statement I is correct and II is incorrect.

**52.** At 25ºC, the vapour pressure of methyl alcohol is 96.0 torr. What is the mole fraction of $CH_3OH$ in a solution in which the (partial) vapour pressure of $CH_3OH$ is 23.0 torr at 25ºC

(1) 0.96          (2) 0.48

(3) 0.24          (4) 0.12

**53.** Positive deviation from raoults law is shown by which of the following mixtures :

(1) Benzene and toluene

(2) $CHCl_3$ & acetone

(3) ethanol & water

(4) HCl & water

**54.** The charge on 1 gram of $Mg^{+2}$ ions is : (e = electronic charge)

(1) $\frac{1}{24} N_A e$ coulomb     (2) $\frac{1}{2} N_A e$ coulomb

(3) $\frac{1}{12} N_A e$ coulomb     (4) $2 N_A e$ coulomb

**55.** The orbital angular momentum of an electron in 2p orbital is :

(1) $\frac{h}{2\pi}$          (2) $\frac{h}{\sqrt{2}\pi}$

(3) $\frac{2h}{\pi}$          (4) None of these

**56.** The values of x and y in the following redox reaction,

$xCl_2 + 6OH^- \longrightarrow ClO_3^- + yCl^- + 3H_2O$ are.

(1) x = 2, y = 4      (2) x = 5, y = 3

(3) x = 3, y = 5      (4) x = 4, y = 2

**Space for Rough Work**

**57.** Which of the following sets of quantum numbers can be correct for an electron in 4f-orbital :

(1) $n = 4$, $\ell = 3$, $m = -2$, $s = 0$

(2) $n = 4$, $\ell = 3$, $m = +4$, $s = -\dfrac{1}{2}$

(3) $n = 4$, $\ell = 3$, $m = +1$, $s = +\dfrac{1}{2}$

(4) $n = 4$, $\ell = 2$, $m = -1$, $s = +\dfrac{1}{2}$

**58.** Number of oxygen atoms in 684 gm $C_{12}H_{22}O_{11}$

(1) 11 $N_A$          (2) 44 $N_A$

(3) 22 $N_A$          (4) 5 $N_A$

**59.** What is the number of proton in 32 gm of $SO_2$ ?

(1) $200 \times 10^{23}$      (2) $96.35 \times 10^{23}$

(3) $48.02 \times 10^{23}$      (4) $6.022 \times 10^{23}$

**60.** The difference between $\Delta H$ and $\Delta E$ on a molar basis for the combustion of Methane gas at T K (kelvin) would be :

(1) zero           (2) $-$ RT

(3) -2RT          (4) -3RT

**61.** The energy of hydrogen atom in its ground state is $-13.6$ eV. Then the energy of the $e^-$ in $n = 5$ orbit is:

(1) $-0.54$ eV      (2) $-5.40$ eV

(3) $-0.85$ eV      (4) $-2.72$ eV

**62.** Consider the reaction at 300 K

$H_2$ (g) + $Cl_2$ (g) $\longrightarrow$ 2HCl (g) ;

$\Delta H^0 = -185$ kJ

If 2 mole of $H_2$ completely react with 2 mole of $Cl_2$ to form HCl. What is $\Delta U^0$ for this reaction?

(1) 0          (2) $-$ 185 kJ

(3) 370 kJ      (4) $-$ 370 kJ

**63.** The pH when $10^{-2}$ M $CH_3COOH$ solution is? ($pK_a$ ($CH_3COOH$) = 4.7) :

(1) 2.35        (2) 3.35

(3) 5.35        (4) 7

**64.** electronic Which configuration of neutral atoms will have the highest first ionisation energy ?

(1) $1s^2\ 2s^2\ 2p^4$      (2) $1s^2\ 2s^2\ 2p^3$

(3) $1s^2\ 2s^2\ 2p^2$      (4) $1s^2\ 2s^2\ 2p^1$

**65.** The correct order of dipole moment is :

(1) $CH_4 < NF_3 < NH_3 < H_2O$

(2) $NF_3 < CH_4 < NH_3 < H_2O$

(3) $NH_3 < NF_3 < CH_4 < H_2O$

(4) $H_2O < NH_3 < NF_3 < CH_4$

**66.** What is the pH of the solution at half neutralization in the titration of 0.1 M $CH_3COOH$ and 0.1 M KOH :

($K_a = 1.8 \times 10^{-5}$)

(1) 4.75        (2) 1

(3) 13          (4) Zero

**Space for Rough Work**

**67.** Calculate frequency of light having wavelength 500 nm is

(1) $6 \times 10^{14}$ Hz      (2) $5 \times 10^{10}$ Hz

(3) $2 \times 10^{20}$ Hz      (4) $7 \times 10^{10}$ Hz

**68.** The oxidation number of sulphur in $H_2S_2O_7$ is :

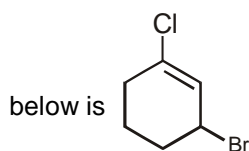(1) + 2      (2) + 6

(3) + 4      (4) + 8

**69.** The ion which is not tetrahedral in shape is

(1) $BF_4^-$      (2) $NH_4^+$

(3) $XeO_4$      (4) $ICl_4^-$

**70.** Among the following, the **correct** order of acidic nature is :

(1) $HClO_4 < HClO_2 < HClO < HClO_3$

(2) $HClO_3 < HClO_4 < HClO_2 < HClO$

(3) $HClO < HClO_2 < HClO_3 < HClO_4$

(4) $HClO_2 < HClO < HClO_3 < HClO_4$

**71.** The IUPAC name of the compound shown below is



(1) 2 - Bromo-6-chlorocyclohex-1-ene

(2) 6-Bromo-2-chlorocyclohexene

(3) 3-Bromo-1-chlorocyclohex-1-ene

(4) 1-Bromo-3-chlorocyclohexene

**72.** Which will undergo reaction with ammonical $AgNO_3$

(1)
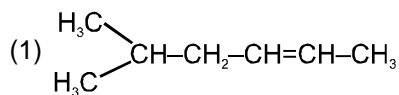


(2) $CH_3-CH=CH-C \equiv CH$

(3) $CH_3-CH_2-CH=CH-CH_2-CH_3$

(4) $CH_2=CH-CH_2-CH_3$

**73.**
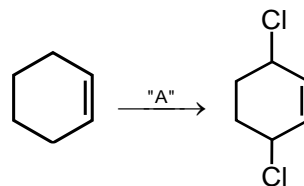


Identify the reagent(s) 'A' and condition(s) for the reaction

(1) A = HCl ; Anhydrous $AlCl_3$

(2) A = $Cl_2$ ; dark, Anhydrous $AlCl_3$

(3) A = HCl, $ZnCl_2$

(4) A = $Cl_2$ ; UV light

**74.** 1-Butyne can be converted into 1-bromo-1-butene by reacting it with which of the following reagent?

(1) HBr

(2) HBr and $(C_6H_5 COO)_2$

(3) $Br_2$ and $H_2O$

(4) $Br_2$ and $CCl_4$

**Space for Rough Work**

**75.** Match List I with List II.

| | List I<br>Isometric pairs | | List II<br>Type of isomers |
|---|---|---|---|
| A. | Propanamine and N-methylethanamine | I. | Metamers |
| B. | Hexan-2-one and Hexan-3-one | II. | Positional isomers |
| C. | Ethanamide and Hydeoxyethanimine | III. | Functional isomers |
| D. | o-nitrophenol and p-nitrophenol | IV. | Tautomers |

Choose the correct answer from the options given below:

(1) A-II, B-III, C-I, D-IV

(2) A-III, B-I, C-IV, D-II

(3) A-III, B-IV, C-I, D-II

(4) A-IV, B-III, C-I, D-II

**76.** **Assertion :** The resonating structure of acylium ion, $R - C \equiv \overset{+}{\underset{..}{O}}$ is more stable than

$R - \overset{+}{\underset{}{C}} = \overset{..}{\underset{..}{O}}:$.

**Reason :** The octet of all atoms is complete in $R - C \equiv \overset{+}{\underset{..}{O}}$

(1) If both assertion and reason are true and reason is a correct explanation of assertion.

(2) If both assertion and reason are true but reason is not a correct explanation of assertion.

(3) If assertion is true but reason is false.
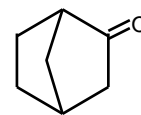
(4) If assertion and reason both are false..

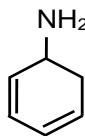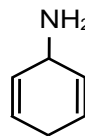**77.** Which among the give nmolecules can exhibit tautomerism?
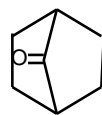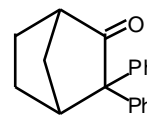


I  II  III

(1) Both II and III  (2) III only

(3) Both I and III  (4) Both I and II
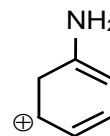
**78.** The most stable carbocation for the following is:



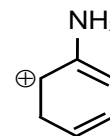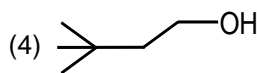a  b  c  d

(1) c  (2) d

(3) b  (4) a

**79.** The major product in the following reaction

 $\xrightarrow[\text{(ii) NaBH}_4]{\text{(i) Hg(OAc)}_2, \text{H}_2\text{O}}$ ? is

(1) 

(2) 

(3) 

(4) 
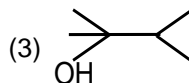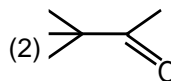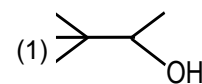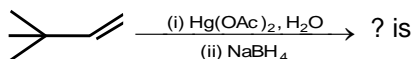
**80.** Compound X on reaction with $O_3$ followed by $Zn/H_2O$ gives formaldehyde and 2-methyl propanal as products. The compound X is :

(1) 2-Methylbut-2-ene

(2) Pent-2-ene

(3) 3-Methylbut-1-ene

(4) n-Methylbut-1-ene

**Space for Rough Work**

**81.** A five carbon atom alkyne forms a sodium salt on treatment with sodamide. The alkyne is

(1) $CH_3CH_2CH_2C \equiv CH$

(2) $CH_3C \equiv CCH_2CH_3$
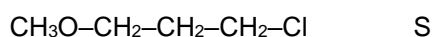
(3) $(CH_3)_2CHC \equiv CH$

(4) Either (1) or (3).

**82.** Propanoic acid or its sodium salt can be converted into alkanes by reduction with HI/red P or decarboxylation reaction or kolbe's reduction. Which of the following alkanes is not formed in any of these reactions ?

(1) Methane         (2) Ethane

(3) Propane        (4) Butane

**83.** Halogenation of alkanes is an example of

(1) Free radical addition reaction

(2) Free radical substitution reaction

(3) Nucleophilic substitution reaction

(4) Nucleophilic addition reaction.

**84.** Which of them is correct order for solvolysis rate in aqueous acetone ?

$CH_3O-CH=CH-CH_2-Cl$      P

$CH_3-O-\underset{\underset{CH_2}{\|}}{C}-CH_2-Cl$      Q

$CH_3O-CH_2-CH=CH-Cl$      R

$CH_3O-CH_2-CH_2-CH_2-Cl$      S
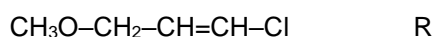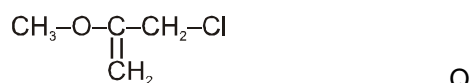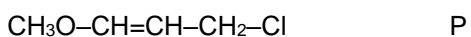
(1) R > P > Q > S

(2) P > Q > R > S

(3) Q > P > S > R

(4) P > Q > S > R

**85.** What is the final product of the following reaction ?
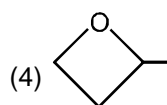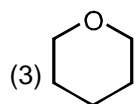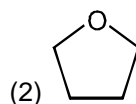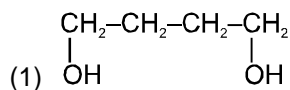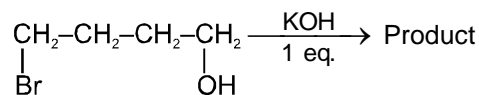
$$\underset{\underset{Br}{|}}{CH_2}-CH_2-CH_2-\underset{\underset{OH}{|}}{CH_2} \xrightarrow[\text{1 eq.}]{KOH} \text{Product}$$

(1) $\underset{\underset{OH}{|}}{CH_2}-CH_2-CH_2-\underset{\underset{OH}{|}}{CH_2}$

(2) 

(3) 

(4) 

**Space for Rough Work**

**86.** Match the compound given in column I with the hybridization and shape given in column II and mark the correct option.

| Column-I | | Column-II |
|---|---|---|
| (a) $XeF_6$ | (i) | distorted octahedral |
| (b) $XeO_3$ | (ii) | square planar |
| (c) $XeOF_4$ | (iii) | pyramidal |
| (d) $XeF_4$ | (iv) | square pyramidal |

Code :

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

**87.** The number of $\sigma$ and $\pi$ bonds in dicyanogen $(CN)_2$ are :
(1) $2\sigma + 3\pi$ 　　(2) $3\sigma + 2\pi$
(3) $3\sigma + 4\pi$ 　　(4) $4\sigma + 3\pi$

**88.** Two ice cubes are pressed together until they form one block. Which of the following force is primarily responsible for holding the cubes together?
(1) Dipole–dipole interaction
(2) Van der Waals forces
(3) Ionic interaction
(4) Hydrogen bonding

**89.** Among $KO_2, AlO_2^-, BaO_2$ and $NO_2^+$ unpaired electron is present in :
(1) $KO_2$ only 　　(2) $NO_2^+$ and $BaO_2$
(3) $KO_2$ and $AlO_2^-$ 　　(4) $BaO_2$ only

**90.** Which is least stable & has doubtful existence?
(1) $CI_4$ 　　(2) $GeI_4$
(3) $SnI_4$ 　　(4) $PbI_4$

**91.** $Au(s) \rightleftharpoons Au(\ell)$
Above equilibrium is favoured at
(1) High pressure, low temperature
(2) High pressure, high temperature
(3) Low pressure, high temperature
(4) Low pressure, low temperature
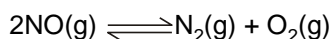
**92.** For the reaction
$2NO(g) \rightleftharpoons N_2(g) + O_2(g)$
$\Delta H = -180$ kJ mol$^{-1}$
which of the following facts does not hold good.
(1) the pressure changes at constant temperature do not affect the equilibrium constant
(2) the volume changes at constant temperature do not affect the equilibrium constant
(3) the dissociation of NO is favoured more at high temperature
(4) the dissociation of NO is favoured less at high temperature

**93.** Which of the following equations correctly represents the standard heat of formation ($\Delta H_f^0$) of methane ?
(1) C (diamond) + $2H_2$ (g) = $CH_4$ (g)
(2) C (graphite) + $2H_2$(g) = $CH_4$ ($\ell$)
(3) C (graphite) + $2H_2$ (g) = $CH_4$ (g)
(4) C (graphite) + 4H = $CH_4$ (g)

**Space for Rough Work**

**94.** If Z-axis is the molecular axis, then $\pi$-molecular orbitals are formed by the overlap of

(1) $s + p_z$

(2) $p_x + p_y$

(3) $p_z + p_z$

(4) $p_x + p_x$

**95.** In the following compound

$$\overset{1}{CH_2} = \overset{2}{CH} - \overset{3}{C}CH_2 - C \equiv CH, \text{ the } C_2 - C_3$$

bond is of the type :

(1) $sp - sp^2$

(2) $sp^3 - sp^3$

(3) $sp - sp^3$

(4) $sp^2 - sp^3$

**96.** Chlorinaton of toluene in the presence of light and heat followed by treatment with aqueous NaOH gives:

(1) o-Cresol

(2) p-Cresol

(3) 2,4- Dihydroxytoluene

(4) Benzyl alcohol

**97.** The order of the rate of formation of carbocations from the following iodo compounds is :
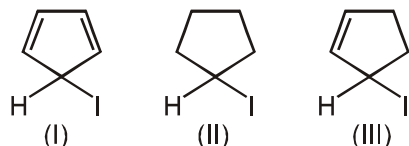


(1) I > II > III

(2) I > III > II

(3) III > II > I

(4) III > I > II

**98.**
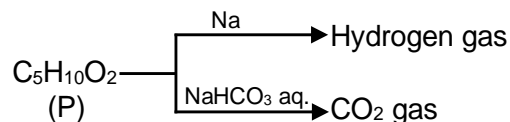


Find the isomer of P which fails to give above tests ?

(1) 

(2) 

(3) 

(4) 
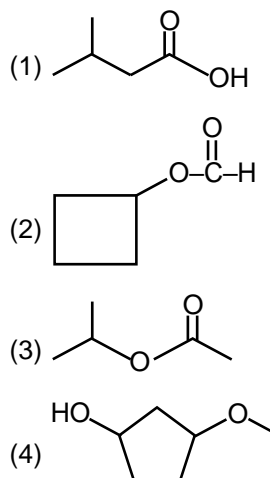
**99.** Which of the following is best leaving group?

(1) $PhO^-$

(2) $PhCH_2O^-$

(3) $HO^-$

(4) $EtO^-$

**100.** **Statement I :** o-Hydroxy benzene sulphonic acid on heating to 373 K changes to p-Hydroxybenzene sulphonic acid.

**Statement II :** Sulphonation of phenol is a reversible process.

(1) Statement I and II both are correct.

(2) Statement I incorrect and II is correct.

(3) Statement I and II both are incorrect.

(4) Statement I is correct and II is incorrect.

**Space for Rough Work**

# PART–C
# Botany

**SECTION – A : (Maximum Marks : 140)**

- This section contains **THIRTY FIVE (35)** questions.
- Each question has **FOUR** options (1), (2), (3) and (4) **ONLY ONE** of these four option is correct
- Marking scheme :
- Full Marks : **+ 4** If ONLY the correct option is chosen.
- Zero Marks : **0** If none of the options is chosen (i.e. the question is unanswered).
- Negative Marks : **–1** In all other cases

101. Plants offer rewards to animals in the form of pollen and nectar and the animals facilitate the pollination process. This is an example of:
    (1) Amensalism       (2) Competition
    (3) Commensalism    (4) Mutualism

102. In an ecosystem the function of the producers is to
    (1) Convert organic compounds into inorganic compounds
    (2) Trap solar energy and convert it into chemical energy
    (3) Utilize chemical energy
    (4) Release energy

103. The mass of living material at a trophic level at a particular time is called :
    (1) Standing crop
    (2) Gross primary productivity
    (3) Standing state
    (4) Net primary productivity

104. Steller's sea cow and passenger pigeon became extinct due to
    (1) Alien species invasions
    (2) co-extinctions
    (3) over-exploitation by humans
    (4) none of these

105. Coenocytic, multinucleate and aseptate mycelial habit is found in
    (1) Basidiomycetes    (2) Phycomycetes
    (3) Ascomycetes       (4) Deuteromycetes

106. Hot spots are regions of
    (1) high level of species richness
    (2) accelerated habitat loss
    (3) high degree of endemism
    (4) all of 1, 2, 3

107. Ex situ mode of conservation is :
    (1) Botanical gardens
    (2) National parks
    (3) Sacred grooves
    (4) All of these

108. 'X' and 'Y' are the components of Binomial nomenclature. This naming system was proposed by 'Z':
    (1) X-Generic name, Y-Specific epithet, Z-Carolus Linnaeus
    (2) X-Specific epithet, Y-Generic name, Z-R Whittaker
    (3) X-Specific epithet, Y-Generic name, Z-Carolus Linnaeus
    (4) X-Generic name, Y-Specific epithet, Z-R.H Whittaker

109. Which of the following is not the characteristic feature of all forms of life?
    (1) Reproduction
    (2) Growth
    (3) Motility
    (4) None of these

110. In which of the following both pairs have **correct** combination ?
    (1) *in situ conservation :* Cryopreservation
        *Ex situ conservation :* Wildlife Sanctuary
    (2) *in situ conservation :* Seed Bank
        *Ex situ conservation :* National Park
    (3) *in situ conservation :* Tissue calture
        *Ex situ conservation :* Sacred groves
    (4) *in situ conservation :* National Park
        *Ex situ conservation :* Botanical Garden

111. In an ecosystem the rate of production of organic matter during photosynthesis is termed as :
    (1) Net productivity
    (2) Net primary productivity
    (3) Gross primary productivity
    (4) Secondary productivity

112. In an ecosystem keystone species are:
    (1) species that are predatory in nature
    (2) species that exert influence out of proportion to its abundance
    (3) species that decrease the flow of energy through ecosystems.
    (4) species that create an abundance in species-richness of that ecosystem

113. House fly belongs to_____ family.
    (1) Cyprinidae
    (2) Hominidae
    (3) Calliphoridae
    (4) Muscidae

114. Which of the following is parasite on mustard ?
    (1) Albugo
    (2) Puccinia
    (3) Yeast
    (4) Ustilago

**115.** Given below are two statements:

**Statement I:** Habitat loss and fragmentation represents the most important cause driving animals and plants to extinction.

**Statement II:** Amazon rain forest is commonly called 'lungs of earth'.

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

(1) Both Statement I and Statement II are false.

(2) Statement I is correct but Statement II is false.

(3) Statement I is incorrect but Statement II is true.

(4) Both Statement I and Statement II are true.

**116. Assertion :** In mutualism both the individuals are benefitted.

**Reason :** Both indiividuals are benefitted by the association but their relationships are not obligatory.

(1) If both Assertion and Reason are true and the Reason is the correct explanation of the Assertion

(2) If both Assertion and Reason are true but the Reason is not the correct explanation of the Assertion

(3) If Assertion is true but Reason is false

(4) If both Assertion and Reason are false

**117.** Diatoms do not decay as readily as most other algae because

(1) they are non living cells

(2) they have waterproof cell walls

(3) they have siliceous cell walls

(4) they have mucilaginous cell walls.

**118.** Approximately how much of the solar energy that falls on the leaves of a plant is converted to chemical energy by photosynthesis.

(1) Less than 1%    (2) 2-10%

(3) 30%    (4) 50%

**119.** A biologist studied the population of rats in a barn. He found that the average natality was 250, average mortality 240, immigration 20 and emigration 30. The net increase in population is :

(1) 15    (2) 05

(3) zero    (4) 10

**120.** The correct sequence of taxonomic hierarchy in ascending order is

(1) Family $\rightarrow$ Order $\rightarrow$ Class $\rightarrow$ Division $\rightarrow$ Kingdom

(2) Species $\rightarrow$ Genus $\rightarrow$ Class $\rightarrow$ Order $\rightarrow$ Division

(3) Kingdom $\rightarrow$ Division $\rightarrow$ Class $\rightarrow$ Order $\rightarrow$ Genus

(4) Kingdom $\rightarrow$ Division $\rightarrow$ Class $\rightarrow$ Family $\rightarrow$ Order

**121.** R.H. whittaker (1969) proposed a five kingdom classification. The main criteria for classification used by....

(1) Cell structure

(2) Mode of nutrition and Reproduction

(3) Body organisation and phylogenetic Relations

(4) All of the above

**122.** *Aspergillus* and *Claviceps* involve in

(1) Ascomycetes    (2) Basidiomycetes

(3) Phycomycetes    (4) Deuteromycetes

**123.** When does the growth rate of a population following the logistic model equal zero? The logistic model is given as dN/dt = rN(1-N/K) :

(1) when death rate is greater than birth rate.

(2) when N/K is exactly one.

(3) when N nears the carrying capacity of the habitat.

(4) when N/K equals zero.

**124.** In a geographical area, the number of individuals of some organisms is as follow

**I.** Rats– 708,000

**II.** Snakes– 1500

**III.** Herbs– 58,42,000

**IV.** Hawk– 14

On the basis of above data the pyramid of biomass of this area will?

(1) Inverted    (2) Upright

(3) Spindle shaped    (4) Any of the these

**125.** Match column I with column II for mango classification and select the correct option using the codes given below.

| Column I | Column II |
|---|---|
| a. Division | i. Sapindales |
| b. Order | ii. Anacardiaceae |
| c. Family | iii. Dicotyledonae |
| d. Class | iv. Angiospermae |

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

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

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

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

**126.** Which statement is/are wrong with respect to kingdom protista.
   (i)  All single celled eukaryotes are placed under protista
   (ii)  The boundaries of this kingdom are not well defined.
   (iii)  Chrysophytes, dinoflagellated, Euglenoids, slimemoulds and protozoans are included under protista.
   (iv)  All protista are eukaryotic, achlorophyllous, heterotrophic, nonvascular organism.
   (1) only (ii)      (2) only (iii)
   (3) only (iv)      (4) None of these

**127.** Gause's principle of competitive exclusion states that:
   (1)  Larger organisms exclude smaller ones through competition.
   (2)  More abundant species will exclude the less abundant species through competition.
   (3)  Competition for the same resources excludes species having different food preferences.
   (4)  No two species can occupy the same niche indefinitely for the same limiting resources.

**128.** Given below are two statements:
   **Statement I:** In aquatic ecosystem GFC is the major conduit for energy flow.
   **Statement II:** In terrestrial ecosystem, a much larger fraction of energy flows through GFC than through DFC.
   In the light of the above statements, choose the correct answer from the options given below:
   (1) Both Statement I and Statement II are false.
   (2) Statement I is correct but Statement II is false.
   (3) Statement I is incorrect but Statement II is true.
   (4) Both Statement I and Statement II are true.

**129.** On a logarithmic scale, the relationship between species richness and area is a straight line described by the equation - [S = Species richness, A = Area, Z = Slope of line and C = V-intercept]
   (1) $\log S = \log C + A \log Z$
   (2) $\log C = \log S + A \log Z$
   (3) $\log S = \log C + Z \log A$
   (4) $\log S = \log A + Z \log C$

**130.** Biosystematics aims at
   (1)  Identification and arrangement of organisms on the basis of cytological characteristics
   (2)  The classification of organisms based on broad morphological characters
   (3)  Delimiting various taxa of organism and establishing their relationships
   (4)  The classification of organisms based on their evolutionary history and establishing their phylogeny on the totality of various parameters from all fields of studies

**131.** The % global species diversity in India is –
   (1) 2.4 %      (2) 12 %
   (3) 9 %      (4) 8.1 %

**132.** Niche is
   (1)  all the biological factors in the organism's environment
   (2)  the functional role played by the organism where it lives
   (3)  the range of temperature that the organism needs to live
   (4)  the physical space where an organism lives

**133.** Match the columns and find the correct option.

| Column I | Column II |
|---|---|
| a. Ascomycetes | i. Ustilago |
| b. Phycomycetes | ii. Saccharomyces |
| c. Basidiomycetes | iii. Trichoderma |
| d. Deuteromycetes | iv. Albugo |

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

**134.** Based on earth's biodiversity, which of the statements can be considered as incorrect?
   (1)  Every 2nd vertebrate species is that of fishes·
   (2)  Every 2nd plant species is that of angiospermss
   (3)  Out of every 10 animal species, 7 belong to insects
   (4)  Out of every 10 plant species, 5 belong to either angiosperm or fungi

**135.** **Assertion :** Net primary productivity is gross primary productivity minus respiration**.**
   **Reason :** Secondary productivity is produced by heterotrophs.
   (1) If both Assertion and Reason are true and the Reason is the correct explanation of the Assertion
   (2) If both Assertion and Reason are true but the Reason is not the correct explanation of the Assertion
   (3) If Assertion is true but Reason is false
   (4) If both Assertion and Reason are false

**136.** Select the correctly written scientific name Mango which was first described by Carolus Linnaeus :
(1) *Mangifera Indica*
(2) *Mangifera indica Car. Linn.*
(3) *Mangifera indica Linn.*
(4) *Mangifera indica*

**137.** Match **Column-I** with **Column-II** and select the correct option from the codes given below.

| Column - I | Column - II |
|---|---|
| A. Commensalism | (i) One inhibited, other unaffected |
| B. Parasitism | (ii) One benefitted, other unaffected |
| C. Mutualism | (iii) Both are benefited |
| D. Amensalism | (iv) One benefitted, other harmed |

(1) A - (iv), B - (ii), C - (iii), D - (i)
(2) A - (iii), B - (iv), C - (ii), D - (i)
(3) A - (ii), B - (iv), C - (iii), D - (i)
(4) A - (ii), B - (iv), C - (i), D - (iii)

**138.** Which the following statements is correct ?
(1) Fusion of protoplasms between two motile on non-motile gametes is called plasmogamy.
(2) Organisms that depend on living plants are called saprophytes.
(3) Some of the organisms can fix atmospheric nitrogen in specialized cells called sheath K cells.
(4) Fusion of two cells is called Karyogamy

**139.** Given below are two statements:
**Statement I:** Emmigration is the number of individuals of the same species that have come into the habitat from elsewhere during the time period under consideration.
**Statement II:** Immigration is the number of individuals of the population who left the habitat and gone elsewhere during the time period under consideration.
In the light of the above statements, choose the correct answer from the options given below:
(1) Both Statement I and Statement II are false.
(2) Statement I is correct but Statement II is false.
(3) Statement I is incorrect but Statement II is true.
(4) Both Statement I and Statement II are true.

**140.** Select the *wrong* statement:
(1) Cell wall is present in members of Fungi and Plantae.
(2) Mitochondria are the powerhouse of the cell in all kingdoms except Monera.
(3) Pseudopodia are locomotory and feeding structures in Sporozoans.
(4) Mushrooms belong to Basidiomycetes.

**141.** Match the trophic levels with their correct species examples in grassland ecosystem
(1) Fourth trophic level     (i) Crow
(2) Second trophic level     (ii) Vulture
(3) First trophiclevel     (iii) Rabbit
(4) Third trophic level     (iv) Grass
Select the correct option :

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| (1) | (iii) | (ii) | (i) | (iv) |
| (2) | (iv) | (iii) | (ii) | (i) |
| (3) | (i) | (ii) | (iii) | (iv) |
| (4) | (ii) | (iii) | (iv) | (i) |

**142. Assertion:** In sigmoid growth curve, population finally stabilizes itself.
**Reason :** Finally, the death rate increase than the birth rate.
(1) If both Assertion and Reason are true and the Reason is the correct explanation of the Assertion
(2) If both Assertion and Reason are true but the Reason is not the correct explanation of the Assertion
(3) If Assertion is true but Reason is false
(4) If both Assertion and Reason are false

**Resonance®**
Educating for better tomorrow
**Reg. & Corp. Office:** CG Tower, A-46 & 52, IPIA, Near City Mall, Jhalawar Road, Kota (Raj.)-324005
**Website :** www.resonance.ac.in | E-mail : contact@resonance.ac.in
**Toll Free :** 1800 258 5555 | **CIN:** U80302RJ2007PLC024029
PCRASHCPT2310324C0-18

**143.** Glucose is taken in a test tube and acted upon by hexokinase enzyme. Resulting substrate Is glucose-6-phosphate. This isolated metabolic reaction is considered to be :
(1) In vivo and living
(2) In vivo and non-living
(3) In vitro and living
(4) In vitro and non-living

**144. Assertion :** Deuteromycetes lack sexual reproduction.
**Reason :** Fungi show three type of reproduction asexual, sexual and vegetative.
(1) If both Assertion and Reason are true and the Reason is the correct explanation of the Assertion
(2) If both Assertion and Reason are true but the Reason is not the correct explanation of the Assertion
(3) If Assertion is true but Reason is false
(4) If both Assertion and Reason are false

**145.** Identify the **correct** statements :
A. Detrivores perform fragmentation.
B. The humus is further degraded by some microbes during mineralization.
C. Water soluble inorganic nutrients go down into the soil and get precipitated by a process called leaching.
D. The detritus food chain begins with living organisms.
E. Earthworms break down detritus into smaller particles by a process called catabolism.
Choose the **correct** answer from the options given below :
(1) B, C, D only
(2) C, D, E only
(3) D, E, A only
(4) A,B,C only

**146.** Given below are two statements:
**Statement I:** Archaebacteria live in some of the most harsh habitats.
**Statement II:** They are characterised by the presence of a rigid cellulosic cell wall.
In the light of the above statements, choose the correct answer from the options given below:
(1) Both Statement I and Statement II are false.
(2) Statement I is correct but Statement II is false.
(3) Statement I is incorrect but Statement II is true.
(4) Both Statement I and Statement II are true.

**147.** Competitive exclusion principle states that two closely related species if compete for same resources than
(1) They can coexist indefinitely
(2) They will develop mutual relationship
(3) One will become parasite on another
(4) One species will eliminate inferior one

**148.** For most efficient energy transfer across trophic levels, which of the following acts as 'conduits'
(1) Parasites          (2) Decomposers
(3) Predators          (4) None of these

**149.** Maximum modes of nutrition are found in
(1) Monera
(2) Protista
(3) Fungi
(4) Plantae

**150.** Which of the following represent taxa at same level ?
(1) *Panthera, Solanum, Felis*
(2) *Datura,* Felidae, Polymoniales
(3) Solanaceae, Carnivora, Chordata
(4) Mammalia, Monocotyledonae, Angiospermae

## PART–D
## Zoology

**151.** Find out the incorrect matching with regards to innate immunity
(1) Physical barriers – Skin, mucosa
(2) Cytokine barriers – Interferons
(3) Cellular barriers – PMNL neutrophils
(4) Physiological barriers – Epithelial lining

**152.** Which of the following immune responsible for rejection of kidney graft ?
(1) Cell-mediated immune response
(2) Auto-immune response
(3) Humoral immune response
(4) Inflammatory immune response

**Resonance®**
Educating for better tomorrow
**Reg. & Corp. Office:** CG Tower, A-46 & 52, IPIA, Near City Mall, Jhalawar Road, Kota (Raj.)-324005
**Website :** www.resonance.ac.in | E-mail : contact@resonance.ac.in
**Toll Free :** 1800 258 5555 | **CIN:** U80302RJ2007PLC024029
**PCRASHCPT2310324C0-19**

**153.** Identify the correct pair representing the causative agent of typhoid fever and the confirmatory test for typhoid.
(1) Salmonella typhi / Widal test
(2) Plasmodium vivax / UTI test
(3) Streptococcus pneumoniae /Widal test
(4) Salmonella typhi / Anthrone test

**154.** Drug called 'Heroin' is synthesized by
(1) nitration of morphine
(2) methylation of morphine
(3) acetylation of morphine
(4) glycosylation of morphine

**155**. Due to increasing air-borne allergens a pollutants, many people in urban areas a suffering from respiratory disorder cause wheezing due to:
(1) reduction in the secretion of surfactant; pneumocytes.
(2) benign growth on mucous lining of nasal cavity.
(3) inflammation of bronchi and bronchioles
(4) proliferation of fibrous tissues and damage of the alveolar walls.

**156.** Humans have acquired immune system that produces antibodies to neutralize pathogens. Still innate immune system is present at the time of birth because it
(1) is very specific and uses different macrophages,
(2) produces memory cells for mounting fast secondary response.
(3) has natural killer cells which can phagocytosis and destroy microbes
(4) provides passive immunity.

**157.** Which of the following sexually transmitted diseases do not specifically affect reproductive organs?
(1) Genital warts and Hepatitis-B
(2) Syphilis and Genital herpes
(3) AIDS and Hepatitis B
(4) Chlamydiasis and AIDS

**158.** Coca alkaloid or cocaine is obtained from
(1) Papaver somniferum
(2) Atropha belladona
(3) Erythroxylum coca
(4) Datura

**159.** Which of the following STDs are not curable?
(1) Genital herpes, Hepatities B, HIV infection
(2) Chlamydiasis, Sysphilis, Genital warts
(3) HIV, Gonorrhoea, Trichomoniasis
(4) Gonorrhoea, Trichomoniasis, Hepatitis B

**160.** Cyclosporin A, used as immuno-suppression agent, is produced from:
(1) Monascus purpureus
(2) Saccharomyces cerevisiae
(3) Penicillium notatum
(4) Trichoderma polysporum

**161.** The yellowish fluid "colostrum" secreted by mammary glands of mother during the initial days of lactation has abundant antibodies (IgA) to protect the infant. This type of immunity is called as:
(1) Passive immunity
(2) Active immunity
(3) Acquired immunity
(4) Autoimmunity

**162.** Most cancers are treated by combination of
(a) Surgery
(b) Radiotherapy
(c) Chemotherapy
(1) a and b
(2) a and c
(3) b and c
(4) a, b and c

**163.** The organisms which cause diseases in plants and animals are called:
(1) Pathogens
(2) Vectors
(3) Insects
(4) Worms

**164.** The techniques to alter the chemistry of genetic material to introduce these into host organism.
(1) molecular biology
(2) cytogenetics
(3) genetic hybridization
(4) genetic engineering

**165.** The clinical test that is used for diagnosis of typhoid is:
(1) ELISA
(2) ESR
(3) PCR
(4) Widal

**166.** The disease chikunguniya is transmitted by:
(1) house fly
(2) Aedes mosquito
(3) cockroach
(4) female Anopheles

**167.** Cancer causing genes are called:
(1) structural genes
(2) expressor genes
(3) oncogenes
(4) regulatory genes

**Resonance®** Educating for better tomorrow

**Reg. & Corp. Office:** CG Tower, A-46 & 52, IPIA, Near City Mall, Jhalawar Road, Kota (Raj.)-324005
**Website :** www.resonance.ac.in | E-mail : contact@resonance.ac.in
**Toll Free :** 1800 258 5555 | **CIN:** U80302RJ2007PLC024029
PCRASHCPT2310324C0-20

**168.** In malignant tumors, the cells proliferate, grow rapidly and move to other parts of the body to form new tumors. This stage of disease is called:
(1) metagenesis
(2) metastasis
(3) teratogenesis
(4) mitosis

**169.** 'Smack' is a drug obtained from the:
(1) latex of Papaver somniferum
(2) leaves of Cannabis sativa
(3) flowers of Dhatura
(4) fruits of Erythroxyl coca

**170.** The substance produced by a cell in viral infection that can protect other cells from further infection is:
(1) serotonin
(2) colostrum
(3) interferon
(4) histamine

**171.** Genetically engineered bacteria have been used in commercial production of :-
(1) Thyroxin
(2) Testosterone
(3) Human insulin
(4) Melatonium

**172.** The first clinical gene therapy was given for treating
(1) diabetes mellitus
(2) chicken pox
(3) rheumatoid arthritis
(4) adenosine deaminase deficiency.

**173.** A genetically engineered bacteria used for clearing oil spills is :-
(1) Escherischia coli
(2) Bacillus subtilis
(3) Agrobacterium tumifaciens
(4) Pseudomonas putida

**174.** An enzyme catalysing the removal of nucleotides from the ends of DNA is
(1) endonuclease
(2) exonuclease
(3) DNA ligase
(4) Hind II

**175.** Which of the following combination of risk are associated with genetically modified food?
(1) Toxicity
(2) Allergic reaction
(3) Antibiotic resistance in microorganism present in alimentary canal
(4) All the above

**176.** The use of bio-resources by multinational companies & other organisations without proper authorisation from the countries & people concerned, is known as :–
(1) Biopatent
(2) Biopiracy
(3) Biowar
(4) Biodiversity

**177.** The correct order of steps in Polymerase Chain Reaction (PCR) is
(1) extension, denaturation, annealing
(2) annealing, extension, denaturation
(3) denaturation, extension, annealing
(4) denaturation, annealing, extension

**178.** Which of following feature is not necessary for cloning vector?
(1) Origin of replication
(2) High copy number
(3) Selectable marker
(4) Cloning sites

**179.** The substrate for restriction enzyme is :-
(1) Single stranded RNA
(2) Proteins
(3) Double stranded DNA
(4) Single stranded DNA

**180.** In which type of bioreactor air bubbles dramatically increases the oxygen transfer area?
(1) Simple stirred tank bioreactor
(2) Sparged stirred tank bioreactor
(3) Both (1) & (2)
(4) None of these

**181.** *Agrobacterium tumefaciens* is pathogen of
(1) Monocot plants
(2) Dicot plants
(3) Animals
(4) Fungi

**182.** Taq-polymerase which is used for amplification of DNA related with: -
(1) Hybridoma technique
(2) PCR-technique
(3) Gene cloning
(4) r-DNA technology

**183.** Restriction endonucleases: -
(1) Are synthesized by bacteria as part of their defense mechanism
(2) Are present in mammalian cells for degradation of DNA when the cell dies
(3) Are used in genetic engineering for ligating two DNA molecules
(4) Are used for invitro DNA synthesis

**184.** Electroporation procedure involves :-
- (1) Fast passage of food through sieve pores in phloem elements with the help of electric stimulation.
- (2) Opening of stomatal pores during night byartificial light
- (3) Making transient pores in the cell membrane to introduce gene constructs
- (4) Purification of saline water with the help of amembrane system.

**185.** Choose the correct pair from the following.
- (1) Ligases -Join the two DNA molecules
- (2) Polymerases-Break the DNA into fragments
- (3) Nucleases-Separate the two strands of DNA
- (4) Exonucleases-Make cuts at specific positionswithin DNA

---

**SECTION – B : (Maximum Marks : 40)**
- ❖ This section contains **FIFTEEN (15)** questions. **You have attempt any 10 Questions. If a student attempts more than 10 questions, then only first 10 questions which he has attempted will be checked.**
- ❖ Each question has **FOUR** options (1), (2), (3) and (4) **ONLY ONE** of these four option is correct
- ❖ Marking scheme :
- ➢ Full Marks : **+4** If ONLY the correct option is chosen.
- ➢ Zero Marks : **0** If none of the options is chosen (i.e. the question is unanswered).
- ➢ Negative Marks : **–1** In all other cases

---

**186.** **Assertion:** Agrobacterium tumefaciens is popular in genetic engineering because this bacterium is associated with roots of all cereals and pulse crops
**Reason :** A gene incorporated in the bacterial chromosomal genome gets automatically transferred to the crop with which the bacterium is associated
- (1) Both Assertion and Reason are true and Reason is correct explanation of Assertion.
- (2) Both Assertion and Reason are true, but Reason is not the correct explanation of Assertion.
- (3) Assertion is true, but Reason is false.
- (4) Assertion is false, but Reason is true.

**187.** **Assertion:** DNA is a positively charged molecule.
**Reason :** DNA moves towards the positive electrode (anode).
- (1) Both Assertion and Reason are true and Reason is correct explanation of Assertion.
- (2) Both Assertion and Reason are true, but Reason is not the correct explanation of Assertion.
- (3) Assertion is true, but Reason is false.
- (4) Assertion is false, but Reason is true.

**188.** Read the following statement
Statement-A : Restriction enzymes are **obtained only from eukaryotes.**
Statement-B : The first discovered restriction **endonuclease was EcoRI.**
**Choose the correct option.**
- (1) Both statements are correct
- (2) Both statements are incorrect
- (3) Statement A is correct but B is incorrect
- (4) Statement B is correct but A is incorrect

**189.** Mark the correct statement for pBR322 as a plasmid vector
- (I) Contains origin of replication.
- (II) Two genes coding for resistance to antibiotics havebeen introduced.
- (III) There are single recognition sites for a number of restriction enzymes at various points.
- (IV) Insertional inactivation is a useful selection method for identifying recombinant vectors with insert.
- (1) I, II, III & IV  (2) I, II only
- (3) II, III only  (4) II only

**190.** During the process of gel electrophoresis, DNA moves towards the_A_ of the electrophoretic chamber as the charge of DNA is _B_.
Choose the option that fills the blanks correctly.

| | A | B |
|---|---|---|
| (1) | Cathode | Positive |
| (2) | Cathode | Negative |
| (3) | Anode | Positive |
| (4) | Anode | Negative |

**191.** Column I lists the components of body defense and column II lists the corresponding descriptions. Match the two columns. Choose the correct option from those given

| Column I | Column II |
|---|---|
| A. Active natural immunity | p. Injection of gamma globulins |
| B. First line of defense | q. Complement proteins and interferons |
| C. Passive natural immunity | r. Direct contact with the pathogens that have entered inside |
| D. Second line of defense | s. Surface barriers |
| | t. Antibodies transferred through the placenta |

- (1) A= s, B= r, C= t, D= q
- (2) A= r, B= s, C= q, D=t
- (3) A= r, B= s, C= t, D= q
- (4) A= t, B= r, C= q, D=p

**192.** The following questions consist of two statements one labelled ASSERTION (1) and the another labelled REASON (R).
Select the correct answers to these questions from the codes given below :
**Assertion :** Sporozoites of malaria parasite enter human body by biting of new born female Anopheles whose mother was carrier.
**Reason :** Male and female gametocytes of malaria parasite develop in human intestine.
(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 correct explanation of A
(3) A is true but R is false
(4) Both A and R are false

**193.** The following questions consist of two statements one labelled ASSERTION (1) and the another labelled REASON (R). Select the correct answers to these questions from the codes given below :
**Assertion :** STDs are also called silent diseases.
**Reason :** These remain asymptomatic during early stages.
(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 correct explanation of A
(3) A is true but R is false
(4) Both A and R are false

**194.** Surgical removal of thymus of a new born shall result in the failure to produce:
(1) Allergens
(2) Interferons
(3) B-lymphocyte
(4)T-lymphocyte

**195.** Match the following columns and select the correct option :

| Column – I | Column – II |
|---|---|
| (i) Typhoid | (a) Haemophilus influenzae |
| (ii) Malaria | (b) Wuchereria bancrofti |
| (iii) Pneumonia | (c) Plasmodium vivax |
| (iv) Filariasis | (d) Salmonella typhi |

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

**196.** Given below are two statements :
**Statement-I:** When an infected. Female Anopheles mosquito bites, it releases gametocytes of Plasmodium into the healthy person.
**Statement-II:**The female Anopheles mosquito takes up sporozoites of Plasmodium with blood meal from an infected person, suffering from malaria.
In the light of the above statements, choose the most appropriate answer from the options given below:
(1) Statement-I is incorrect but Statement-II is correct
(2) Both Statement-I and Statement-II are correct
(3) Both Statement-I and Statement-II are incorrect
(4) Statement-I is correct but Statement-II is incorrect

**197.** Given below are two statements:
**Statement I:** Autoimmune disorder is a condition where body defense mechanism recognizes its own cells as foreign bodies.
**Statement II:** Rheumatoid arthritis is a condition where body does not attack self cells.
In the light of the above statements, choose the most appropriate answer from the options given below:
(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

**198.** Read the following four statements (A-D) about certain mistakes in two of them.
(A) The first transgenic buffalo, Rosie produced milk which was human alpha-lactalbumin enriched.
(B) Restriction enzymes are used in isolation of DNA from other macromolecules.
(C) Downstream processing is one of the steps of rDNA technology.
(D) Disarmed pathogen vectors are also used in transfer of rDNA into the host.
Which of the two statements have mistakes?
(1) B and C
(2) C and D
(3) A and C
(4) A and B

**199.** Which of the following statements is false?
  I.    Insulin was originally extracted from pancreas of slaughtered pigs and cattle
  II.   Animal insulin is difficult to obtain
  III.  Animal insulin is identical to human insulin
  IV.   Non human insulin caused some patients to develop allergy Recombinant DNA allowed scientists to insert a human insulin gene into a bacterial expression vector
  VI.   Recombinant insulin is actually obtained from E. coli bacterial cell
  (1) Only I and II
  (2) Only III and IV
  (3) Only III
  (4) Only VI

**200. Assertion :** Cellular defense mechanism in eukaryotes is RNAi.
  **Reason :** RNAi is silencing of a specific tRNA.
  (1) Both Assertion and Reason are true and Reason is correct explanation of Assertion.
  (2) Both Assertion and Reason are true, but Reason is not the correct explanation of Assertion.
  (3) Assertion is true, but Reason is false.
  (4) Assertion is false, but Reason is true.

# STUDENT'S SPACE

# Resonance®
### Educating for better tomorrow

## PAN INDIA PRESENCE



### Presence in Cities: 78
Resonance Eduventures Ltd. Network

- Resonance Corporate/Head Office : 1
- Study Centers / Network Partners : 44 — **Total 49**
- School Integrated Program (ICCPs) : 4

**ResoBASE Network**
- ResBASE Head Office : 1
- BASE Study Centers (BSC) : 17 — **Total 29**
- BASE Integrated Program (ICCPs): 11

The map is only indicative and not to scale.

Above information is updated till 27.01.2023.

---

## REGISTERED & CORPORATE OFFICE (CIN: U80302RJ2007PLC024029)

**CG Tower, A-46 & 52, IPIA, Near City Mall, Jhalawar Road, Kota (Rajasthan) - 324005**

📞 0744-2777777 | 🟢 73400 10345 | ✉ contact@resonance.ac.in | 🌐 www.resonance.ac.in

Follow Us: ▶ ✈ f in 🐦 @ResonanceEdu | 📷 @Resonance_Edu

---

**STUDY CENTRES: Agra:** 0562-4034879 | **Ahmedabad:** 079-48001701 | **Aligarh:** 8755999676 | **Allahabad:** 7355156950 | **Alwar:** 9602793493 | **Ayodhya:** 6390006701 | **Bareilly:** 7060022807 | **Bhandara:** 9607962727 | **Bhopal - Lalghati:** 9399651680 | **M.P. Nagar:** 9589827733 | **Bhubaneswar:** 7735160060 | **Bilaspur:** 9109995591 | **Chandrapur:** 8788443797 | **Dehradun:** 7060960877 | **Gorakhpur:** 8853211001 | **Guwahati:** 6900491255 | **Gwalior:** 0751-4929811 | **Hyderabad - Kukatpally:** 9121144126 | **Madhapur:** 9121144137 | **Tarnaka:** 9121144135 | **West Maredpally:** 9121144128 | **Indore - Annapurna :** 0731-4046267 | **South Tukoganj:** 0731-4005695 | **Jaipur - Tonk Road:** 8306233301 | **Vaishali Nagar:** 7737269994 | **Vidhyadhar Nagar:** 6378291042 | **Jalgaon:** 9923044144 | **Jamnagar:** 9725552362 | **Kalaburgi:** 6361229979 | **Kanpur:** 9170099688 | **Karimnagar:** 9052116688 | **Kolkata:** 7735160060 | **Lucknow - Alambagh:** 9839419722 | **Hazaratganj :** 0522-4300040 | **Moradabad:** 7060496389 | **Mumbai- Andheri:** 9769210460 | **Borivali:** 9769210453 | **Churchgate:** 9769210460 | **Kalyan:** 8779851819 | **Panvel:** 9930269180 | **Thane:** 9930269191 | **Virar:** 7718866633 | **Muzaffarnagar:** 9997179898 | **Muzaffarpur:** 7292888884 | **Nagpur - Hudkeshwar:** 9096194172 | **Manish Nagar:** 0712-2537222 | **Pragati:** 0712-2537222 | **Vinamra:** 0712-2760233 | **Nashik- Canada Corner:** 8380830444 | **HAL Township:** 7728890115 | **Nashik Road:** 8390890444 | **New Delhi:** 7340010308 | **Patna:** 9304275695 | **Raipur:** 7771007837 | **Sonbhadra:** 7311125100 | **Srinagar:** 0194-3570220 | **Thrissur:** 6235461880 | **Udaipur- A-One:** 7340010318 | **Study Center:** 0294-3561305 | **Varanasi:** 7311121381 | **Vijaywada:** 8897623332 | **Visakhapatnam:** 9611235235 | **Warangal:** 9959910011 | **SCHOOL TIEUPS: Buldana:** 9970282821 | **Parli:** 0244-6295555 | **Singrauli:** 8318418126