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IIT-JEE | NEET | Foundation

NEET

Time: 200 Minute   **M.M. 720**

ALL INDIA SKY TEST SERIES

Pulse Batch – Neet

Date : 02/10/2023

SYLLABUS

PHYSICS	CHEMISTRY	BOTANY	ZOOLOGY
Previous + Ray Optics	Previous + Periodic Table, IUPAC	Plant kingdom, Morphology of flowering plants (upto flower)	Body fluid and circulation

Please read the instructions carefully. You are allotted **5** minutes specifically for this purpose.

INSTRUCTIONS:

1. This Question paper is divided in to four parts physics, chemistry, botany, zoology and each part is further divided into two sections.
   Section –A contains 35 Questions Section B contains 15 questions. Please ensure that the Questions paper you have received contains **ALL THE QUESTIONS** in each Part.

2. **In Section A all the 35 Questions are compulsory and in Section B Contain 15 Question, out of these**
   15 Questions, candidates can choose to attempt any 10 Questions.
   Each Question has four choices (a), (b), (c), (d) out of which **only one is correct & Carry 4 marks each 1 mark** will be deducted for each wrong answer.

GENERAL INSTRUCTION

1. Use only **blue/black pen (avoid gel pen)** for darkening the bubble.

2. Indicate the correct answer for each question by filling appropriate bubble in your **OMR** answer sheet.

3. The answer sheet will be checked through computer hence; the answer of the question must be marked by –shading the circles against the question by dark **blue/black pen**

4. Blank papers, Clipboards, Log tables, Slide Rule, Calculator, Cellular Phones Papers and Electronic Gadgets in any form are **not** allowed to be carried inside the examination hall.

Name of the candidate: _____

Signature of the candidate: _____Signature of the invigilator: _____

PHYSICS

SECTION – A

1. A ray of light passes from vacuum into a medium of refractive index n. If the angle of incidence is twice the angle of refraction, then the angle of incidence is
    (a) $\cos^{-1}$ (n/2)   (b) $\sin^{-1}$ (n/2)
    (c) $2\cos^{-1}$ (n/2)   (d) $2\sin^{-1}$ (n/2)

2. A ray of monochromatic light is incident on one refracting face of a prism of angle 75°. It passes through the prism and is incident on the other face at the critical angle. If the refractive index of the material of the prism is $\sqrt{2}$, the angle of incidence on the first face of the prism is
    (a) 30°   (b) 45°   (c) 60°   (d) N.O.T.

3. A ray incident at an angle of incidence 60° enters a glass sphere of $\mu = \sqrt{3}$ and it is reflected and refracted at the farther surface of the sphere. The angle between reflected and refracted rays at this surface is
    (a) 120°   (b) 90°   (c) 60°   (d) 150°

4. The critical angle of light going from medium A to medium B is θ. The speed of light in medium A is v. The speed of light in medium B is
    (a) $\dfrac{v}{\sin\theta}$ (b) $\dfrac{v}{\cos\theta}$ (c) $v\sin\theta$ (d) $v\cos\theta$

5. A convexo-concave diverging lens is made of glass of refractive index 1.5 and focal length 24 cm. Radius of curvature for one surface is double that of the other. Then radii of curvature for the two surfaces are (in cm)
    (a) 6, 12   (b) 12, 24   (c) 3, 6   (d) 18, 36

6. Focal length of a convex mirror is 10 cm
    (a) image of an object placed at 20 cm is also at 20 cm .
    (b) image of an object placed at 10 cm is at infinity
    (c) both (a) and (b) are wrong
    (d) both (a) and (b) are correct

7. A concave mirror has a focal length 20 cm. The distance between the two positions of the object for which the image size is double of the object size is
    (a) 20 cm   (b) 40 cm   (c) 30 cm   (d) 60 cm

8. Two plane mirrors are inclined at angle θ as shown in figure. If a ray parallel to OB strikes the other mirror at P and finally emerges parallel to OA after two reflections then θ is equal to
    (a) 90°   (b) 60°   (c) 45°   (d) 30°
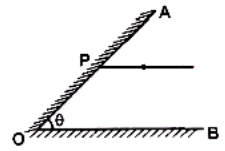
9. A ray of light falls on a transparent sphere with centre at C as shown in figure. The ray emerges from the sphere parallel to line AB. The refractive index of the sphere is
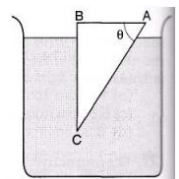   (a) $\sqrt{2}$ (b) $\sqrt{3}$ (c) 3/2   (d) 4/3
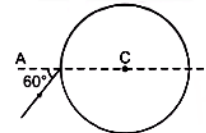
10. An equiconvex lens of glass (μ_g = 1.5) of focal length 10 cm is silvered on one side. It will behave like a
    (a) concave mirror of focal length 10 cm
    (b) convex mirror of focal length 5.0 cm
    (c) concave mirror of focal length 2.5 cm
    (d) convex mirror of focal length 20 cm

11. Distance of an object from the first focus of an equiconvex lens is 10 cm and the distance of its real image from second focus is 40 cm. The focal length of the lens is
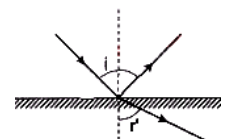   (a) 25 cm   (b) 10cm   (c) 20 cm   (d) 40 cm

12. A glass prism of refractive index 1.5 is immersed in water (refractive index 4/3). A light beam incident normally on the face AB is totally reflected to reach the face BC if
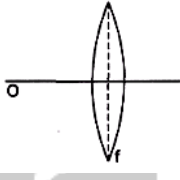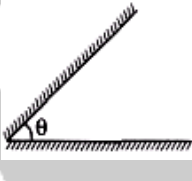   (a) sin θ > 8/9   (b) 2/3 < sin θ < 8/9
    (c) sin θ < 2/3   (d) None of the above

13. A ray of light from a denser medium strikes a rarer medium at an angle of incidence i (see figure). The reflected and refracted rays make an angle of 90° with each other. The angles of reflection and refraction are r and r'. The critical angle is
   (a) $\sin^{-1}$ (tan r)   (b) $\sin^{-1}$ (cot i)
    (c) $\sin^{-1}$ (tan r')   (d) $\tan^{-1}$ (sin i)

14. One of the refracting surfaces of a prism of angle 30 ° is silvered. A ray of light incident at an angle of 60° retraces its path. The refractive index of the material of prism is.
    (a) $\sqrt{2}$　　(b) $\sqrt{3}$　　(c) 3/2　　(d) 2

15. Angle of minimum deviation is equal to the angle of prism A of an equilateral glass prism. The angle of incidence at which minimum deviation will be obtained is
    (a) 60°　　(b) 30°　　(c) 45°　　(d) $\sin^{-1}$ (2/3)

16. A 2 cm diameter coin rests flat on the bottom of a bowl in which the water is 20 cm deep (μ_w = 4/3). If the coin is viewed directly from above, what is its apparent diameter?
    (a) 2 cm　　(b) 1.5 cm　(c) 2.67 cm　(d) 1.67 cm

17. A real image of a point object O was formed by an equi-convex lens of focal length f and the magnification was found to be unity. Now the lens is cut into two symmetrical pieces as shown by the dotted line and the right part is removed. The position of the image formed by the remaining part is at.
    (a) f　　(b) 2f　　(c) -2f　　(d) Infinity

18. Two mirrors are inclined at angle θ as shown in the figure. Light rays are incident parallel to one of the mirrors. Light will start retracing its path after third reflection if.
    (a) θ = 45°　(b) θ = 30°　(c) θ = 60°　　(d) all three

19. A point object is placed at the centre of a glass sphere of radius 6 cm and refractive index 1.5. The distance of the virtual image from the surface of the sphere is
    (a) 2 cm　　(b) 4 cm　　(c) 6 cm　　(d) 12 cm

20. At what angle will a ray of light be incident on one face of an equilateral prism, so that the emergent ray may graze the second surface of the prism (μ = 2)?
    (a) 30°　　(b) 90°　　(c) 45°　　(d) 60°

21. When an object is at a distance u_1 and u_2 from a lens, real image and a virtual image is formed respectively having same magnification. The focal length of the lens is
    (a) $u_1 - u_2$　　　　(b) $\dfrac{u_1 - u_2}{2}$
    (c) $\dfrac{u_1 + u_2}{2}$　　　　(d) $u_1 + u_2$

22. If in a plano-convex lens, radius of curvature of convex surface is 10 cm and the focal length of lens is 30 cm, the refractive index of the material of the lens will be
    (a) 1.5　　(b) 1.66　　(c) 1.33　　(d) 3

23. The plane faces of two identical plano-convex lenses, each having focal length of 40 cm, are placed against each other to form a usual convex lens. The distance from this lens at which an object must be placed to obtain a real, inverted image with magnification '–1' is
    (a) 80 cm　(b) 40 cm　(c) 20 cm　(d) 160 cm

24. When a beam of light is incident on a plane mirror, it is found that a real image is formed. The incident beam must be
    (a) Converging　　(b) Diverging　　(c) Parallel
    (d) Formation of real image by a plane mirror is impossible

25. When a light ray from a rarer medium is refracted into a denser medium, its
    (a) Speed increases, wavelength increases
    (b) Speed decreases, wavelength increases
    (c) Speed increases, wavelength decreases
    (d) Speed decreases, wavelength decreases

26. Which of the following is possible application of fibre optics?
    (a) Endoscopy
    (b) High speed internet traffic
    (c) Radio, TV & Telephone signals
    (d) All of the above

27. The least distance between a point object and its real image formed by a convex lens of focal length F is
    (a) 2 F　　(b) 3 F　(c) 4 F　(d) Greater than 4 F

28. A convex lens forms a real image of a point object at a distance of 50 cm from the convex lens. A concave lens is placed 10 cm behind the convex lens on the image side. On placing a plane mirror on the image side and facing the concave lens, it is observed that the final image now coincides with the object itself. The focal length of the concave lens is
    (a) 50 cm　(b) 20 cm　　(c) 40 cm　　(d) 25 cm

29. The focal length of a plano-concave lens is -10 cm, then its focal length when its plane surface is polished is
   (a) 20 cm　(b) -5 cm　　(c) 5 cm　(d) -20 cm

30. Two plane mirrors are arranged at right angles to each other as shown in figure. A ray of light is incident on the horizontal mirror at an angle θ. For what value of θ the ray emerges parallel to the incoming ray after reflection from the vertical mirror?
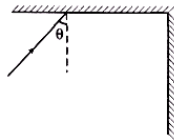
(a) 60° (b) 30° (c) 45° (d) All of these

31. Figure shows the graph of angle of deviation δ versus angle of incidence i for a light ray striking a prism The prism angle is
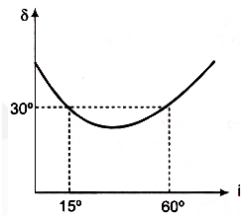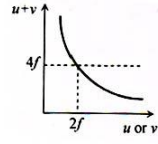
(a) 30° (b) 45° (c) 60° (d)75°

32. A ray of light undergoes deviation of 30° when incident on an equilateral prism of refractive index $\sqrt{2}$. The angle made by the ray inside the prism with the base of the prism is
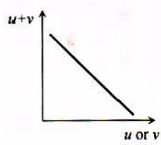
(a) 15° (b) 0° (c) 45° (d) 30°

33. For a convex lens, if real image is formed the graph between $(u + v)$ and u or v is as follows.
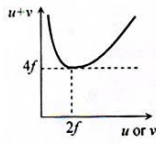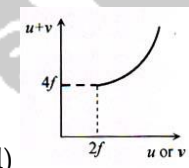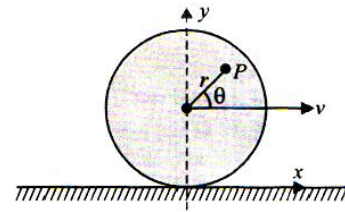
(a) (b)

(c) (d)

34. A concave lens forms the image of an object such that the distance between the object and image is 10 cm and the magnification produced is 1/4. The focal length of the lens will be

(a) 8.6 cm (b) 6.2 cm (c) 10 cm (d) 4.4 cm

35. An object is kept at a distance of 16 cm from a thin lens and the image formed is real. If the object is kept at a distance of 6 cm from the same lens the image formed is virtual. If the size of the images formed are equal, the focal length of the lens will be

(a) 8 cm (b) 5 cm (c) 11 cm (d) $\sqrt{96}$ cm

SECTION -B

36. A disc of radius R rolls without slipping at speed v along positive x-axis. Velocity of point P at the instant shown in figure is.

(a) $\vec{V}_P = \left(v + \dfrac{vr\sin\theta}{R} \right)\hat{i} + \dfrac{vr\cos\theta}{R}\hat{j}$

(b) $\vec{V}_P = \left(v + \dfrac{vr\sin\theta}{R} \right)\hat{i} - \dfrac{vr\cos\theta}{R}\hat{j}$

(c) $\vec{V}_P = \dfrac{vr\sin\theta}{R}\hat{i} + \dfrac{vr\cos\theta}{R}\hat{j}$

(d) $\vec{V}_P = \dfrac{vr\sin\theta}{R}\hat{i} - \dfrac{vr\cos\theta}{R}\hat{j}$

37. A hollow cylinder and a solid cylinder are released from rest simultaneously from the top of an inclined plane. Which will reach the bottom first
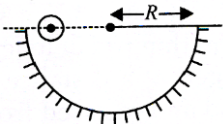
(a) the solid cylinder

(b)the hollow cylinder

(c) both will reach the bottom together

(d) the one having greater density

38. A cylinder rolls up an inclined plane, reaches some height and then rolls down (without slipping throughout these motions). The directions of the frictional force acting on the cylinder are

(a) up the incline while ascending and down the incline while descending

(b) up the incline while ascending as well as descending

(c) down the incline while ascending and up the incline while descending

(d) down the incline while ascending as well as descending

39. A solid sphere of mass m rolls down an inclined plane without slipping, starting from rest at the top of an inclined plane. The linear speed of the sphere at the bottom of the inclined plane is v. The kinetic energy of the sphere at the bottom is.

(a) $\dfrac{7}{10}mv^2$ (b) $\dfrac{2}{5}mv^2$ (c) $\dfrac{5}{3}mv^2$ (d) $\dfrac{1}{2}mv^2$

40. A solid sphere of mass 2 kg rolls on a smooth horizontal surface at 10 ms^{-1}. It then rolls up a smooth inclined plane of inclination 30° with the horizontal. The height attained by the sphere before it stops is.
(a) 70 cm   (b) 8 m   (c) 7 m   (d) N.O.T.

41. A solid sphere is rolling without slipping on a horizontal surface. The ratio of its rotational kinetic energy to its translational kinetic energy is.
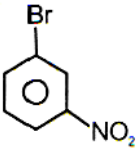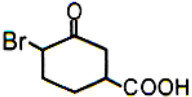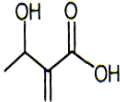(a) 2/9   (b) 2/7   (c) 2/5   (d) 7/2

42. A body is rolling down an inclined plane. Its translational and rotational kinetic energies are equal. The body is a.
(a) solid sphere   (b) hollow sphere
(c) solid cylinder   (d) hollow cylinder

43. The acceleration of the centre of mass of a uniform solid disc rolling down an inclined plane of angle α is.
(a) $g\sin\alpha$ (b) $(2/3)g\sin\alpha$
(c) $(1/2)g\sin\alpha$ (d) $(1/3)g\sin\alpha$

44. In the figure shown, a small ball of mass 'm' can move without sliding in a fixed semicircular track of radius R in vertical plane. It is released from the top. The resultant force on the ball at the lowest point of the track is.

(a) $\dfrac{10mg}{7}$ (b) $\dfrac{17mg}{7}$ (c) $\dfrac{3mg}{7}$ (d) Zero

45. When a body rolls without sliding up an inclined plane, the frictional force is:
(a) directed up the plane
(b) directed down the plane
(c) zero
(d) dependent on its velocity

46. When a solid sphere rolls without slipping down an inclined plane making an angle θ with the horizontal, the acceleration of its centre of mass is a. If the same sphere slides without friction, its acceleration is.
(a) $\dfrac{7}{2}a$ (b) $\dfrac{5}{7}a$ (c) $\dfrac{7}{5}a$ (d) $\dfrac{5}{2}a$

47. A ball rolls without slipping. The radius of gyration of the ball about an axis passing through its centre of mass is k. If radius of the ball be R, then the fraction of total energy associated with its rotation will be.
(a) $\dfrac{k^2+R^2}{R^2}$ (b) $\dfrac{k^2}{R^2}$
(c) $\dfrac{k^2}{k^2+R^2}$ (d) $\dfrac{R^2}{k^2+R^2}$

48. A uniform solid disk rolling down an incline making angle θ with the horizontal. The minimum coefficient of friction required to maintain motion for the disk is.
(a) $\left(\dfrac{2}{3}\tan\theta\right)$ (b) $\left(\dfrac{1}{3}\tan\theta\right)$
(c) $\left(\dfrac{2}{3}\tan\theta\right)$ (d) $\left(\dfrac{1}{2}\tan\theta\right)$

49. A ring and a disc having the same mass, roll without slipping with the same linear velocity. If the kinetic energy of the ring is 8J, find the kinetic energy of disc (in J).
(a) 6   (b) 2   (c) 5   (d) 10

50. A solid cylinder of mass M and radius R rolls without slipping down an inclined plane of length L and height h. What is the speed of its center of mass when the cylinder reaches its bottom.
(a) $\sqrt{\dfrac{3}{4}gh}$ (b) $\sqrt{\dfrac{4}{3}gh}$
(c) $\sqrt{2gh}$ (d) $\sqrt{2}v$

CHEMISTRY

SECTION – A

51. The number of elements present in 3rd period of the periodic table are :
(a) 6   (b) 8
(c) 18   (d) 9

52. Choose the endothermic process :
(a) $F(g) + e^- \rightarrow F^-(g)$
(b) $Cl(g) \rightarrow Cl^+(g) + e^-$
(c) $O^-(g) + e^- \rightarrow O^{2-}(g)$
(d) Both b and c

53. Which of the following can readily react with NaOH solution :
(a) CO   (b) NO
(c) CaO   (d) Cl_2O_7

54. For an element M, the successive ionisation energies are 7.9 eV, 15.5 eV, 340.8 eV and 520.6 eV respectively. The formula of its oxide will be :
(a) MO   (b) M_2O
(c) MO_2 (d) M_2O_3

55. Choose the incorrect order of size :
(a) $Al^{3+} < Mg^{2+} < Na^+$
(b) $I^+ < I < I^-$
(c) $Li^+ +< Na^+ < K^+$
(d) $F^- > O^{2-} < N^{3-}$

56. The element with atomic number 33 belongs to which period and group in the periodic table :
(a) Period 15, Group 4
(b) Period 3, Group 15
(c) Period 4, Group 15
(d) Period 3, Group 16

57. Amphoteric oxide among the following is :
(a) N_2O (b) Al_2O_3
(c) PbO   (d) Both b and c

58. Which of the following can't exist :
(a) AlF_6^{3-} (b) BF_4^-
(c) BF_6^{3-} (d) Both a and b

59. The 1st ionisation potential (eV) of Be and B respectively are :
(a) 8.29, 8.29   (b) 9.32, 9.32
(c) 9.32, 8.29   (d) 8.29, 9.32

60. Orbitals having maximum shielding effect is :
(a) s   (b) d
(c) p   (d) f

61. IUPAC name of the element with atomic number as 117 is :
(a) Ununheptium   (b) Unnilheptium
(c) Unnilseptium   (d) Ununseptium

62. Identify the transuranium element :
(a) Th   (b) Pa   (c) Pu   (d) Sm

63. The electrons in 3p subshell wont be shielded by :
(a) 1s   (b) 2p   (c) 4s
(d) They will be shielded by all of the above

64. General electronic configuration of outermost and penultimate shell is $(n-1)s^2$ $(n-1)p^6$ $(n-1)d^x$ ns^2. If n = 4 and x = 6 then find the number of protons in the nucleus :
(a) < 24   (b) > 26   (c) 25   (d) 26

65. Pair where the IP of 1st is more than 2nd is :
(a) O, N   (b) P, S
(c) O, F   (d) C, N

66. Choose the incorrect option :
(a) $IE_1 : O < N < F$
(b) Size : $Mg > Mg^+ > Mg^{2+}$
(c) Electron gain enthalpy (-ve) : Cl > F > Br
(d) Electronegativity : Cl > F > O

67. The correct order of the acidic strength is :
(a) $SO_2 < P_2O_3 < SiO_2 < Al_2O_3$
(b) $SiO_2 < SO_2 < Al_2O_3 < P_2O_3$
(c) $Al_2O_3 < SiO_2 < SO_2 < P_2O_3$
(d) $Al_2O_3 < SiO_2 < P_2O_3 < SO_2$

68. If the internuclear distance 2H atoms in H_2 molecule is 74 pm then the covalent radius of H is :
(a) 74 pm   (b) 37 pm
(c) 74 Å   (d) 37 Å

69. The one having maximum first ionization energy in the second period is :
(a) F   (b) N   (c) Li   (d) Ne

70. In the modern periodic table, the period indicates the value of :
(a) atomic number
(b) atomic mass
(c) principal quantum number
(d) azimuthal quantum number.

71. Which of the following statements related to the modern periodic table is incorrect ?
    (a) The p-block has 6 columns, because a maximum of 6 electrons can occupy all the orbitals in a p-shell.
    (b) The d-block has 8 columns, because a maximum of 8 electrons can occupy all the orbitals in a d-subshell.
    (c) Each block contains a number of columns equal to the number of electrons that can occupy that subshell.
    (d) The block indicates value of azimuthal quantum number (l) for the last subshell that received electrons in building up the electronic configuration.

72. Anything that influences the valence electrons will affect the chemistry of the element. Which one of the following factors does not affect the valence shell ?
    (a) Valence principal quantum number (n)
    (b) Nuclear charge (Z)
    (c) Nuclear mass
    (d) Number of core electrons.

73. The size of isoelectronic species - F^-, Ne and Na^+ is affected by
    (a) nuclear charge (Z)
    (b) valence principal quantum number (n)
    (c) electron electron interaction in the outer orbitals.
    (d) none of the factors because their size is the same.

74. Which one of the following statements is incorrect in relation to ionization enthalpy?
    (a) Ionization enthalpy increases for each successive electron.
    (b) The greatest increase in ionization enthalpy is experienced on removal of electron from core noble gas configuration.
    (c) End of valence electrons is marked by a big jump in ionization enthalpy.
    (d) Removal of electron from orbitals bearing lower n value is easier than from orbital having higher n value.

75. Considering the elements B, Al, Mg, and K, the correct order of their metallic character is :
    (a) B > Al > Mg > K   (b) Al > Mg > B > K
    (c) Mg > Al > K > B   (d) K > Mg > Al > B

76. Considering the elements B, C, N, F, and Si, the correct order of their non-metallic character is :
    (a) B > C > Si > N > F   (b) Si > C > B > N > F
    (c) F > N > C > B > Si   (d) F > N > C > Si > B

77. Considering the element F, Cl, O and N, the correct order of their chemical reactivity in terms of oxidizing property is :
    (a) F > Cl > O > N   (b) F > O > Cl > N
    (c) Cl > F > O > N   (d) O > F > N > Cl

78. IUPAC name of the following compound

    (a) 1-Bromo-3-nitrobenzene
    (b) 1-nitro-3-Bromobenzene
    (c) 1-Bromo-3-nitrobenzene
    (d) 1-nitro-3-bromobenzene

79. IUPAC name for the following structure

    (a) 4-Bromo-3-oxocyclohexane-carboxylic acid
    (b) 3-Bromo-4-oxocyclohexanoic acid
    (c) 2-Bromo-4-carboxyhexasnone
    (d) 2-Bromo-5-carboxycyclohexanone

80. The IUPAC name of the compound.

    (a) 3-Hydroxy-2-methyl butanoic acid
    (b) 3-Hydroxy-2-methylidenebutanoic acid
    (c) 3-Hydroxy-2-ethylenebutanoic acid
    (d) 3-Hydroxy-2-ethylidene butanoic acid

81. Which of the following is not an actinoid ?
    (a) Curium (Z = 96)   (b) Californium (Z = 98)
    (c) uranium (Z = 92)   (d) Terbium (Z = 65)

82. The statement that is not correct for periodic classification of elements is :
    (a) The properties of elements are periodic function of their atomic numbers.
    (b) Non metallic elements are less in number than metallic elements.
    (c) For transition elements, the 3d-orbitals are filled with electrons after 3p-orbitals and before 4s-orbitals.
    (d) The first ionisation enthalpies of elements generally increase with increase in atomic number as we go along a period.

83. Electronic configurations of four elements A, B, C and D are given below :
    (a) $1s^2 2s^2 2p^6$ (b) $1s^2 2s^2 2p^4$
    (c) $1s^2 2s^2 2p^6 3s^1$ (d) $1s^2 2s^2 2p^5$
    Which of the following is the correct order of increasing tendency to gain electron :
    (a) A < C < B < D   (b) A < B < C < D
    (c) D < B < C < A   (d) D < A < B < C

84. Match the following :

Atomic Number		Official Name	
(a)	106	(i)	Nobelium
(b)	111	(ii)	Rontgenium
(c)	116	(iii)	Seaborgium
(d)	102	(iv)	Livermorium

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

85. How many elements can be present in 3rd period of the periodic table if 3 values are allowed for spin quantum number :
(a) 8   (b) 12   (c) 18   (d) 27

SECTION –B

86. The oxidation state of O in BaO_2
(a) -1/2   (b) -1
(c) -2   (d) 0

87. Density of 3M solution of NaCl is 1.25 g/ml. Molality of the solution is
(a) 7.92   (b) 9.72
(c) 2.79   (d) 3.98

88. In Haber's process $N_2 + 3H_2 \rightarrow 2NH_3$, starting with 5 mol of N_2 and 10 mol of H_2, the reagent completely consumed in the reaction is
(a) N_2
(b) H_2
(c) Cannot be predicted
(d) Neither N_2 nor H_2

89. Which one has maximum number of atoms
(a) 11.2 L of CO_2 at STP
(b) 11.3g-atom of He
(c) 11.2g of H_2O (s)
(d) 8.0g of SO_3

90. Magnetic moment of Fe^{3+} is
(a) 3.872 BM   (b) 5.92 BM
(c) 4.899 BM   (d) 6.48 BM

91. Monochromatic light of frequency $6.0 \times 10^{14}\,Hz$ is produced by a laser. Calculate the energy of the photon in light beam ?
(a) $4.0 \times 10^{-19}\,J$ (b) $4.0 \times 10^{18}\,J$
(c) $4.0 \times 10^{-20}\,J$ (d) $4.0 \times 10^{-21}\,J$
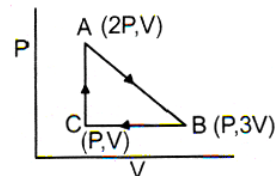
92. The potential energy of an electron present in N-shell of the Be^{3+} ion is
(a) -3.4 eV   (b) -6.8 eV
(c) -13.6 eV   (d) -27.2 eV

93. If heat of formation $\left(\Delta_f H^o\right)$ of C_2H_4 and C_2H_6 are x_1 and x_2 kCal mol^{-1} respectively, then heat of hydrogenation of C_2H_4 is –
(a) $x_1 + x_2$ (b) $x_1 - x_2$
(c) $x_2 - x_1$ (d) $x_1 + 2x_2$

94. Heat exchanged in this cyclic process is numerically equal to :

(a) 3PV   (b) PV   (c) PV/2   (d) 2PV

95. The change in internal energy is zero for which of the following process ?
(i) Vaporisation of water
(ii) Combustion of CH_4 at constant temperature
(iii) Expansion of gas against vacuum in isothermal process
(iv) Isothermal expansion of a gas
(a) (i), (ii), (iii), (iv)   (b) (ii), (iii), (iv) only
(c) (iii), (iv) only   (d) (i), (ii) only

96. Calculate the pH of mixture of 400ml 0.01 M HCl and 600ml H_2O.
(a) 4   (b) 3.4   (c) 7   (d) 2.4

97. Which one is the conjugate base of HSO_4^- ?
(a) H_2SO_4 (b) HSO_3 (c) SO_3 (d) SO_4^{2-}

98. For the following $3A \rightleftharpoons 2B + 2C$
What is the relation between K_p, total pressure at equilibrium (P) and degree of dissociation (α)?
(a) $K_p = \dfrac{P\alpha^4}{(1-\alpha)^3}$

(b) $K_p = \dfrac{4P\alpha^4}{9(1-\alpha)^3}$

(c) $K_p = \dfrac{16P\alpha^4}{27(1-\alpha)^3(3+\alpha)}$

(d) $K_p = \dfrac{4P\alpha^2}{(1-\alpha)^3}$

99. Choose the incorrect order for acidic strength.
(a) $CO_2 > CO$ (b) $SO_2 < SO_3$
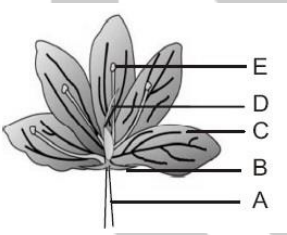(c) $HClO_2 > HOCl$ (d) $SiO_2 > CO_2$

100. Choose the correct order of ionization energy for the following species.
(a) Sc > La > Y   (b) $Sc > Y \approx La$
(c) Sc > Y > La   (d) Sc < Y > La

BOTANY

SECTION - A

101. Most algae are characterized by
(a) Presence of embryo
(b) Presence of multicellular jacketed sex organ
(c) Possessing thalloid plant body
(d) Presence of photosynthetic independent sporophyte

102. Red algae differ from the green algae as they lack
(a) Chlorophyll a
(b) Specialised sex organs
(c) Cellulosic cell wall
(d) Flagella throughout the life

103. Select the incorrect statement w.r.t. bryophytes
(a) Commonly growing in moist and shaded areas
(b) Dependent on water for sexual reproduction
(c) Lack true roots, stem and leaves
(d) Zygote undergoes reduction division immediately to form spore

104. The main plant body of bryophytes is
(a) Free living sporophyte
(b) Free living gametophyte
(c) More differentiated than that of ferns
(d) Non green structure dependent on sporophyte

105. Statement A: Protonema is formed in mosses and liverworts.
Statement B: Protonema represents sporophytic stage of bryophytes.
(a) Only (A) is correct
(b) Only (B) is correct
(c) Both (A) and (B) are incorrect
(d) Both (A) and (B) are correct

106. In which of the following features bryophytes do not resemble green algae?
(a) Thalloid plant body
(b) Absence of vascular tissues
(c) Need of water for sexual reproduction
(d) Presence of embryo

107. In heterosporous species, the female gametophyte remains on the parent sporophytes for variable periods and development of zygote into young embryo within the female gametophyte is precursor to the
(a) Heterospory
(b) Seed habitat
(c) Development of prothallus
(d) Fruit formation

108. In some pteridophytes, the spore germinates to form prothallus, which is
(a) Inconspicuous and unicellular
(b) Multicellular and green in colour
(c) Thalloid and photosynthetic
(d) Both (b) and (c)

109. Vascular archegoniate include
(a) All embryophytes
(b) All spermatophytes
(c) Pteridophytes and gymnosperms
(d) Gymnosperms and angiosperm

110. Pteridophytes differ from gymnosperms as the former
(a) Have embryo
(b) Contains vessels in their xylem
(c) Do not form seeds
(d) Produce non-motile male gametes

111. In flowering plants, male and female gametophytes are called respectively
(a) Pollen grain and endosperm
(b) Pollen grain and embryo-sac
(c) Stamen and carpel
(d) Anther and ovule

112. Select the incorrect match.
(a) First embryophytes – Bryophytes
(b) First tracheophytes – Pteridophytes
(c) Archegoniate spermatophytes – Gymnosperms
(d) Seed plants without ovary – Angiosperms

113. Classification system based upon gross superficial morphological characters
(a) Was given by Bentham and Hooker
(b) Was an artificial classification
(c) Consider various internal features also for classification of organisms
(d) Was mainly based upon evolutionary relationships among organisms

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114. *Spirogyra*
(a) Is a unicellular alga
(b) Produce flagellated gametes
(c) Shows isogamous reproduction
(d) Has motile female gamete

115. Select the mismatched pair
(a) *Fucus* – Rich source of iodine
(b) *Chlorella* – Food supplement for space travellers
(c) *Volvox* – Colonial alga
(d) *Chara* – Presence of hydrocolloids in cell wall

116. Find the statements that are true for the root:
(A) The main function of root is the absorption of water and minerals
(B) Root provide proper anchorage to the plant
(C) Plant growth regulator are synthesized in root
(D) Root helps in the storage of food
(a) A, B, C, D   (b) Only C
(c) C, D   (d) Only D

117. Consider the following statements
(A) In recemose inflorescence, the flowers are borne in a basipetal order.
(B) Epigynous flowers are seen in rose plants
(C) In Brinjal the ovary is superior
    Of these statements
(a) (A) and (B) are true, but (C) is false
(b) (A) and (C) are true, but (B) is false
(c) (A) and (B) are false, but (C) is true
(d) (B) and (C) are true, but (A) is false

118. Select the correct statements:
A. From the region of elongation, some epidermal cells form root hairs
B. Pneumatophores are seen in *Rhizophora*
C. Adventitious roots are seen in the banyan trees
D. Maize and sugarcane have prop-roots
(a) A and D   (b) A, C and D
(c) C and D   (d) B and C

119. The ovules develop on the inner wall of the ovary on peripheral part in which type of placentation?
(a) Axile   (b) Parietal
(c) Marginal   (d) Basal

120. Find the incorrect match
(a) Tendrils   - Pea
(b) Spines   - Cactus
(c) Fleshy leaves   - Onion
(d) Phylloclade   - Australian *Acacia*

121. A bud is present in:
(a) The axil of petiole of simple leaf
(b) The axil of petiole of compound leaf
(c) The stem apex
(d) All are correct

122. In pea and bean flowers:
(a) There are seven petals
(b) The anterior petals (keel) overlap the lateral petals (wings)
(c) Papilionaceous aestivation is absent
(d) The largest posterior petal (standard) overlaps the two lateral petals (wings)

123. Read the following statements:
(A) A sterile stamen is called staminode
(B) Epipetalous stamen is found in lily and an epiphyllous stamen in brinjal
(C) China rose possess polyadelphous stamen
(D) *Salvia* and mustard possess variable length filaments in stamen
(E) Pea possess monoadelphous as well as diadelphous stamen
How many of the above statements are correct?
(a) Three   (b) Two
(c) Four   (d) Five

124. **Statement-A :** In some leguminous plants, the leaf base swells and is called pulvinus.
Statement-B : Pulvinus produces a cooling effect in the leaves by bringing fresh air to the leaf surface.
(a) Statement-A is incorrect
(b) Statement-B is incorrect
(c) Both statements A and B are incorrect
(d) Both statements A and B are correct

125. Which of the following is not the function of stem?
(A) Storage of food
(B) Provides support
(C) Conduction of minerals
(D) Vegetative propagation
(E) Absorption of minerals
(a) All except (E)   (b) All except (A) and (B)
(3) (D) only   (d) (E) only

126. **Statement A :** The region proximal to region of elongation in a root, bears root hairs.
Statement B : The region distal to region of maturation is responsible for the growth of the root in length.
(a) Both statements A and B are incorrect
(b) Both statements A and B are correct
(c) Only statement A is correct
(d) Only statement B is correct

127. Select the mismatch w.r.t. modifications of leaf.
(a) Leaf tendrils – Pea
(b) Leaf spines – Cactus
(c) Phyllodes – *Aloe*
(d) Storage organ – Garlic

128. **Statement-A :** Thalamus is the swollen end of the pedicel of a flower.
Statement-B : In Lily, calyx and corolla are not distinct.
(a) Both statement A and B are incorrect
(b) Both statement A and B are correct
(c) Only statement A is correct
(d) Only statement B is correct

129. Select the correct option for A, B, C, D and E in the figure given below.

(a) (A) Pedicel, (B) Calyx, (D) Gynoecium
(b) (A) Calyx, (D) Androecium, (E) Gynoecium
(c) (B) Corolla, (C) Calyx, (D) Gynoecium
(d) (B) Calyx, (D) Androecium, (E) Gynoecium

130. Select the correct option w.r.t. plants bearing ovules which are borne on central axis and lack septa.
(a) *Argemone* and mango
(b) *Dianthus* and *Primrose*
(c) Tomato and lemon
(d) *Primrose* and marigold

131. Variation of leaves is not depends on
(a) Shape
(b) Extent of incision of lamina
(c) Apex
(d) Photosynthetic ability

132. In which of the following placentation, false septa is formed?
(a) Marginal
(b) Free central
(c) Axial
(d) Parietal

133. Which among the following is the function of midrib?
(a) Provide rigidity to leaf blade
(b) Photosynthesis
(c) Absorption of nutrients
(d) All the above

134. Ginger is an underground stem. It is distinguished from root because
(a) it lacks chlorophyll.
(b) it stores food.
(c) it has nodes and internodes.
(d) it has xylem and vessels.

135. Find the incorrect statement:
(a) In pinnately compound leaf rachis is present
(b) Rachis, actually represents the mid-rib of the leaf in a pinnately compound leaf
(c) In palmately compound leaf rachis is present
(d) Silk cotton has got palmately compound leaf

SECTION - B

136. The margins of sepals or petals overlap one another but not in any particular directions in the flowers of:
(a) Cassia and gulmohar
(b) China rose and cotton
(c) Calotropis
(d) Calotropis and lady's finger

137. The main function of stem is?
(a) Spreading out branches bearing leaves, fruits and flowers
(b) It conducts water, minerals and photosynthates
(c) It performs the function of storage of food, support, protection and of vegetative propogation
(d) None of the above

138. Regarding to modification of root, find out the odd match
(a) Storage of food　　- Potato
(b) Support　　　　　- Banyan
(c) Gaseous exchange　- *Rhizophora*
(d) Photosynthesis　　- *Tinospora*

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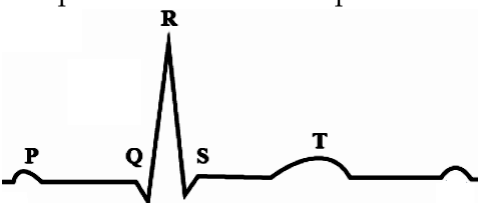
139. Leaves are lateral, generally flattened structure born on nodes. They originate from _____ and _____ arranged in _____ manner
    (a) Apical meristem, Acropetal
    (b) Lateral meristem, Acropetal
    (c) Apical meristem, Basipetal
    (d) Lateral meristem, Basipetal

140. Which among the following is not the function of petiole
    (a) Hold the blade in light
    (b) Flutter of leaves in wind
    (c) Cooling of leaf
    (d) Gaseus exchange

141. "X" is the outermost whorl of the flower and contains "Y". Y is green, leaf like and protect the other whorls of the flower. Identify X and Y.
    (a) X - Calyx; Y - Sepals
    (b) X - Corolla; Y - Petals
    (c) X - Gynoecium; Y - Fruit
    (d) X - Androecium; Y – Ovary

142. **Statement A :** Style is a tube like structure which lies above the ovary in stigma.
    Statement B : Stigma acts as the receptive organ for pollen grains during pollination.
    (a) Only statement A is correct
    (b) Only statement B is correct
    (c) Both the statements A and B are correct
    (d) Both the statements A and B are incorrect

143. In morphology of flower which of the following statement is incorrect?
    (a) In Citrus plants more than two bundles of stamens form
    (b) Apocarpous can be seen in lotus and rose
    (c) Syncarpous condition can be seen in mustard and tomato
    (d) In *Salvia* stamens filament are of same length

144. In given figure root modified for:
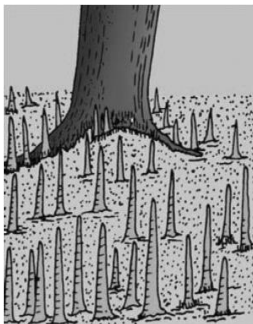
    (a) Photosynthesis   (b) Respiration
    (c) Excretion   (d) Storage

145. The roots of sweet potato get swollen and store food. These roots are of the type
    (a) Tap root   (b) Adventitious roots
    (c) Prop roots   (d) Stilt roots

146. The lateral branches originate from the basal and underground portion of the main stem, grow horizontally beneath the soil and then come out obliquely upward giving rise to leafy shoots in
    (a) Pineapple   (b) Strawberry
    (c) Pumpkin   (d) All of the above

147. Read the following five statements
    (A) Sheathing leaf base is found in monocotyledons
    (B) In some leguminous plants the leaf base may become swollen, which is called the pulvinus
    (C) A bud is present in the axil of leaflet of the compound leaf
    (D) Palmately compound leaves are found in neem
    (E) Whorled phyllotaxy is found in *Alstonia*
    How many of the above statements are correct?
    (a) Four   (b) One
    (c) Two   (d) Three

148. Tendril and spine develops from:
    (a) Root   (b) Modification of root
    (c) Stem   (d) Modification of leaves

149. Mode of arrangement of sepals and petals in floral bud with respect to other members of the same whorl is termed as:
    (a) Inflorescence   (b) Aestivation
    (c) Venation   (d) Placentation

150. Find odd one out:
    (a) Ginger   (b) Zaminkand
    (c) Turmeric   (d) Turnip

ZOOLOGY

SECTION – A

151. Serum differs from blood in
(a) lacking globulins
(b) lacking aldumins
(c) lacking clotting factors
(d) lacking antibodies

152. Which one of the following animals has two separate circulatory pathways?
(a) Whale
(b) Shark
(c) Frog
(d) Lizard

153. Which one of the following is correct?
(a) Lymph = Plasma + RBC +WBC
(b) Blood = Plasma + RBC + WBC + Platelets
(c) Plasma = Blood - Lymphocytes
(d) Serum = Blood + Fibrinogen

154. Blood pressure in the mammalian aorta is maximum during
(a) systole of the left ventricle
(b) diastole of the right atrium
(c) systole of the left atrium
(d) diastole of the right ventricle

155. Person with blood group AB is considered as universal recipient because he has
(a) both A and B antigens on RBC but no antibodies in the plasma
(b) both A and B antibodies in the plasma
(c) no antigen on RBC and no antibody in the plasma
(d) both A and B antigens in the plasma but no antibodies.

156. The diagram given here is the standard ECG of a normal person. The P-wave represents the

(a) beginning of the systole
(b) end of systole
(c) contraction of both the atria
(d) Initiation of the ventricular contraction.

157. A certain road accident patient with unknown blood group need immediate blood transfusion. His one doctor friend at once offers his blood. What was the blood group of the donor?
(a) Blood group B
(b) Blood group AB
(c) Blood group O
(d) Blood group A

158. Which one of the following human organ organs is often called the "graveyard" of RBCs?
(a) Gall bladder
(b) Kidney
(c) Spleen
(d) Liver

159. Which one of the following plasma proteins is involved in the coagulation of blood?
(a) Albumin
(b) Serum amylase
(c) Globulin
(d) Fibrinogen

160. Which one of the following statements is correct regarding blood pressure?
(a) 130/90 mm Hg is considered high and requires treatment.
(b) 100/55 mm Hg is considered an ideal blood pressure.
(c) 105/50 mm Hg makes one very active.
(d) 190/110 mm Hg may harm vital organs like brain and kidney.

161. Which two of the following changes (i – iv) usually tend to occur in the plain dwellers when they move to high altitudes (3,500 m or more)?
(i) Increase in red blood cell size
(ii) Increase in red blood cell production
(iii) Increased breathing rate
(iv) Increase in thrombocyte count
Change occurring are
(a) (ii) and (iii)
(b) (iii) and (iv)
(c) (i) and (iv)
(d) (i) and (ii)

162. Given below are four statements (i - iv) regarding human blood circulatory system.
(i) Arteries are thick-walled and have narrow lumen as compared to veins.
(ii) Angina is acute chest pain when the blood circulation to brain is reduced.
(iii) Persons with blood group AB can donate blood to any person with any blood group under ABO system.
(iv) Calcium ions play a very important role in blood clotting.
Which two of the above statements are correct?
(a) (i) and (iv)
(b) (i) and (ii)
(c) (ii) and (iii)
(d) (iii) and (iv)

163. The hemoglobin content per 100 ml of blood of a normal healthy human adult is
(a) 5 – 11 g   (b) 25 – 30 g
(c) 17 – 20 g   (d) 12 – 16 g

164. The most active phagocytic white blood cells are
(a) eosinophil's and lymphocytes
(b) neutrophils and monocytes
(c) neutrophils and eosinophils
(d) lymphocytes and macrophages

165. Which type of white blood cells are concerned with the release of histamine and the natural anticoagulant heparin?
(a) Eosinophils   (b) Monocytes
(c) Neutrophils   (d) Basophils

166. The cardiac pacemaker in a patient fails to function normally. The doctors find that an artificial pacemaker is to be grafted in him. It is likely that it will be grafted at the site of
(a) atrioventricular bundle
(b) Purkinje system
(c) sinoatrial node
(d) atrioventricular node

167. Bundle of His is a network of
(a) muscle fibres distributed throughout the heart walls?
(b) muscle fibres found only in the ventricle wall.
(c) nerve fibres distributed in venticles
(d) nerve fibres found throughout the heart.

168. Difference between pulmonary artery and pulmonary vein is that, the pulmonary artery has
(a) no endothelium   (b) valves
(c) thicker walls   (d) oxygenated blood

169. The thickening of walls of arteries is called
(a) arteriosclerosis   (b) arthritis
(c) aneurysm   (d) both (b) and (c)

170. The correct route through which pulse-making impulse travels in the heart is
(a) SA node → Purkinje fibres → bundle of His →AV node → heart muscles
(b) SA node → AV node → bundle of His → Purkinje fibres → heart muscles

(c) AV node → bundle of His → SA node → Purkinje fibres → heart muscles
(d) AV node → SA node → Purkinje fibers → bundle of His → heart muscles

171. The lymph serves to
(a) return the interstitial fluid to the blood
(b) return the WBCs and RBCs to the lymph nodes
(c) transport CO_2 to the lungs
(d) transport O_2 to the brain.

172. In veins, valves are present to check backward flow of blood flowing at
(a) atmospheric pressure
(b) high pressure
(c) low pressure
(d) all of these

173. The heart sound 'dup' is produced when
(a) mitral valve is closed
(b) semi-lunar valves at the base of aorta get closed
(c) tricuspid valve is opened
(d) mitral valve is opened.

174. Cells formed in bone marrow include
(a) RBC   (b) RBC and leucocytes
(c) leucocytes   (d) lymphocytes

175. Carbonic anhydrase occurs in
(a) lymphocytes   (b) blood plasma
(c) RBC   (d) leucocytes

176. Tricuspid valve is found in between
(a) sinus venosus and right auricle
(b) right auricle and right ventricle
(c) left ventricle and left auricle
(d) ventricle and aorts

177. Child death may occur in the marriage of
(a) Rh$^+$ man and Rh$^+$ woman
(b) Rh$^+$ man and Rh$^-$ woman
(c) Rh$^-$ man and Rh$^-$ - woman
(d) Rh$^-$ man and Rh$^+$ - woman

178. During cardiac cycle, each ventricle pump out blood which is called
(a) Stroke volume   (b) Cardiac output
(c) Beat volume   (d) Both (a) and (c)

179. Match the column – I and II, and choose the correct combination from the options given.

	Column – I		Column – II
A.	Eosinophils	1.	Involved in inflammatory reactions
B.	Basophils	2.	Allergic reactions
C.	Neutrophils	3.	Responsible for immune response
D.	Lymphocytes	4.	Phagocytic cells
E.	Monocytes	5.	Gas transport

(a) A – 4, B – 5, C – 1, D – 2, E – 3
(b) A – 2, B – 1, C – 4, D – 3, E – 5
(c) A – 1, B – 2, C – 3, D – 4, E – 3
(d) A – 2, B – 1, C – 4, D – 3, E – 4

180. Which among the following statements are correct and which are wrong?
1. Plasma constitutes 45% of blood.
2. Albumin is plasma protein involved in osmotic balance
3. Blood clotting factors are present in blood
4. Plasma without clotting factors is serum
5. Minerals are not found in blood
(a) 1 – 4 correct, 5 wrong
(b) 1 – 2 correct, 3, 4, 5 wrong
(c) 2, 3, 4 correct, 1 and 5 wrong
(d) 2 and 4 correct, 1, 3, 5 wrong

181. Match the column – I and II, and choose the correct combination from the options given.

	Column – I (Formed elements)		Column – II (Number)
A.	Erythrocytes	1.	5 – 5.5 millions mm^{-3}
B.	Leucocytes	2.	6000 – 8000 mm^{-3}
C.	Platelets	3.	1,50,000 – 3,50,000 mm^{-3}

(a) A – 1, B – 2, C – 3　　(b) A – 2, B – 1, c – 3
(c) A – 3, B – 2, C – 1　　(d) A – 1, B – 3, C – 2

182. Fill in the blanks:

Blood groups	Antigens on RBCs	Antibodies in plasma
A	A	……1….
B	B	….2….
AB	….1….	….4….
O	…..5…..	Anti – A, B

(a) 1 – anti-A, 2 - anti- B, 3- nil, 4 – anti- B, 5- A, B
(b) 1 – anti-A, 2 – anti- B, 3 -A,B, 4-nil, 5 – nil
(c) 1 – anti-B, 2 - anti- A, 3 -A,B, 4 – nil, 5 – nil
(d) 1 – anti-B, 2 – anti -A, 3 – nil, 4 – anti-B, 5-A, B

183. Prothrombin $\xrightarrow{A}$ Thrombin
Fibrinogen $\xrightarrow{B}$ Fibrin
Recognise A and B
(a) A – thrombokinase, B - thrombin
(b) A – fibrin, B – thrombokinase
(c) A – thrombokinase, B – thrombinase
(d) A – thrombinase, B – thrombokinase

184. Read the following statements and find out the incorrect statements.
A. Heart is situated in the thoracic cavity, is between the two lungs, slightly tilted to the right
B. Heart has the size of a clenched fist
C. Heart is protected by double walled membranous bag, pericardium, enclosed the pericardial fluid
D. Human heart has four chambers, two relatively larger upper chambers called atria and two smaller lower chambers called ventricles
E. A thick muscular wall called the inter – atrial septum separates the left and right ventricles.
(a) A, D and E　　　(b) B, C and D
(c) B, C and E　　　(d) A and D

185. Match the column – I and II, and choose the correct combination from the options given.

	Column – I (Organisms)		Column – II (Heart)
A.	Fishes	1.	Two – chambered
B.	Amphibians	2.	Three – chambered
C.	Reptiles	3.	Four – chambered
D.	Birds		
E.	Mammals		

(a) A – 1, B – 1, C – 2, D – 2, E – 3
(b) A – 1, B – 1, C – 2, D – 3, E – 3
(c) A – 1, B – 2, C – 2, D – 3, E – 3
(d) A – 1, B – 2, C – 3, D – 2, E – 2

SECTION – B

186. How many cardiac cycles performed per minute?
(a) 72　　(b) 12 – 16　　(c) 80 – 120　　(d) 30

187. If due to some injury the chordae tendinae of the tricuspid valve of the human heart is partially non-functional, what will be the immediate effect?
(a) The flow of blood into the aorta will be slowed down
(b) The 'pacemaker' will stop working
(c) The blood will tend to flow back into the left atrium
(d) The flow of blood into the pulmonary artery will be reduced

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188. Globulins contained in human blood plasma are primary involved in
     (a) osmotic balance of body fluids
     (b) oxygen transport in the blood
     (c) clotting of blood
     (d) defence mechanisms of body

189. Which is the principal cation in the plasma of the blood?
     (a) Potassium   (b) Magnesium
     (c) Calcium   (d) Sodium

190. Which of the following is agranulocyte?
     (a) Basophil   (b) Neutrophil
     (c) Lymphocyte   (d) Eosinophil

191. Blood capillaries are made of
     (a) endothelium, connective tissue and muscle fibres
     (b) endothelium and muscle fibres
     (c) endothelium and connective tissue
     (d) endothelium only

192. Recognise the figure and find out the correct matching.
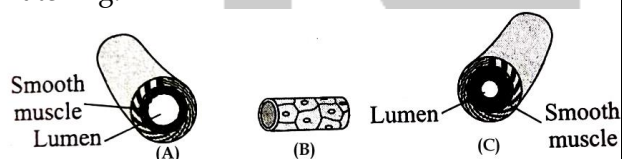
     (a) A – artery, B – vein, C – capillary
     (b) A – artery, A – vein, B – capillary
     (c) B – artery, C – vein, A – capillary
     (d) A – artery, C – vein, B – capillary

193. Read the following statements and find out the incorrect statements.
     A. All vertebrates and a few invertebrates have a closed circulatory system
     B. Hypertension leads to heart disease and also affects vital organs like brain and lungs
     C. CAD affects the vessels that supply blood to the skeletal muscles.
     D. In angina, a symptom of chronic chest pain appears when no enough oxygen is reaching the heart muscle
     E. Heart attack means the state of heart when it is not pumping blood effectively enough to meet the needs of the body.
     (a) A and B   (b) B, C and E
     (c) B, C and D   (d) B, C, D and E

194. Recognise the figure and find out the correct matching.
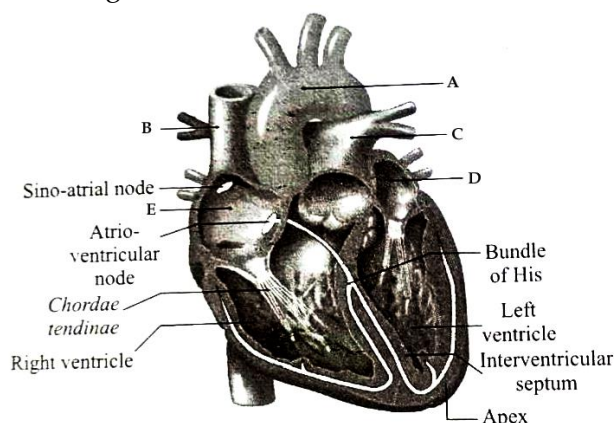
     (a) B – pulmonary vein, A – vena cava, C – aorta, D – right atrium, E – left atrium
     (b) C – pulmonary artery, B – vena cava, A – aorta, E – right atrium, D – left atrium
     (c) A – pulmonary vein, C – vena cava, B – aorta, D – right atrium, E – left atrium
     (d) C – pulmonary artery, A – vena cava, B – aorta, E – right atrium, D – left atrium

195. Match the column – I with column – II and choose the correct combination from the options given below.

	Column – I		Column – II
A.	Cardiac output	1.	70 ml
B.	Stroke volume	2.	5 liters
C.	First heart sound	3.	Dub
D.	Second heart sound	4.	Lub

	A	B	C	D
(a)	1	2	3	4
(b)	2	1	3	4
(c)	1	2	3	4
(d)	2	1	4	3

196. Which one of the following is a correct matching pair?
     (a) Lub – Sharp closure of AV valves at the beginning of ventricular systole
     (b) Dub – Sudden opening of semilunar valves at the beginning of ventricular diastole
     (c) Pulsation of the radial artery valves in the blood vessels
     (d) Purkinje fibers – Initiation of the heart beat

Assertion and Reason type questions
     (a) If both assertion and reason are true and the reason is a correct explanation of the assertion
     (b) If both assertion and reason re true but reason is not a correct explanation of the assertion
     (c) If the assertion is true but reason is false
     (d) If the assertion is false but the reason is true

197. **Assertion:** When there is a fall in the blood pressure due to loss of blood volume, this is compensated by vasoconstriction of veins.
Reason: Veins hold the extra amount of blood which can be shifted to the arteries as required
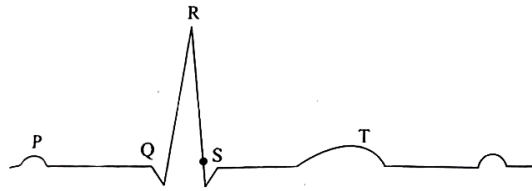(a)   (b)   (c)   (d)

198. **Assertion:** Blood is colourless in the insects
**Reason:** Insect blood has no role in O_2 transport
(a)   (b)   (c)   (d)

199. Given here is an ECG of a normal human. Which one of its components is correctly interpreted?

(a) QRS completes – one completes pulse
(b) Peak T – initiation of total cardiac contraction
(c) Peaks P and R – systole and diastole blood pressure
(d) Peak T – initiation of left atrial contraction only

200. Find the correct sequence that depicts the flow of blood in human circulatory system.

(a)

(b)

(c)

(d)
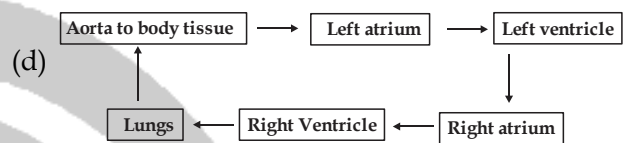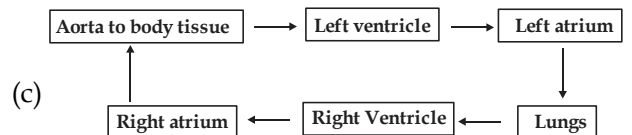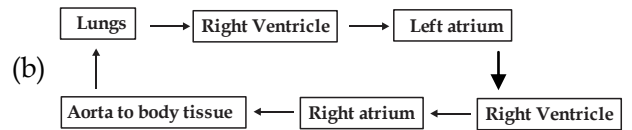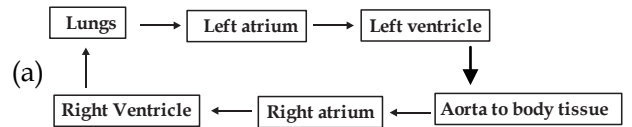
TEST ASSESMENT AND ANALYSIS SHEET

Name……………...…….…….………Test topic - …………….……….……………….……….Date …….…………

Physics	Marks per question	Total Ques.	Attempted	Unattempted	Correct	Incorrect	Net score
Multiple choice questions							
Q. No. (Incorrect)							
Q. No. (Unattempted)							
Chemistry	Marks per question	Total Ques.	Attempted	Unattempted	Correct	Incorrect	Net score
Multiple choice questions							
Q. No. (Incorrect)							
Q. No. (Unattempted)							
Biology	Marks per question	Total Ques.	Attempted	Unattempted	Correct	Incorrect	Net score
Multiple choice questions							
Q. No. (Incorrect)							
Q. No. (Unattempted)							
Total net score							
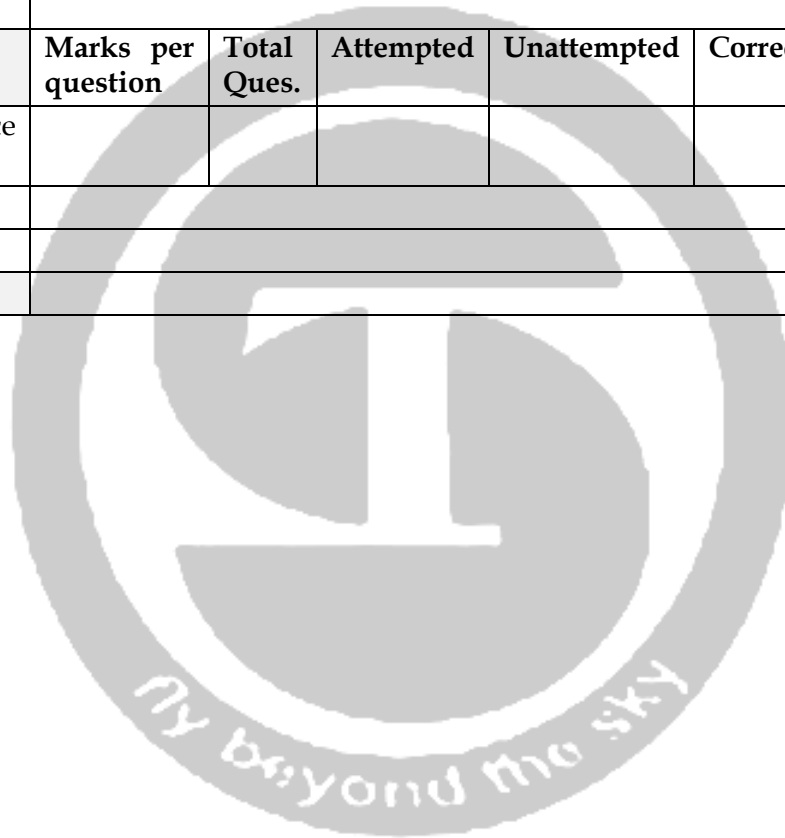
Space for rough work

Space for rough work