NEW STANDARD ACADEMY

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

PRE-MEDICAL :12ᵗʰ Undergoing/Pass Students

Read carefully the Instructions on the Back Cover of this Test Booklet.

Important Instructions :

1. On the answer sheet, fill in the particulars on Side-1 and Side -2 carefully with blue/black ball point pen only.

2. The test The test is of 3 hours 20 minutes duration and this Test Booklet contains 200 questions. Each question carries 4 marks. For each correct response, the candidate will get 4 marks. For each incorrect response, one mark will be deducted from the total scores. The maximum marks are 720.

3. In this Test Paper, each subject will consist of two sections. Section A will consist of 35 questions (all questions are mandatory) and Section B will have15 questions. Candidate can choose to attempt any 10 question out of these 15 questions. In case if candidate attempts more than 10 questions, first 10 attempted questions will be considered for marking

4. In case of more than one option correct in any question, the best correct option will be considered as answer.

5. Use Blue/Black Ball Point Pen only for writing particulars on this page/marking responses.

6. Rough work is to be done on the space provided for this purpose in the Test Booklet only.

7. On completion of the test, the candidate must hand over the Answer Sheet to the Invigilator before leaving the Room/Hall. The candidates are allowed to take away this Test Booklet with them.

8. 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 Form No. anywhere else except in the specified space in the Test Booklet/Answer Sheet.

9. Use of white fluid for correction is not permissible on the Answer Sheet.

Name of the Candidate(In Capitals) _____
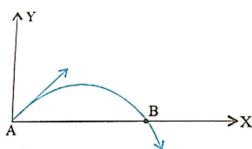
Date of Examination _____

Candidate`s Signature:_____     Invigilator`s Signature: _____

1. A body of mass 5 kg at rest explodes into three fragments with masses in the ratio 1 : 1 : 3. The fragments with equal masses fly in mutually perpendicular directions with speeds of 21 m/s. The velocity of the heaviest fragment in m/s will be
   (A) $7\sqrt{2}$ (B) $5\sqrt{2}$
   (C) $3\sqrt{2}$ (D) $\sqrt{2}$

2. A particle starting from the origin (0, 0) moves in a straight line in the (x, y) plane. Its coordinates at a later time are ($\sqrt{3}$, 3). The path that the particle makes with the x-axis is at an angle of
   (A) 45° (B) 60°
   (C) 0° (D) 30°

3. A particle moves in x – y plane according to rule x = asin ωt and y = acos ωt. The particle follows:
   (A) an elliptical path
   (B) a circular path
   (C) a parabolic path
   (D) a straight line path inclined equally to x – axes and y – axes

4. The maximum range of a gun of horizontal terrain is 16 km. If g = 10 ms^{-2}, then muzzle velocity of a shell must be
   (A) 160 ms^{-1} (B) 200 $\sqrt{2}$ ms^{-1}
   (C) 400 ms^{-1} (D) 800 ms^{-1}

5. If a body A of mass M is thrown with velocity v at an angle of 30° to the horizontal and another body B of the same mass is thrown with the same speed at an angle of 60° to the horizontal, the ratio of horizontal range of A to B will be
   (A) 1 : 3 (B) 1 : 1
   (C) 1 : $\sqrt{3}$ (D) $\sqrt{3}$: 1

6. Two projectiles of same mass and with same velocity are thrown at an angle 60° and 30° with the horizontal, then which will remain same?
   (A) time of flight
   (B) range of projectile
   (C) maximum height acquired
   (D) all of them.

7. A particle A is dropped from a height and another particle B is projected in horizontal direction with speed of 5 m/s from the same height then correct statement is
   (A) particle A will reach ground first with respect to particle B.
   (B) particle B will reach ground first with respect to particle A.
   (C) both particles will reach ground simultaneously.
   (D) both particles will reach ground with same speed.

8. For angles of projection of a projectile at angle (45° – θ) and (45° + θ), the horizontal range described by the projectile are in the ratio of
   (A) 2 : 1 (B) 1 : 1
   (C) 2 : 3 (D) 1 :2

9. The speed of a projectile at its maximum height is half of its initial speed. The angle of projection is
   (A) 60° (B) 15°
   (C) 30° (D) 45°

10. A projectile is fired at an angle of 45° with the horizontal. Elevation angle of the projectile at its highest point as seen from the point of projection, is
    (A) 45° (B) 60°
    (C) $\tan^{-1}$ 1/ 2 (D) $\tan^{-1}$ $\sqrt{3}$/ 2

11. A missile is fired for maximum range with an initial velocity of 20 m/s. If g = 10 m/s^2 , the range of the missile is
    (A) 40 m (B) 50 m
    (C) 60 m (D) 20 m

12. A body is moving with a constant speed v in a circle of radius r. Its angular acceleration is
    (a) Zero (b) $\frac{v}{r}$
    (c) $\frac{v^2}{r^2}$ (d) $\frac{v^2}{r}$

13. A projectile is fired from the surface of the earth with a velocity of 5 m s^{-1} and angle θ with the horizontal. Another projectile fired from another planet with a velocity of 3 m s^{-1} at the same angle follows a trajectory which is identical with the trajectory of the projectile fired from the earth. The value of the acceleration due to gravity on the planet is (in m s^{-2}) (given g = 9.8 m s^{-2})
    (A) 3.5 (B) 5.9
    (C) 16.3 (D) 110.8

14. When an object is shot from the bottom of a long smooth inclined plane kept at an angle 60° with horizontal, it can travel a distance x1 along the plane. But when the inclination is decreased to 30° and the same object is shot with the same velocity, it can travel x2 distance. Then x1 : x2 will be :
    (A) 1 : $\sqrt{3}$ (B) 1 : 2$\sqrt{3}$
    (C) 1 : $\sqrt{2}$ (D) $\sqrt{2}$: 1

15. Two bullets are fired horizontally and simultaneously towards each other from roof tops of two buildings 100 m apart and of same height of 200 m, with the same velocity of 25

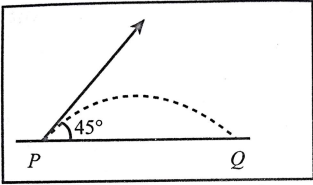m/s. When and where will the two bullets collide? (g = 10 m/s^2)
(A) They will not collide
(B) After 2 s at a height of 180 m
(C) After 2 s at a height of 20 m
(D) After 4 s at a height of 120 m

16. The trajectory of a projectile as seen from another projectile is a
(a) straight line   (b) ellipse
(c) hyperbola   (d) parabola.

17. A particle moves in a circular path of radius 'r'. In half the period of revolution, its displacement and distance covered
(a) 2r 2πr
(b) r/2, πr
(c) 2r. πr
(d) r, πr

18. Path of the bomb released from an aeroplane moving with uniform velocity at certain height is observed by the pilot is
(a) straight line
(b) a parabola
(c) a circle
(d) None of these.

19. Two stones A and B are thrown at angles θ and (90^0 - θ) with horizontal. The ratio of their horizontal range is
(a) 1:1
(b) tan θ: 1
(c) tan^2 θ / 1
(d) 1 / tan θ

20. A projectile is fired at an angle of **45°** with the horizontal. **Elevation angle** of the projectile at **its highest point** as seen from the point of projection is
(a) 45°   (b) 60 deg
(c) tan^{-1}(1/2)   (d) tan^{-1}($\sqrt{3}$/2)

21. The **horizontal range** and **maximum height** of a projectile are equal. The angle of **projection of the projectile** is
(a) θ = tan^{-1}(1/4)
(b) θ = tan^{-1}(4)
(c) θ = tan^{-1}(2)
(d) θ = 45^0

22. The velocity of a projectile at the initial point **A** is (2 $\hat{\imath}$ +3 $\hat{\jmath}$) m / s . Its velocity (in m / s) at point B is

(a) (- 2 $\hat{\imath}$ -3 $\hat{\jmath}$)
(b) (- 2 $\hat{\imath}$ +3 $\hat{\jmath}$)

(c) (2 $\hat{\imath}$ -3$\hat{\jmath}$)
(d) (2$\hat{\imath}$ +3 $\hat{\jmath}$) .

23. A projectile is fired from the surface of the earth with a velocity of 5 m s^{-1} and angle θ with horizontal. Another projectile is fired from another planet with a velocity of 3 m s^{-1} at the same angle follows a trajectory which is identical with the trajectory of the projectile fired from the earth. The value of gravity on the planet (in m s^{-2}) is (given g = 9.8m s^{-2})
(a) 3.5   (b) 5.9
(c) 16.3   (d) 110.8.

24. When an object is shot from the bottom of a long smooth inclined plane kept at an angle **60^0** with horizontal, it can travel a distance x_1 along the plane. But when the inclination is decreased to **30^0** and the same object is shot with the same velocity, it can travel x_2 distance. Then x_1 :x_2 will be
(a) 1/2 $\sqrt{3}$)
(b) 1 / $\sqrt{2}$
(c) $\sqrt{2}$ / 1
(d) 1 / $\sqrt{3}$

25. A particle is projected at an angle of 60^0 above the horizontal with a speed of 10 m s^{-1}. After some time the direction of velocity makes an angle of 30^0 above the horizontal. The speed of the particle at this instant is
(a) 5/$\sqrt{3}$ m s^{-1}
(b) 5$\sqrt{3}$ ms^{-1}
(c) 5m s^{-1}
(d) 10/$\sqrt{3}$ m s^{-1}

26. Two particles A and B are moving in uniform circular motion in concentric circles of radii r_A and r_B with speed v_A and v_B respectively. Their **time period** of rotation is the sameThe ratio of angular speed of **A** to that of **B** will be
(a) 1:1
(b) r_A / r_B
(c)v_A: v_B
(d) r_B / r_A

27. A ball is projected with a velocity, 10ms^{-1} at an angle of 60° with the vertical direction. Its speed at the highest point of its trajectory will be
(a) zero
(b) 5$\sqrt{3}$ ms^{-1}
(c) 5m s^{-1}
(d) 10m s^{-1}

28. At an instant t, the co-of a particle are x = a t^2, y = b t^2 and z = 0 The magnitude of velocity of particle at an instant t is
(1) t$\sqrt{a^2 + b^2}$

(2) $v/\sqrt{2}$

(3) $v/\sqrt{3}$

(4) $2t\sqrt{a^2+b^2}$

29. A particle is moving eastwards with velocity of 5 m/s. In 10 sec the velocity changes to 5 m/s northwards. The average acceleration in this time is

(1) Zero

(2) $1/\sqrt{2}$ m / s^2 toward north-west

(3) $1/\sqrt{2}$ m / s^2 toward north-east

(4) $1/2$ m / s^2) toward north-west

30. A particle moves in the x - y plane with velocity $\vec{v}=2\,\hat{\imath}+4x\,\hat{\jmath}$ where $\hat{\imath}$ and $\hat{\jmath}$ are unit vectors in the direction of x and y-axis. At the initial moment of time, the particle was located at the point x = y = 0 Find the equation of the trajectory of the particle.

(1) $y = (x^2)/4$

(2) $y = (x^2)/16$

(3) $y = (x^2)/2$

(4) $y = x^2$

31. A ball rolls off the top of a staircase with a horizontal velocity u m/s. If the steps are h meter high and b meter wide, the ball will hit the edge of the nth step, if

(1) $n = (2hu)/(g\,b^2)$

(2) $n = (2hu^2)/(gb)$

(3) $n = (2h\,u^2)/(g\,b^2)$

(4) $n = (h\,u^2)/(g\,b^2)$

32. An aeroplane is flying horizontally at a height of 490 m with a velocity of 150ms^{-1} A bag containing food is to be dropped to the jawans on the ground. How far from them should the bag he dropped so that it directly reaches them?

(1) 1000 m

(2) 1500 m

(3) 750 m

(4) 2000 m

33. A body is thrown horizontally from the top of a tower of height 5 m. It touches the ground at a distance of 10 m from the foot of the tower. The initial velocity of the body is (g = 10m s^{-2})

(1) 2.5m s^{-1}

(2) 5m s^{-1}

(3) 10m s^{-3}

(4) 20m s^{-1}

34. A bomber plane moves horizontally with 500 m/s and a bomb released from it, strikes the ground in 10 sec. Angle at which it strikes the ground will be (g = 10m / (s^2)

(1) $\tan^{-1}(1/5)$ ` (2) $\tan^{-1}(1/2)$

(3) $\tan^{-1}(1)$ (4) $\tan^{-1}(5)$

35. A cart is moving horizontally along a straight line with 20 constant speed 30 m/s. A projectile is to be fired from the moving cart in such a way that it will return to the cart after the cart has moved 80 m. At what speed (relative to the cart must the projectile be fired (Take g = 10m / s^2)

(1) 10 m/s (2) $10\sqrt{8}$ m / s

(3) 40/3 m / s (4) None of these

36. A stone is just released from the window of a train moving along a horizontal straight track. The stone will hit the ground following a

(1) straight line path

(2) circular path

(3) parabolic path

(4) hyperbolic path

37. The trajectory of a projectile fired horizontally with velocity u is parabola given by

(1) $y = g/(2u^2)\,x^2$

(2) $y = -\,g/(2u^2)\,x^2$

(3) $y = g/(2u^2)\,y^2$

(4) $y = g/(2u^2\,)y^2$

38. A body projected from the top of a tower horizontally with an initial velocity 20 m/s hits the ground at an angle of 45^0 .The vertical component of velocity at the times of hitting is

(1) 20 m/s

(2) $20\sqrt{2}$ m / s

(3) $20/\sqrt{2}$ m / s

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

39. From a tower of height h a particle is projected horizontally with velocity u and another thrown down with the same velocity u. If the time taken by these be t_1 and t_2 what is true?

(1) $t_1 = t_2$

(2) $t_1 > t_2$

(3) $t_1 < t_2$

(4) $t_1 = 3t_2$

40. A body is thrown horizontally with velocity $\sqrt{(2gh)}$ from the top of a tower of height h. It strikes the level through the foot of tower at a distance x from the tower. The value of x is

(1) h (2) h/2

(3) 2h (4) 2h/3

41. Two bullets are fired simultaneously, horizontally and with different speeds from the

same place. Which bullet will hit the ground first?

(1) The faster one
(2) The slower one
(3) Both will reach simultaneously
(4) Depends on the masses

42. An aeroplane is moving with a horizontal velocity u at a height h above the ground. If a packet is dropped from it, the speed of the packet when it reaches the ground will be

(1) $\sqrt{u^2 + 2gh}$
(2) $\sqrt{2gh}$
(3) $\sqrt{u^2 - 2gh}$
(4) 2gh

43. A projectile can have the same range R for two angles of projection when projected with the same speed. If t_1 and t_2 be the times of flight in two cases, then the product times of flight will be

(1) $t_1 t_2 \propto R$
(2) $t_1 t_2 \propto R^2$
(3) $t_1 t_2 \propto 1/R$
(4) $t_1 t_2 \propto 1/ R^2$

44. The height y and the distance x along the horizontal plane of a projectile on a certain planet (with no surrounding atmosphere) are given by y = (3t - 2t^2) meter and x = 4t meter where t is time in seconds. The velocity with which the projectile is projected is

(1) 8 m/s
(2) 6 m/s
(3) 5 m/s
(4) 10 m/s

45. Three projectile A, B and C are thrown from the same point in the same plane. Their trajectories are shown in the figure. 46 Then which of the following statement is true
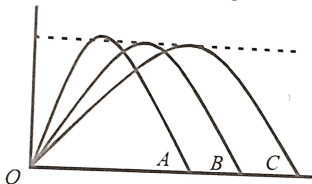
(1) the time of flight is the same for all the three
(2) the launch speed is greatest for particle C
(3) the horizontal velocity component is greatest for particle C
(4) all of the above

46. A particle is projected with a speed I from a point O making an angle of 30° with the vertical. At the same instant, a second particle is thrown vertically upwards with a speed v from a point A. The two particle reach H, the

highest point own the parabolic path of particle one simultaneously. Then ratio V/v is
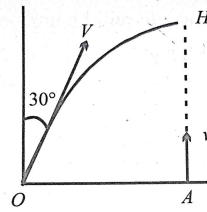
(1) $3\sqrt{2}$)
(2) $2\sqrt{(3)}$
(3) $2 / \sqrt{(3)}$
(4) $\sqrt{3} / 2$

47. A projectile is thrown with an initial velocity of V = a $\hat{i}$ + b $\hat{j}$, if the range of projectile is double, the maximum reached by it then

(1) a = 2b
(2) b = a
(3) b = 2a
(4) b = 4a

48. The horizontal range of a projectile is $4\sqrt{(3)}$ times its maximum height. Then the angle of projection is

(1) 90°
(2) 60°
(3) 45°
(4) 30°

49. A particle is projected with velocity u at an angle α from a point P on a horizontal plane strikes the plane at the average velocity of the particle for its journey from P to s

(1) (u sinα)/2
(2) $u$cos α
(3) u/2
(4) (u sin α)/4

50. A student is able to throw a ball vertically to maximum height of 40 m. The maximum distance the student can throw the ball in the horizontal direction

(1) 40 (2) $^{1/2}$ m
(2) 20 (2)$^{1/2}$ m
(3) 20 m
(4) 80 m

SECTION - A (CHEMISTRY)

1. Which of the following statement is false ?
(1) Elements of ns^2 np^6 electronic configuration lies in 1st to 6th period
(2) Typical elements lies in 3rd period
(3) The seventh period will accommodate thirty twoelements
(4) Boron and silicon are diagonally related

2. **Assertion :** Properties of Beryllium is similar to thatof Aluminium
Reason: Both the elements belongs to same group
(1) Both **Assertion** and **Reason** are true but

Reason is NOT the correct explanation of Assertion.

(2) Assertion is true but Reason is false.

(3) Assertion is false but Reason is true.

(4) Both Assertion and Reason are true and Reason is the correct explanati on of Assertion.

3. Correct electronic configuration of Ce(Z = 58) is:-
   (1) $[Xe]\ 6s^2\ 4f^1\ 5d^1\ 6p^0$
   (2) $[Xe]\ 6s^2\ 4f^2\ 5d^0\ 6p^0$
   (3) $[Xe]\ 6s^2\ 4f^0\ 5d^2\ 6p^0$
   (4) $[Xe]\ 6s^2\ 4f^0\ 5d^1\ 6p^1$

4. How many elements of 5th period will have one or more than one 3d electrons :
   (1) 32   (2) 18
   (3) 10   (4) 20

5. An elements having $[Xe]\ 4f^{14}\ 5d^1\ 6s^2$ configuration than find out group number and period number of that elements :-
   (1) Group number = 3, Period number = 6
   (2) Group number = 3, Period number = 5
   (3) Group number = 4, Period number = 6
   (4) Group number = 5, Period number = 6

6. Which of the following value may be correct for covalent &Vander Waal radii of carbon respectively:-
   (1) 1.54 & 1.34   (2) 1.54 & 0.77
   (3) 0.77 & 1.54   (4) 1.20 & 1.20

7. The correct order of size is :-
   (1) Be < Li < K < Ba
   (2) Mg < Na < K < Ca
   (3) Be < Mg < Ba < K
   (4) Li < Na < K < Ba

8. Which is the correct order of atomic sizes Eu, $_{71}$Lu, $_{70}$Yb & $_{64}$Gd
   (1) Gd > Eu > Yb > Lu
   (2) Eu > Gd > Yb > Lu
   (3) Eu > Gd > Lu > Yb
   (4) Lu > Yb > Gd > Eu

9. Which of the following is **not** related with lanthanoid contraction:-
   (1) Atomic radius of Zr & Hf is almost same
   (2) Ionisation energy of Hg is more than that of Cd.
   (3) Atomic radius of Al and Ga is almost same
   (4) Atomic radius difference between In & Tl is less that that of Ga & In.

10. **Assertion :** Second IP of oxygen is greater than that of fluorine.
    Reason : Z_{eff} of fluorine is more than oxygen.
    (1) Both **Assertion** and **Reason** are true but **Reason** is NOT the correct explanation of **Assertion.**

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

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

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

11. First IE of 5d series elements are higher than those of3dand4dseries elements. This is due to:
    (1) bigger size of atoms of 5d-series elements than 3d-series elements.
    (2) Greater effective nuclear charge is experienced by valence electrons because of the weak shielding by 4f-electrons in5dseries.
    (3) (1) and (2) both.
    (4) None of these.

12. Which of the following is correct for 1st ionisation enthalpy?
    (1) Li < B < Be < C < O < N
    (2) Li < Be < B < C < O < N
    (3) Li > B > Be > C > N > O
    (4) Li < B < Be < C < N < O

13. Match the column

|	Column-I		Column-II
	Valence electronic configuration		Successive ionisation energies
(a)	ns^1	(p)	19, 27, 36, 48, 270
(b)	ns^2	(q)	16, 28, 34, 260
(c)	$ns^2\ np^1$	(r)	18, 26, 230, 250
(d)	$ns^2\ np^2$	(s)	14, 200, 220, 240

Options :-
(1) a-s, b-q, c-r, d-p
(2) a-s, b-r, c-p, d-q
(3) a-r, b-q, c-p, d-s
(4) a-s, b-r, c-q, d-p

14. The correct order of electropositive nature of Li, Na and K is :-
    (1) Li > Na > K   (2) Li > K > Na
    (3) Na > K < Li   (4) K > Na > Li

15. Which element has positive electron gain enthalpy ?
    (1) Cl   (2) F   (3) S   (4) Ne

16. **Assertion :** Highest negative electron gain enthalpy of element in periodic table is $C\ell$.
    Reason : $C\ell$ is the most electronegative element in periodic table.
    (1) Both Assertion & Reason are True & the Reason is a correct explanation of the Assertion.
    (2) Both Assertion & Reason are True but Reason is not a correct explanation of the Assertion.

(3) Assertion is True but the Reason is False.
(4) Both Assertion & Reason are False.

17. Correct order of metallic character :
    (1) P < Si < Mg < Be < Na
    (2) P < Si < Be < Mg < Na
    (3) P < Si < Be < Na < Mg
    (4) P < Be < Si < Na < Mg

18. **Assertion:** EN of oxygen in all of its compounds will remain same.
    Reason: EN is defined for bonded atom.
    (1) Both **Assertion** and **Reason** are true but **Reason** is NOT the correct explanation of **Assertion.**
    (2) **Assertion** is true but **Reason** is false.
    (3) **Assertion** is false but **Reason** is true.
    (4) Both **Assertion** and **Reason** are true and **Reason** is the correct explanation of **Assertion.**

19. Among the following oxoacids, the correct decreasing order of acid strength is :-
    (1) $HClO_4 > HClO_3 > HClO_2 > HOCl$
    (2) $HClO_2 > HClO_4 > HClO_3 > HOCl$
    (3) $HOCl > HClO_2 > HClO_3 > HClO_4$
    (4) $HClO_4 > HOCl > HClO_2 > HClO_3$

20. Among the following electron deficient compound is:-
    (1) CCl_4 (2) PCl_5
    (3) OF_2 (4) BCl_3

21. Which of the following statements is incorrect?
    (1) Double bond is shorter than a single bond (2) σ-bond is weaker than π bond
    (3) Double bond is stronger than a single bond
    (4) Generally covalent bond is stronger than a hydrogen bond

22. Which of the following statement is correct ? (1) existence of N_2 and non existence of P_2 at room temperature is related with Ip-Ip repulsion.
    (2) at room temperature both CO_2 and SiO_2 form discrete molecules
    (3) at room temperature existence of S_8 is related with stronger σ bond between sulphur atoms while non existence of S_2 is related with weaker π bond between sulphur atoms.
    (4) None of the above

23. Which of the following has maximum bond length ?
    (1) C = O   (2) C = C
    (3) C ≡ N   (4) N ≡ N

24. Carbon-halogenbondis strongest inthe following
    (1) CH_3 Cl   (2) CH_3 Br
    (3) CH_3 F   (4) CH_3I

25. Types of bond present in NH_4^+ ion ?
    (1) only covalent
    (2) ionic bond

(3) covalent & coordinate both
(4) None

26. Calculate the formal charge on each atoms of ozone :
    (1) +2, 0, –2   (2) +1, –2, +1
    (3) +1, 0, –1   (4) +1/2, –1/2, 0

27. **Statement-1** : Dipole moment of NF_3 is less than that of NH .
    Statement-2 : NF_3 and NH_3 both have non-zero dipole moment.
    (1) Statement-1 is true, statement-2 is true and statement-2 is correct explanation for statement-1.
    (2) Statement-1 is true, statement-is true and statement-2 is NOT the correct explanation for statement-1.
    (3) Statement-1 is true, statement-2 is false.
    (4) Statement-1 is false, statement-2 is true.

28. Hydrogen bonds are formed in many compounds e.g., H_2O, HF, NH_3 . The boiling point of such compounds depends to a large extent on the strength of hydrogen bond and the number of hydrogen bonds. The correct decreasing order of the boiling points of above compounds is :
    (1) $HF > H_2O > NH_3$
    (2) $H_2O > HF > NH_3$
    (3) $NH_3 > HF > H_2O$
    (4) $NH_3 > H_2O > HF$

29. Which of the following have been arranged in increasing order of stability :-
    (1) $O_2^{-2} < O_2^- < O_2^+ < O_2$
    (2) $O_2^{-2} < O_2^- < O_2 < O_2^+$
    (3) $O_2 < O_2^+ < O_2^{-2} < O_2^-$
    (4) $O_2^+ < O_2^{2-} < O_2^- < O_2$

30. Amongst sodium halide (NaF, NaCl, NaBr, NaI), NaF has the highest melting point because of :
    (1) High oxidising power
    (2) Lowest polarity
    (3) Highest lattice energy
    (4) Lowest ionic character

31. Match the column for molecular shape ?

Column-I		Column-II	
(a)	SF_6	(P)	Tetrahedral
(b)	NH_2^-	(Q)	V-shape
(c)	NH_4^+	(R)	Trigonal Bipyramidal
(d)	XeO_3F_2	(S)	Octahedral

    (1) a–P b–Q c–R d–S
    (2) a–S b–Q c–P d–R
    (3) a–S b–R c–P d–Q
    (4) a–R b–S c–P d–Q

32. Correct match is:-

Column-I		Column-II	
(A)	Chloral hydrate	(p)	Forms Zig-zag chain
(B)	HF (solid)	(q)	Form 2-D-Sheet structure
(C)	H_3BO_3	(r)	Inter-molecular H-bond
(D)	H_2SO_4	(s)	Intramolecular H-bond

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

33. Which of the following pair of compounds are isomorphous.
(1) NaF, CaO
(2) Na_2O, MgS
(3) NaF, MgO
(4) NaCl, MgF_2

34. **Assertion** : Na_2SO_4 is soluble in water while $BaSO_4$ is insoluble.
   Reason : Lattice energy of $BaSO_4$ exceeds its hydration energy but it is opposite for Na_2SO_4 .
   (1) Both **Assertion** and **Reason** are true and **Reason** is the 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.

35. Which of the following order is correct for thermal stability ?
   (1) $K_2CO_3 < MgCO < CaCO_3 < BeCO_3$
   (2) $BeCO_3 < MgCO_3 < CaCO < K_2CO_3$
   (3) $MgCO_3 < BeCO_3 < K_2CO_3 < CaCO_3$
   (4) $CaCO < MgCO_3 < BeCO_3 < K_2 CO_3$

36. Which of the following transition element doesn't show's variable oxidation state ?
   (1) Zn
   (2) Sc
   (3) Mn
   (4) V

37. The electronic configuration of Palladium(Pd, Z = 46)
   (1) $[Kr] 5s^0 4d^{10}$
   (2) $[Kr]5s^2 4d^8$
   (3) $[Kr] 5s^1 4d^9$
   (4) $[Kr]5s^1 4d^8$

38. Which type of atomic radius represented by 'a' & 'b' in the given diagram :-
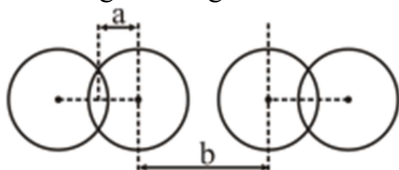
   (1) a = Atomic radius, $\frac{b}{2}$ = Metallic radius
   (2) a = Covalent radius, $\frac{b}{2}$ = Vander Waal's radius

(3) a = Ionic radius, $\frac{b}{2}$ = Covalent radius
(4) a = Covalent radius, $\frac{b}{2}$ = Atomic radius

39. Mark the **incorrect** statements out of the following:
   (1) 'He' has the highest $I.E_1$. in the periodic table
   (2) Cl has the highest E.A. out of all the elements in the periodic table
   (3) Hg and Br are liquid at room temperature
   (4) In any period, the atomic radius of the noble gas is lowest

40. The radius of which ion is closest to that of Li ion ?
   (1) Na^+
   (2) Be^{+2}
   (3) Mg^{+2}
   (4) Al^{+3}

41. Fluorine has the highest electronegativity in its group on the Pauling scale, but the electron affinity of fluorine is less than that of chlorine because –
   (1) The atomic number of fluorine is less than that of chlorine
   (2) Fluorine being the first member of the family behaves in an unusual manner
   (3) Chlorine can accommodate an electron better than fluorine by utilising its vacant 3d orbital
   (4) Small size, high electron density and an increased electron repulsion makes addition of an electron to fluorine less favourable than that of the case of chlorine

42. Which of the following strongly absorbs CO_2?
   (1) K_2O
   (2) BeO
   (3) P_4O_{10}
   (4) conc. H_2SO_4

43. Select correct order of acidic strength of hydra acid of halogen family :-
   (1) HF > HCl > HBr > HI
   (2) HI > HBr > HF > HCl
   (3) HI > HBr > HCl > HF
   (4) HF > HI > HBr > HCl

44. Which of the following species show different bond length ?
   (1) PCl_5
   (2) SF_6
   (3) CH_4
   (4) All

45. **Assertion :** In NH_3 , N is sp^3 hybridised, but angle is found to be 107°
   Reason : The decrease in bond angle is due to repulsion by the lone pair.
   (1) Assertion and reason both are correct, and reason is a correct explanation for assertion.
   (2) Assertion and reason both are correct, but reason is not a correct explanation for assertion.
   (3) Assertion is correct, reason is incorrect.
   (4) Assertion is incorrect, reason is correct

46. Which of the following has been arranged in order of decreasing dipole moment ?
(1) $CH_3Cl > CH_3F > CH_3Br > CH_3I$
(2) $CH_3F > CH_3Cl > CH_3Br > CH_3I$
(3) $CH_3Cl > CH_3Br > CH_3I > CH_3F$
(4) $CH_3F > CH_3Cl > CH_3I > CH_3Br$

47. Which is the most easily liquifiable inert gas ?
(1) Ar   (2) He   (3) Ne   (4) Xe

48. The oxygen molecule is paramagnetic because
(1) the bonding electrons number is higher than anti-bonding electrons in the molecular orbital
(2) it contains unpaired electron in the anti-bonding molecular orbitals
(3) it contains unpaired electrons in the bonding molecular orbitals
(4) the number of bonding electrons equals that of the anti-bonding electrons in the molecular orbitals

49. Solid PCl_5 exist as :-
(1) $[PCl_4]^+$ & $[PCl_6]^-$
(2) PCl_3 & Cl_2
(3) $[PCl_4]^-$ & $[PCl_6]^+$
(4) $[PCl_3]^+$ & $[PCl_3]^-$

50. **Assertion :** B molecule is diamagnetic.
Reason : The highest occupied molecular orbital is of σ-type.
(1) Both Assertion and Reason are true and Reason is the 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) Both Assertion and Reason are false.

Section A Botany

1.

Root hair

Root cap
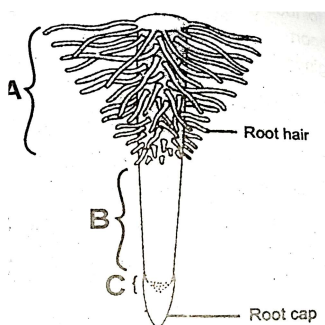
The above figure is related to the root-tip. Identify zones A, B and C
(1) A- zone of elongation, B - zone of meiosis, C - zone of mitosis
(2) A - zone of maturation, B - zone of meristematic activity, C - zone of elongation
(3) A- zone of mitosis, B - zone of elongation, C - zone of root cap
(4) A- region of maturation, B - region of elongation, C - meristematic activity

2. Prop or pillar roots in Banyan tree are-
(1) Fasciculated roots
(2) Tap root
(3) Adventitious roots
(4) Secondary roots

3. Arrangement of leaves on stem or its branches is called-
(1) Phyllotaxy
(2) Venation
(3) Vernation
(4) Heterophylly

4. Identify the order where plants show alternate opposite and whorled phyllotaxy-
(1) China rose, Calotropis and Nerium
(2) China rose, Nerium and Calotropis
(3) Nerium , Calotropis and China rose
(4) Calotropis ,China rose, and Nerium

5. Inflorescence is meant for-
(1) Bearing Flower
(2) Ensuring cross pollination
(3) Inflorescence
(4) Angiology

6. Racemose inflorescence is identified by -
(1) Acropetal arrangement of flowers on peduncle
(2) Presence of sessile flowers
(3) Continuous growth of main axis
(4) a and c

7. Cymose inflorescence is identified by -
(1) Basipetal arrangement of flowers on the main axis (peduncle)
(2) The limited growth of the main axis as main axis terminates in a flower
(3) Both a and b
(4) Presence of sessile flower

8.

Identify A and B inflorescence –
(1) A-Cymose, B – Racemose
(2) A - Racemose, B - Cymose
(3) A- Racemose, B - Racemose

(4) A - Cymose, B - Cymose

9. A flower is -
(1) A modified shoot
(2) The reproductive unit in angiosperms
(3) The reproductive unit of gymnosperms
(4) a and b

10. Which of the following perianths are found?
(1) Lily
(2) China rose
(3) Rose
(4) Pea

11. Which of the following flowers is not actinomorphic (radially symmetry)?
(1) Mustard
(2) Datura
(3) Chilli
(4) Pea

12. Didynamous (2 long and 2 short stamens) condition is seen in -
(1) Salvia, Tulsi
(2) Litchi, pea
(3) Mustard, onion
(4) Polyadelphous - Citrus

13. Tetradynamous (2 short and 4 long stamens) condition is seen in -
(1) Salvia
(2) Mustard
(3) Datura
(4) China rose

14. Match the column I with Column II-

Column I
A. Gamosepalous
B. Polysepalous
C. Gamopetalous
D. Polypelatous
E. Epiphyllous
F. Staminode

Column II
I. Flower of lily
II. Sterile anther
III. Free petals
IV. Free sepals
V. Fused petals
VI. Fused sepals

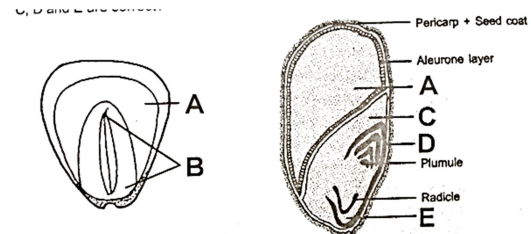|	A	B	C	D	E	F
(a)	IV	V	III	I	VI	II
(b)	IV	V	III	I	II	VI
(c)	VI	IV	V	III	I	II
(d)	VI	IV	V	III	II	I

15. Epiphyllous condition is indicated by-
(1)

⌒
C   A

(2)

⌒
A   G

(3) K

⌒
         C

(4) P

⌒
         A

16. Identify the types of aestivation shown in the following diagram –
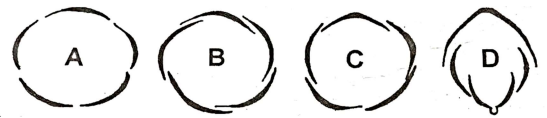
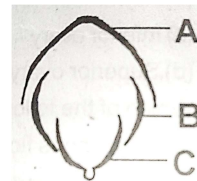(a) A- Valvate, B- Twisted, Cimbricate, D - Vexillary

(b) A-Vexillary, B - Vaivate, C-Twisted, D- Imbricate
(c) A-Imbricate, B-Vexillary, C- Vaivate, D-Twisted
(d) A-Twisted, B-Imbricate, C- Vexillary, D – Valvate

17. Name the petals A, B, and C in vexillary aestivation shown in the above figure -

(a) A- Standard, B - Wing, C - Perianth
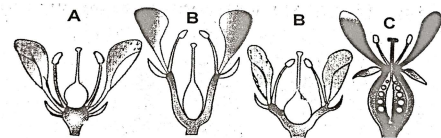(b) A-Standard, B - Keel, C – Wing
(c) A-Wing, B - Keel, C - Wing
(d) A-Standard, B - Wing, C - Keel

18. Match the following figures with I ,II and III-
I- Hypogynous flower
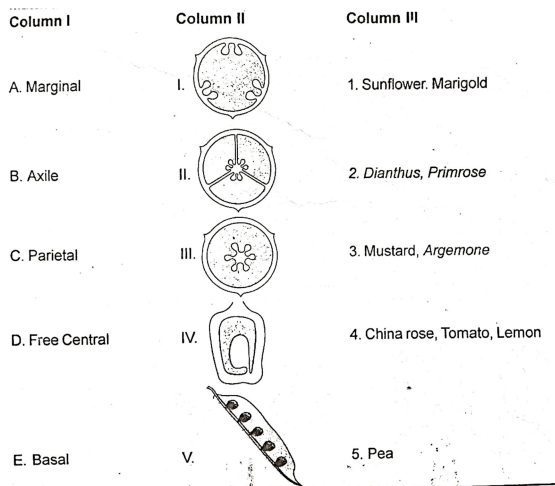II- Perigynous flower
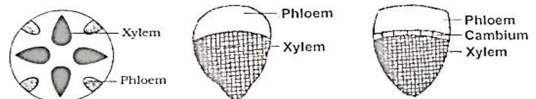III- Epigynous flower

(a) A-I, B-II,C-III
(b) A-I,B-III,C-II
(C) A-III,B-II,C-I
(d) A-III, B-I, C-II

19. Match the Column I and Column II with Column III

| Column I	Column II	Column III
A. Marginal	I.	1. Sunflower. Marigold
B. Axile	II.	2. *Dianthus, Primrose*
C. Parietal	III.	3. Mustard, *Argemone*
D. Free Central	IV.	4. China rose, Tomato, Lemon
E. Basal	V.	5. Pea

(a) A-V,5;B-II,4;C-I,3;D-III,2; E-IV,1
(b) A-I,5;B-II,4;C-III,3;D-IV,2; E-V,1
(c) A-V,1;B-II,4;C-I,2;D-III,3; E-IV,5
(d) A-V,1;B-III,2;C-II,4;D-I,5; E-IV,3

20. Given below is the diagram of atypical structure of monocotyledonous seeds. In which one of the options all the five parts A,B,C,D and E are correct?

(a) A-Endosperm,B-Embryo,C- scutellum, D-Coleorrhiza,E-Coleoptile
(b) A- Embryo,B- Endosperm,C- scutellum, D- Coleoptile,E- Coleorrhiza
(c) A- Endosperm,B- Embryo,C- scutellum, D- Coleoptile,E- Coleorrhiza
(d) A- Embryo,B- Endosperm,C- scutellum, D- Coleorrhiza,E- Coleoptile

21. In marginal placentation, The ovules are arranged-
(a) Along the inner wall of the carpel in a syncarpous ovary
(b|) Along the margin of single carpel
(c) In the middle of the ovary
(d) To the base of the ovary

22. In a multicarpellary syncarpous unilocular ovary , if the ovules are arranged in acolumn (in the centre) this is defined as-
(a) Marginal placentation
(b) Parietal placentation
(c) Axile placentation
(d) Free central placentation

23. Basal placentation develops when the ovary has-
(a) Single ovule
(b) Many ovules
(c) Many locules
(d) Single ovule in each locule

24. Parenocarpic fruit is a-

(a) Seeded fruit
(b) Seedless fruit
(c) Single seeded fruit
(d) Fruit of no use

25. In mango and coconut ,fruit is known as a
(a) Legume
(b) Drupe
(c) Nut
(d) Cystocarp

26. In coconut-
(a) Mesocarp is fibrous
(b) endosperm is edible
(c) Both
(d) Mesocarp is edible

27. In mango-
(a) Mesocarp is edible
(b) Endocarp is stony and hard
(c) Both a and b
(d) Endocarp is edible

28. The seedcoat has 2 layers the outer ____ and inner_____. The ____ is a scar on the seedcoat through which the developing seeds are attached to the fruit . Above the_____ is a small pore called the _____
(a) Testa, tagmen, hilum, hilum, micropyle
(b) Tegmen, testa, hilum, hilum, micropyle
(c) testa, tegmen, micropyle, micropyle, hilum
(d) Tegmen testa, micropyle ,micropyle hilum

29. In castor the food storing tissue is-
(a) Cotyledon
(b) Endosperm
(c) Testa
(d) Tegmen

30. Which of the following is not non-endospermic seed (in matured condition)?
(a) Bean , gram , Pea
(b) Coconut ,cereals(e.g.maize)
(c) both
(d) Mango

31. Maize grain is a –
(a) Seed
(b) Fruit
(c) Flower
(d) inflorescence

32. The aleurone layer in maize grain is speciafly rich in-
(a) Proteins
(b) starch

(c) Lipids

(d) Auxins

33. Plumule is covered by-
(a) Root cap
(b) Coleorrhiza
(c) Coleoptile
(d) Hypocotyl

34. Syncarpous hypogynous trilocular ovary with axile placentation is found in
(a) Liliaceae
(b) Cucurbitaceae
(c) Ranunculaceae
(d) None of these

35. Which of the following is characteristic feature of fabaceae?
(a) Descending imbricate, ten stamens, Diadelphous, Ovary inferior
(b) Sepals five gamosepalous, imbricate aestivation, axile placentation
(c) Monocarpellary ovary interior, style long slightly bent at the apex
(d) Zygomorphic flowers, Vexillary aestivation in corolla,monocarpellary, ovary superior,diadelphous, tenstamens, many ovules, Placentation marginal

36. Angiosoermic xylem consists of
(a) Vessels + Tracheids only
(b) Tracheids + Fibres only
(c) Vessel tracheids , fibres and parenchyma
(d) parenchyma and fibres

37. In each vascular bundle the tissue nearest to the centre of the stem is-
(a) phloem
(b) Fibres
(c) Vascular cambium
(d) Xylem

38. How many tissues are present within dicot root having cortex endodermis, pericycle pith xylem and phloem?
(a) 5   (b) 6
(c) 3   (d) 12

39. In angiosperm phloem-
(a) Both the sieve tube elements and companion cells have nuclei
(b) Sieve tube elements have nuclei but companion cells do not
(c) The companion cells have nuclei but the sieve tube elements do not

(d) Neither the companion cells nor sieve tube elements have nuclei

40. I. Sieve tube or sieve cell is living but enucleate
II. Xylem and phloem constitute the vascular bundle
III. First formed xylem element and phloem element are called metaxylem and metaphloem respectively
IV. Phloem fibres are generally absent in primary phloem
V. Phloem parenchyma is absent in most of the monocots
Which of the above statements is wrong?
(a) 1, II, V   (b) III
(c) IV, V   (d) III,IV

41. Sieve tube is -
(a) Multicellular, vessel like structure
(b) Provided with porous septa
(c) The main conducting element for translocation of food
(d) All of the above

42. Guard cells differ from epidermal cells in having
(a) Specific shape
(b) Chloroplast
(c) Heterogeneous nature of cell wall
(d) All

43. The stomatal apparatus includes-
(a) Only stomatal aperture
(b) Stomatal aperture and guard cells
(c) Only guard cells
(d) Stromatal aperture guard cells and surrounding subsidiary cells

44. Ground tissue includes-
(a) Cortex +pericycle
(b) Pith
(c) Medullary
(d) All

45. Plant cells that are photo synthetically active are found in the___ layer of leaf and are____ cells-
(a) Epidermis parenchymatous
(b) Mesophyll , parenchymatous
(c) Mesophyll , Sclerenchymatous
(d) Aerenchyma ,collenchymatous

46.

These three types of vascular bundles (A,B and C) are present in –
(a) Stem, root, leaf
(b) Root, Stem , leaf
(c) Root, monocot stem and leaf , dicot stem
(d) Monocot stem and leaf, dicot root monocot leaf

47. Vascular bundle having cambium between the xylem and phloem is called
(a) Close vascular bundle
(b) Open vascular bundle
(c) Conjoint vascular bundle
(d) Radial vascular bundle

48. Monocot root differs from dicot root in having –
(a) Polyarch xylem bundles
(b) Large and well developed pith
(c) Both
(d) Radial vascular Bundle and exarch xylem

49. In dicot stem-
(a) Vascular bundles are conjoint open and arranged in a ring
(b) Xylem is endarch
(c) Collenchymatous hypodermis
(d) all

50. In leaves protoxylem elements-
(a) Face towards adaxial side
(b) Face toward abaxial surface
(c) Are surrounded by metaxylem
(d) Are scattered in the middle

Section B (ZOOLOGY)

51. In male cockroach , from each testis arises a thin vas deferens, which open into_____ through seminal vesicle-
(a) Anal cercus
(b) Caudal style
(c) Collateral gland
(d) Ejaculatory duct

52. Spiracles in cockroach are small holes present on _____ side of body
(a) Dorsal   (b) Ventral
(c) Lateral   (d) Mid -dorsal

53. Periplaneta belong to –
(a) class insect of phylum Arthropoda
(b) class insect of phylum Annelida
(c) class insect of phylum of Mollusca
(d) class insect of phylum Platyhelminthes

54. Which of the following is correct as regard to cockroach?
(a) Noctumal, fossorial monoecious, coelomate
(b) Omnivorous, fossorial, dioecious, coelomate
(c) Omnivorous, fossorial, monoecious, coelomate
(d) Omnivorous, fossonal, monoecious, pseudocoelomate

55. Cockroach is-
(a) Not a pest but a vector of several diseases
(b) A pest but not vector of any disease
(c) A serious post and vector of several diseases
(d) is neither a pest nor a vector of diseases

56. The body of cockroach is segmented and divisible into-
(a) Head and thorax
(b) Head and abdomen
(c) Abdomen and thorax
(d) Head, thorax and abdomen

57. Exoskeleton of cockroach is formed of-
(a) Keratin
(b) Amino acids
(c) Chitinous cuticle
(d) Non-chitinous cuticle

58. In cockroach, the body, inspite of being covered by an exoskeleton of strong chitinous cuticle remains flexible due to-
(a) Tergitos
(b) Sternites
(c) Pleurites
(d) Arthrodial membrane or Articular membrane

59. In each segment of cockroach, the exoskeleton has hardened plates called-
(a) sclerites
(b) Arthrodial membrane
(c) Ossicles
(d) None

60. The dorsal sclerites and ventral sclerites are called-
(a) Sternites and tergites respectively
(b) Tergites and sternites respectively
(c) Stermites and pleuntes respectively
(d) Tergites and pleurites respectively

61.
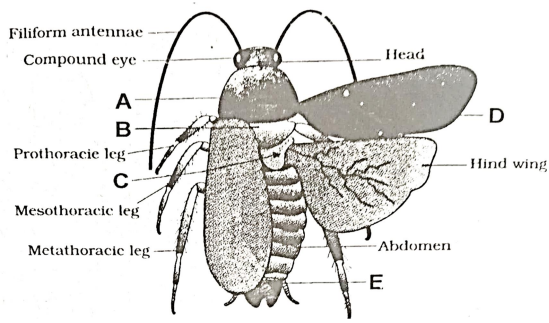
Identify A to E.

	A	B	C	D	E
(a)	Pronotum	Mesothorax	Metathorax	Tegmina	Pleura
(b)	Pronotum	Mesothorax	Metathorax	Tegmina	Sterna
(c)	Pronotum	Mesothorax	Metathorax	Tegmina	Anal cerci
(d)	Pronotum	Mesothorax	Metathorax	Tegmina	Anal style

62. The head of cockroach consists of fusion of _____ segments-
    (a) 6
    (b) 10
    (c) 14
    (d) 18

63. In cockroach head can move in all directions due to
    (a) Absence of neck
    (b) Fusion of all 6 segments of head
    (c) Flexible neck
    (d) Head is small and light in weight

64. In cockroach, a pair of antennae anses from membranous sockel Antennae are-
    (a) Without any sensory receptors
    (b) Many segmented
    (c) Sensory receptors that help in monitorting the onvronment
    (d) b and c are correct

65. Mouth parts of cockroach are-
    (a) Sponging type
    (b) Biting and sucking type
    (c) Biting and chewing type
    (d) Piercing and sucking type

66. Tongue of cockroach is-
    (a) Labrum
    (b) Mandibles
    (c) Labiorn
    (d) hypopharynx

67. Mandibles of cockroach are
    (a) Long and pointed
    (b) Short without leath
    (c) Perforated synnge like
    (d) With grinding and incising regions

68. In cockroach mouth part consists of a labrum, a pair of mandibiles, a pair of maxillae and a labium Labrumandie adas-

    (a) Upper and lower jaws respectively
    (b) Lower and upper jaws respectively
    (c) Upper jaw and lips respectively
    (d) Upper and lower lips respectively

69. The following figure is related to head region of cockroach identify A to F
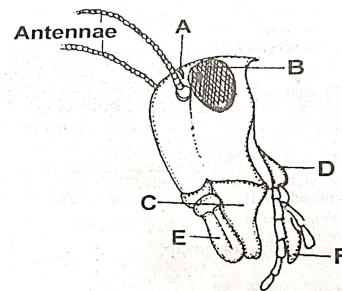
	A	B	C	D	E	F
(a)	Compound eye	Cellus	Maxilla	Mandible	Labrum	Labium
(b)	Ocellus	Compound eye	Mandible	Maxilla	Labrum	Labium
(c)	Ocellus	Compound eye	Mandible	Maxilla	Labium	Labrum
(d)	Ocellus	Compound eye	Maxilla	Mandible	Labium	Labrum

70.
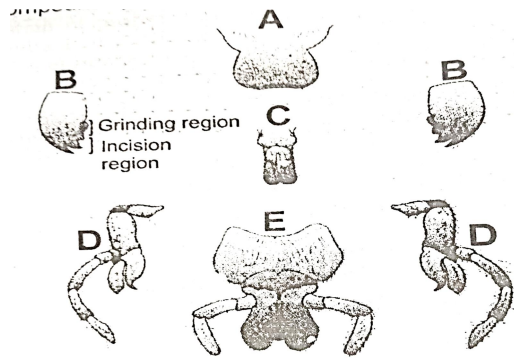
	A	B	C	D	E
(a)	Maxilla	Hypopharynx	Labium	Mandible	Labrum
(b)	Mandible	Labium	Maxilla	Labrum	Hypopharynx
(c)	Labrum	Mandibie	Hypopharynx	Maxilla	Labium
(d)	Labium	Hypopharynx	Labrum	Maxilla	Mandible

71. The two pairs of wings in Periplaneta are situated on -
    (a) Prothorax and metathorax
    (b) Prothorax and mesothorax
    (c) Mesothorax and Metathorax
    (d) Metathorax and first abdominal segment

72. In cockroach, wings are absent in -
    (a) Prothorax
    (b) Mesothorax
    (c) Metathorax
    (d) None or these

73. Forewings of cockroach are articulated to –
    (a) Prothorax
    (b) Metathorax

(c) mesothorax

(d) First abdominal segment

74. In cockroach, the first pair of wings are known as –

(a) Terga

(b) Sterna

(c) tegmina

(d) halters

75. Metathoracic wings in cockroaches are -

(a) Halteres

(b) Tegmina

(c) Hemielytra

(d) None of these

76. Which of the following statements are correct about the forewings in cockroach?

(a) They are mesothoracic

(b) They are opaque, dark and leathery and cover hindwing when at rest

(c) They are not used in flight

(d) All

77. Which of the following statements are correct about the hindwings in cockroach?

(a) They are transparent and membranous

(b) They are metathoracic

(c) They are used in flight

(d) All

78. In cockroach, thorax is divided into how many segments?

(a) 3

(b) 4

(c) 5

(d) 6

79. The abdomen in both male and female cockroach consists of-

(a) 10 segments

(b) 8 segments

(c) 12 segments

(d) 18 segments

80. Bull frog of India is

(a) Rana tigrina

(b) Rana esculenta

(c) rana styvatica

(d) all

81. Frogs belonging to class_____ of phylum chordata are_____ animals and show hibernation in _____ and aestivalion in _____

(a) Hemichordata, poikilathermic winter, summer

(b) Amphibia, poikilothermic summer rainy season

(c) Amphibia, poikilothermic winter summer

(d) Amphibia warmbloor winter, summer

82. The frogs have the ability to change the colour to hide called- them from enemies (can uflage). Thuis protective coloration is

(a) Mimicry

(b) Antagonism

(c) Burrowing

(d) Symbiosis

83. The body of frog is divisible into-

(a) Head and trunk

(b) Head, neck, trunk and tail

(c) Head, neck, thorax, abdomen and tail

(d) Head, trunk and til

84. Neck is absent in frog. This helps in-

(a) Respiration

(b) Catching prey

(c) Jumping on ground

(d) Swimming in water

85. Which of the following is false about the frog? I. Eyes are bulged out and covered by a nictitating membrane that protects them while in water

II On either side of the eyes a membranous tympanum (ear) receives sound signals

III. The forelimbs and hind limbs help in swimming, walking, leaping and burrowing

IV The hind limbs end in five digits and they are larger and muscular than fore limbs that end in four digis Feet have webbed digits that help in swimming

VI. Frogs exhibit sexual dimorphism

(a) Only I and VI

(b) Only III

(c) Only IV and V

(d) None

86. Both male and female frogs have-

(a) Long hindlimbs with five webbed fingers

(b) Short forellimbs with four unwebbed fingers

(c) Both a and b

(d) External ears

87. Frog has-

(a) 5 fingers in hand and 5 toes in foot

(b) 5 fingers in hand and 4 toes in foot

(c) 4 fingers in hand and 5 toes in foot

(d) 6 fingers in hand and 5 toes in foot

88. The glands present in the skin of frogs are-

(a) Sweat and mucous
(b) Sweat and mammary
(c) Sweat and sebaceous
(d) Mucous and poisonous

89. One of the main function of frog's skin is-
(a) Diffusion of respiratory gases
(b) Absorption of ultraviolet rays to produce vitamin D
(c) Storage of excess food in the form of subcutaneous fat
(d) Excretion of mitrogenous waste in the form of uric acid

90. What is not found in skin of frog?
(a) Scales
(b) Epidermis
(c) Porson glands
(d) Mucous glands

91. The figure is associated with diagrammatic representation of internal organs of frog. Identify A to E
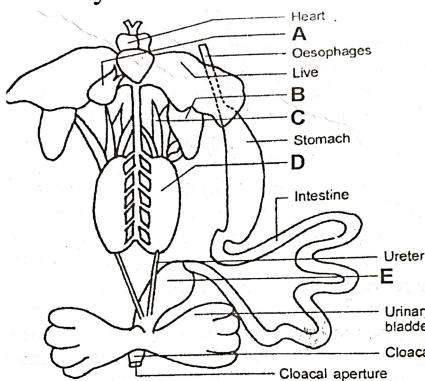
	A	B	C	D	E
(a)	Gall bladder	Lung	Ovary	Testis	Rectum
(b)	Gall bladder	Lung	Fat bodies	Testis	Rectum
(c)	Gall bladder	Lung	Testis	Kidney	Rectum
(d)	Gall bladder	Lung	Fat bodies	Kidney	Rectum

92. Bidders canal in frog is found in
(a) Liver
(b) Testis
(c) Ovary
(d) Kidney

93. The figure is related with female reproductive system of frog . Identify A to D-
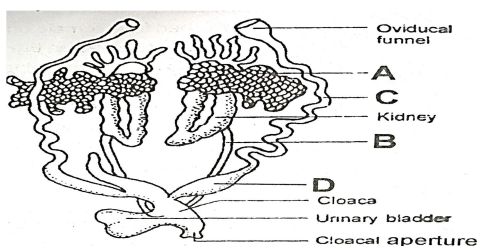
	A	B	C	D
(a)	Ovary	Ureter	Oviduct	Ovisac
(b)	Ovary	Urinogenital duct	Bidder's canal	Ovisac
(c)	Ovary	Urinogenital duct	Ovisac	Oviduct
(d)	Ovary	Urinogenital duct	Bidder's canal	Oviduct

94. In frog, which one of the following opens into the duodenum?
(a) Pancreatic duct
(b) Bile duct
(c) Hepatic duct
(d) Hepato-pancreatic duct

95. In frog, undigested solid wastes pass out through-
(a) Anus
(b) Cloaca
(c) Kidney

(d) Genital pore.

96. In frog the excretory system consists of-
(a) Kidneys, ureters and urinary bladder only
(b)Kidneys and urinary bladder only
(c) Kidneys ureters urinary bladder and cloaca only
(d) Kidneys and cloaca only

97. Frog is-
(a) Ammonotelic
(b) Uricotelic
(c) ureotelic
(d) Guanotelic

98. In frog the ureter acts as urinogenital duct in-
(a) Male   (b) Female
© Male or female
(d) Neither in male nor female

99. Frog has sense organs like sensory papillae (for touch)taste buds nasal epithelium (smell) eyes tympanum with internal ear (for hearing)out of these, whichof the following is well – organised structure?
(a) Eyes and internal ears
(b) eyes and sensory papillae
(c) Internal ears and taste buds
(d) Taste buds and sensory papillae

100. Mesorchium in frog refers to-
(a) Fold of peritoneum between kidney and testis
(b) Internal tissue of kidney
(c) Internal tissue of testis
(d) Capsule of kidney