# FIITJEE Medical Test Sample Paper
# For students presently in
# Class – 10
## IQ, Physics, Chemistry & Biology

**Time Duration: 3 Hours** **Maximum Marks: 720**

## Instructions

**Caution: Class, Paper, Code as given above MUST be correctly marked in the answer OMR sheet before attempting the paper. Wrong Class, Paper or Code will give wrong results.**

1. This Question Paper contains only 4 **Sections**. All questions will be Multiple Choice with single correct option out of four choices. The marking scheme is as per the table given below:

| Section | Subject | Question No. | Marking Scheme for each questions | |
|---|---|---|---|---|
| | | | Correct Answer | Wrong Answer |
| Section – I | IQ | Q.NO: 1 to 30 | +4 | -1 |
| Section - II | Physics | Q.NO: 31 to 70 | +4 | -1 |
| Section - III | Chemistry | Q.NO: 71 to 110 | +4 | -1 |
| Section - IV | Biology | Q.NO: 111 to 180 | +4 | -1 |

2. Answers have to be marked on the OMR sheet. The Question Paper contains blank spaces for your rough work. No additional sheets will be provided for rough work.
3. Blank papers, clip boards, log tables, slide rule, calculator, cellular phones, pagers and electronic devices, in any form, are not allowed.
4. Before attempting paper write your Registration Number, Name and Test Centre in the space provided at the bottom of this sheet

**Note:** Please check this Question Paper contains all **180** questions. If not so, exchange for the correct Question Paper.

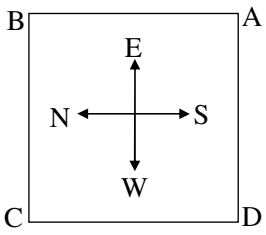
# I.Q Section - I

**Straight Objective Type**

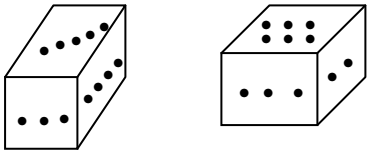
This section contains 30 multiple choice questions numbered 1 to 30. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.

1. 12-In a joint family, there are father, mother, 4 married sons and three unmarried daughters. Of the sons, two have 2 daughters each, and two have a son and a daughter each. How many female members are there in the family?
   (A) 15 (B) 12 (C) 14 (D) 11

2. *A, B, C* and *D* are standing on the four corners of a square field as shown in the adjoining figure.
   'A' starts crossing the field diagonally. After walking half the distance, he turns right, walks some distance and turns left. Which direction is 'A' facing now?
   (A) East (B) South-West
   (C) South-East (D) North-West

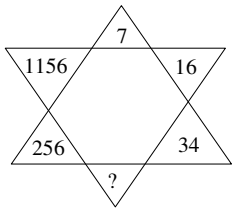



3. Two positions of a dice are shown.
   If 1 is on the bottom, which number will be on the top?
   (A) 4 (B) 3
   (C) 2 (D) 5



4. Find the missing character.

   (A) 72 (B) 49
   (C) 68 (D) 66

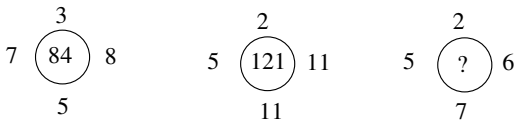



5. Five girls are standing in a row facing east. Savita is to the right of Urvashi, Tina and Urmila. Urvashi, Tina and Urmila are to the right of Kanika. Urmila is between Urvashi and Tina. If Tina is fourth from the left end, how far is Urvashi from the right end?
   (A) First (B) Second (C) Fifth (D) Fourth

6. A, B, C, D, E, F and G are sitting in a row facing North.
   (i) F is to the immediate left of G. (ii) E is 4$^{th}$ to the right of G.
   (iii) C is the neighbour of B and D. (iv) Person who is third to the left of D is at one of the ends.
   Who are the neighbours of B?
   (A) C and D (B) C and G (C) G and F (D) C and E

7. If x stands for –, ÷ stands for +, + stands for ÷ and – stands for x, which one of the following equation is correct?
   (A) $15-5\div5\times20+10=6$ (B) $8\div10-3+5\times6=8$
   (C) $6\times2+3\div12-3=15$ (D) $3\div7-5\times10+3=10$

8. Find the missing number in the following set of number around the circle from the choice given below:




   (A) 28 (B) 36 (C) 48 (D) 42

**Directions: (Questions 9-10): In each of the following questions, there is a certain relation between two given numbers on one side of :: and one number is given on another side of :: while another word is to be found from the given alternatives, having the same relation with this word of the given pair bears. Choose the best alternative.**

9. Conference : Chairman : : Newspaper : ?
(A) Reporter (B) Distributor (C) Printer (D) Editor

10. Crow : Carrion : : Leech : ?
(A) Bugs (B) Blood (C) Meat (D) Bones

**Directions: (Questions 11-12 ): In each of the following questions, there is a certain relation between two given numbers on one side of :: and one number is given on another side of :: while another number is to be found from the given alternatives, having the same relation with this number of the given pair bears. Choose the best alternative.**

11. 73 : 52 : : 25 : ?
(A) 9 (B) 37 (D) 27 (D) None of these

12. 242 : 121 : : 546 : ?
(A) 273 (B) 276 (C) 272 (D) 327

**Directions: (Questions 13-14 ): Find the missing term in the series.**

13. 20, 22, 25, 30, 37, _____
(A) 46 (B) 48 (C) 50 (D) None of these

14. 5, 7, 12, 19, 31, ____
(A) 40 (b) 50 (c) 52 (d) 55

**Directions: In each of the following questions, there are four choices (a-d). Three of them are alike and one different. Find the odd-man out.**

15. (A) Explain (B) Instruct (C) Teach (D) Train

16. If COULD is coded as BNTKC and MARGIN is coded as LZQFHM, then MOULDING =
(A) LNTKCHMF (B) CNMFINTK
(C) LNKTCHMF (D) NITKHCMF

17. If Alphabet series is written in reverse order then, from your left, what is the $7^{th}$ letter from the right of $12^{th}$ letter
(A) G (B) F (C) H (D) S

**DIRECTION (18) Five members of a family, Rakesh, Mukesh, Roopesh, Vipul and Umesh take food in a definite order—**
(1) Umesh was next to first man.
(2) Roopesh took food just before Vipul.
(3) Rakesh was the last man to take food.

18. Who were the first and last men to take food?
(A) Mukesh and Roopesh
(B) Roopesh and Rakesh
(C) Umesh and Mukesh
(D) None of these

19. If the numbers between 4 to 90, which are divisible by 5, and which contain 5 in the unit, tenth or both place, are removed, then how many numbers divisible by 5 will be left?
(A) 7 (B) 8 (C) 18 (D) 12

***Directions: (20): Study the following information carefully and answer the questions below it—***
There are six persons A, B, C, D, E and F. C is the sister of F. B is the brother of E's husband. D is the father of A and grandfather of F. There are two fathers, three brothers and a mother in the group.

20. Who is the mother?
(A) A (B) B (C) D (D) E

21. If 'nso ptr kli chn' stands for 'Rahul get birthday gift', 'ptr lnm wop chn' stands for 'sister gives birthday gift', 'tti wop nhi' stands for 'she gives pen' what would mean 'gives'?
(A) chn (B) nhi (C) ptr (D) wop

22. Between 4 and 5'O clock, when the hands will be inclined at $60^o$ for the first time?
(A) $10\frac{10}{11}$ min past 4 (B) $11\frac{10}{11}$ min past 4 (C) 12 min past 4 (D) $9\frac{10}{11}$ min past 4

**DIRECTION (23-24)** L,M,N,O,P,Q and R are sitting around a circle facing the centre. O is sitting between L and R. Q is second to the right of R and P is second to the right of Q. N is not an immediate neighbor of R.

23. Which of the following is not correct?
(A) R is second to right of L (B) M is second to left of N
(C) P sits to opposite of N (D) P and N are immediate neighbors

24. How many persons are seated between L and Q if we count anticlockwise from L to Q?
(A) 1 (B) 2 (C) 3 (D) 4

**Directions (Q. Nos. 25 to 26) Study the information given below and answer the questions that follow:**
A, B, C, D, E and F are cousins. No two cousins are of the same age, but all have birthdays on the same date. The youngest is 17 years old and the oldest E is 22. F is somewhere between B and D in age. A is older than B. C is older than D.

25. Which of the following is not possible?
(A) D is 20 years old (B) F is 18 years old (C) F is 19 years old (D) F is 20 years old

26. Which of the following could be the ages of D and C respectively, if B is 17 years old?
(A) 18 and 19 (B) 19 and 21 (C) 18 and 20 (D) 18 and 21

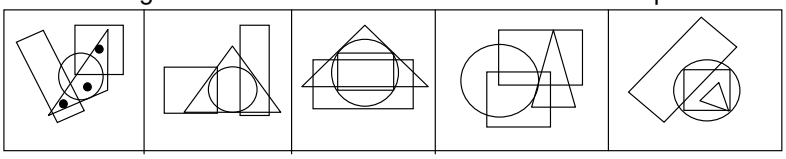
***Directions (Questions 27-28): Read the following information carefully and answer the questions given below it:***
i) Six friends P, Q, R, S, T and U are members of a club and play a different game of football, cricket, tennis, basketball, badminton and volleyball.
ii) T, who is taller than P and S, plays tennis.
iii) The tallest among them plays basketball.
iv) The shortest among them plays volleyball.
v) Q and S neither play volleyball nor basketball.
vi) R plays volleyball.
vii) T is between Q who plays football and P in order of height.

27. What does S play?
(A) Football (B) Cricket or badminton
(C) Volleyball (D) None of these

28. Who among them is taller than R but shorter than P?
(A) T (B) Data in adequate (C) Q (D) None of these

29. A man completes a journey in 10 hours. He travels first half of the journey at the rate of 21 km/hr and second half at the rate of 24 km/hr. Find the total journey in km.
(A) 220 km (B) 224 km (C) 230 km (D) 234 km

30. Select the figure which satisfies the same conditions of placement of the dots as in Figure-X.




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

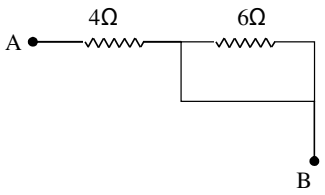
# Physics Section - II

**Straight Objective Type**

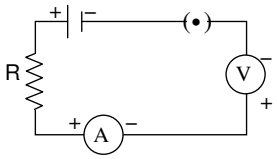
Physics contains 15 multiple choice questions numbered 31 to 70. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.

31. In an electrical circuit
    (A) Electrons move from the higher potential to lower potential
    (B) Electrons move from lower potential to higher potential
    (C) There is no fixed pattern about the movement of electrons
    (D) Nothing can be said

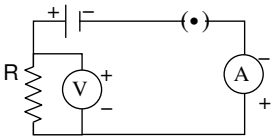
32. The effective resistance between A and B is
    (A) 4 Ω (B) 6 Ω
    (C) May be 10 Ω (D) Must be 10 Ω



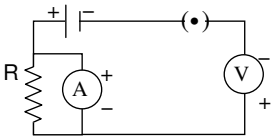

33. Identify the circuit in which the electrical components have been properly connected.



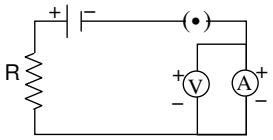
(A)



(B)



(C)



(D)

34. A current flows in a conductor from east to west. Direction of magnetic field at a point above the conductor is towards
    (A) East (B) west (C) north (D) south

35. If the current is flowing clockwise in a circular coil the direction of line of magnetic field inside the coil is
    (A) Towards you (B) Away from you
    (C) Towards the centre along the radius (D) Away from the centre along the radius

36. Which of the following cannot be deflected by a magnetic field?
    (A) Alpha rays (B) Beta rays
    (C) Gamma rays (D) Moving charge particle

37. When light travels from glass to air, the incident angle is $\theta_1$ and the refracted angle is $\theta_2$. The true relation is
    (A) $\theta_1 = \theta_2$ (B) $\theta_1 < \theta_2$ (C) $\theta_1 > \theta_2$ (D) not predictable

38. When a ray of light enters a glass slab from air:
    (A) Its wavelength decreases (B) its wavelength increases
    (C) Its frequency increases (D) neither wavelength nor frequency changes

39. A clock hung on a wall has marks instead of numerals on its dial. On the adjoining wall, there is a plane mirror and the image of the clock in the mirror indicates the time 7: 10. Then the time on the clock is:
    (A) 7: 10 (B) 4: 50 (C) 5: 40 (D) 10: 7

40. The sun remains visible for up to 2 minutes after the actual sunset because of
    (A) Total internal reflection in the earth's atmosphere (B) reflection of light by the earth's surface
    (C) Scattering of light in the earth's atmosphere (D) atmospheric refraction.

41. What is the minimum number of principal rays needed to locate the image formed by a lens?
    (A) 1 (B) 2 (C) 3 (D) 4

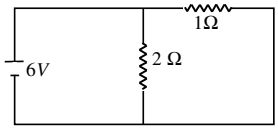
42. _____ plays the same role as the aperture in a camera
(A) Sclera (B) pupil (C) cornea (D) ciliary muscle

43. What type of lens is used in the spectacles of a person suffering from myopia?
(A) Converging (B) diverging (C) cylindrical (D) convex

44. When we see an object, the image found on the retina is
(A) Real (B) virtual (C) erect (D) real-erect

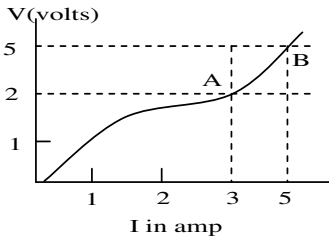
45. The maximum focal length of the eye – lens of a person is greater than its distance from the retina. The eye is
(A) Strained for objects at large distances only (B) unstrained for all distance
(C) Strained for objects at short distances only (D) none of the above

46. The Current passing through $1\,\Omega$ resistor is
(A) 8 A (B) 6 A
(C) 4 A (D) 12 A

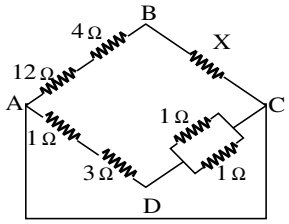



47. A cylindrical conductor of length 3.14 m and diameter 1mm has resistance 4 ohm. Its resistivity is ( in ohm meter)
(A) $10^{-6}$ (B) $2 \times 10^{-6}$ (C) $2 \times 10^{-9}$ (D) $10^{-8}$

48. The Figure represents the V-I characteristics of a circuit element. The dynamic resistance in the region AB is:
(A) $(2/3)\,\Omega$ (B) $(3/2)\Omega$
(C) $2\Omega$ (D) $1\,\Omega$




49. In the arrangement of resistances shown in the diagram the potential difference between B and D will be zero, when the resistance X is:
(A) $4\Omega$ (B) $3\Omega$
(C) $2\Omega$ (D) zero

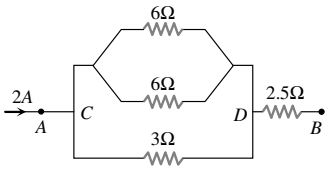



50. If two bulbs of 25 W & 100 W rated at 200 volts are connected in series across a 440 volts supply.
(A) 25 watt bulb will fuse (B) 100 watt bulb will fuse
(C) None of the bulb will fuse (D) both the bulbs will fuse

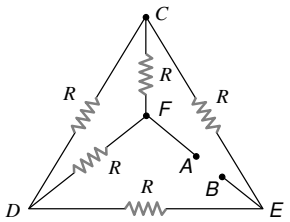
51. A resistor of resistance R is connected to an ideal battery. If the value of R is decreased, the power dissipated in the resistor will
(A) May increase (or) decrease (B) decrease (C) remain unchanged. (D) Increase

52. The specific resistance of a wire is $\rho$. Its volume is 4 $m^3$ and its resistance is 9 ohms, then its length will be
(A) $\rho\sqrt{\frac{1}{3}}$ (B) $\frac{6}{\sqrt{\rho}}$ (C) $\frac{3}{\sqrt{\rho}}$ (D) $\rho\sqrt{\frac{1}{6}}$

53. The equivalent resistance and potential difference between *A* and *B* for the circuit is respectively
(A) 4 Ω, 8 *V* (B) 8 Ω, 4 *V*
(C) 2 Ω, 2 *V* (D) 16 Ω, 8 *V*



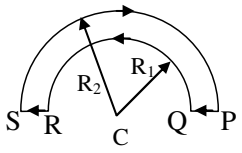
54. Five equal resistances each of resistance *R* are connected as shown in the figure. *A* battery of *V* volts is connected between *A* and *B*. The current flowing in *AFCEB* will be




(A) $\frac{3V}{R}$ (B) $\frac{V}{R}$

(C) $\frac{V}{2R}$ (D) $\frac{2V}{R}$

55. A wire loop PQRSP formed by joining two semi-circular wires of radii $R_1$ and $R_2$ carries a current I as shown. The magnitude of the magnetic induction at the centre C is:




(A) $\frac{\mu_0 I}{4}\left(\frac{1}{R_1}-\frac{1}{R_2}\right)$ (B) $\frac{\mu_0 I}{2}\left(\frac{1}{R_1}-\frac{1}{R_2}\right)$ (C) $\frac{\mu_0 I}{8}\left(\frac{1}{R_1}-\frac{1}{R_2}\right)$ (D) $\mu_0 I\left(\frac{1}{R_1}-\frac{1}{R_2}\right)$

56. Magnetic field is not associated with
(A) A charge in uniform motion (B) an accelerated charge
(C) A decelerated charge (D) a stationary charge

57. A moving charged particle placed in a uniform magnetic field experiences
(A) A force in the direction of the field (B) a force opposite to the direction of the field
(C) A force perpendicular to the direction of field (D) no force at all

58. Which of the following cannot be deflected by a magnetic field?
(A) Alpha rays (B) Beta rays
(C) Gamma rays (D) Moving charge particle

59. An electron moving in a circular path of radius *r* makes *n* rotations per second. The magnetic field produced at the centre has magnitude
(A) Zero (B) $\frac{\mu_0 \ ne}{2 \ r}$ (C) $\frac{\mu_0 \ ne}{2 \ \pi \ r}$ (D) $\frac{\mu_0 \ n^2 \ e}{2 \ r}$

60. Proton and $\alpha$–particle projected perpendicularly into a magnetic field, if both move in a circular path with same speed, then ratio of radii
(A) 1: 2 (B) 2:1 (C) 1: 4 (D) 1: 1

61. Geothermal energy is feasible in the regions that
(A) are near the sea (B) have coalmines
(C) Have thermal plants (D) area over hot spots in the crust

62. A substance cannot fire or burn as long as its temperature is lower than
(A) Critical temperature (B) melting point
(C) boiling point (D) ignition temperature

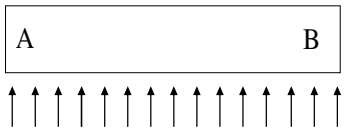
63. A good fuel is one which possess
(A) High calorific value and low ignition temperature
(B) High calorific value and high ignition temperature
(C) High calorific value and moderate ignition temperature
(D) Low calorific value and moderate ignition temperature

64. A convex mirror with a focal length of 100 cm is used to form an image. An object is placed 50 cm in front of the mirror. Given the incidence side is taken as negative, what is the image distance from the mirror (pole)?
(A) 33.33 cm (B) -33.33 cm (C) 66.66 cm (D) -66.66 cm

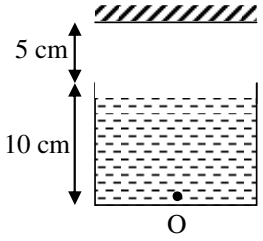
65. An object is placed at a distance of 30 cm from a thin converging lens along its axis. The lens has a focal length of 10 cm. What are the values of the image distance and magnification (respectively)?
(A) 60 cm and 2 (B) 15 and 2 (C) 60 cm and -0.5 (D) 15 cm and -0.5

66. A light ray in air is incident on an air to glass boundary at an angle of 45.0 degrees and is refracted into glass medium at 30° with the normal. What is the index of refraction of the glass? ($\sin 45° = \frac{1}{\sqrt{2}}$ and $\sin 30° = 1/2$)
(A) 2.13 (B) 1.74 (C) 1.23 (D) 1.41

67. Rays of light fall on a glass slab ($\mu > 1$) as shown in figure. If $\mu$ at A is maximum and at B it is minimum, then what will happen to these rays?
(A) it will tilt towards A (B) It will tilt towards B
(C) It will not deviate (D) There will be total internal reflection




68. Consider the situation shown in figure. Water ($\mu_w$ = 4/3) is filled in a beaker up to a height of 10 cm. A plane mirror is fixed at a height of 5 cm from the surface of water. Distance of image from the mirror after reflection from it of an object O at the bottom of the beaker, is :
(A) 15 cm (B) 12.5 cm
(C) 7.5 cm (D) 10 cm




69. The refractive index of water with respect to air is 4/3 and the refractive index of glass with respect to air is 3/2. Then the refractive index of water with respect to glass is:
(A) 9/8 (B) 8/9 (C) 1/2 (D) 2

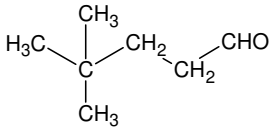
70. Two plane mirrors are parallel to each other and spaced 20 cm apart. An object is kept between them at 15 cm from A. Out of the following at which point, an image is not formed in mirror A: (distance measured from mirror A)
(A) 15 cm (B) 25 cm (C) 45 cm (D) 55 cm

# Chemistry

**Straight Objective Type**

Chemistry contains 15 multiple choice questions numbered 71 to 110. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.

71. What is the IUPAC name of the given compound



(A) 2,2- dimethyl pentanal
(B) 4,4 – dimethyl pentanal
(C) 2,2- dimethyl 5-pentanl
(D) 4,4 – dimethyl 5-pentanal

72. The molecular formula of the third member of the homologous series of ketone is
(A) $C_4H_8O$ (B) $C_3H_6O$ (C) $C_5H_{10}O$ (D) $C_6H_{12}O$

73. Which of the following molecular formula corresponds to ethyl butanoate ester?
(A) $C_4H_{10}O_2$ (B) $C_6H_{12}O_2$ (C) $C_7H_{14}O_2$ (D) $C_8H_{16}O_2$

74. When ethanol is heated with concentrated sulphuric acid at $170^\circ C$, it gets converted into ethene. In this reaction, concentrated sulphuric acid act as:
(A) Oxidising agent (B) Reducing agent (C) Dehydrating agent (D) None of these

75. Which pair of minerals contains of same metal?
(A)Bauxite, Limonite
(B) Haematite, Magnesite
(C) Cupurite, Malachite
(D) Galena, pyrolusite

76. Roasting is generally carried out in case of
(A)Oxide ores (B) Sulphide ores (C) Silicate ores (D) Carbonate ores

77. Zinc metal is refined by
(A) Crystallisation (B) Poling (C) Cupellation (D) Distillation

78. Which of the following will occur in nature state?
(A) Ag (B) Au (C) Pt (D) All of the above

79. Which one of the following reactions represents reduction only change?
(A) $X \rightarrow X^{3+} + 3e^-$ (B) $A + D^{2+} \rightarrow A^{2+} + D$ (C) $E - 2e^- \rightarrow E^{2+}$ (D) $I_2 + 2e^- \rightarrow 2I^-$

80. Which one of the following metals will not liberate hydrogen gas when added to dilute sulphuric acid?
(A) Zn (B) Mg (C) Sn (D) Hg

81. Identify the anionic single displacement reaction
(A) $Fe_2O_3 + 2Al \rightarrow Al_2O_3 + 2Fe$
(B) $ZnO + Mg \rightarrow MgO + Zn$
(C) $Cu(NO_3)_2 + Sn \rightarrow Sn(NO_3)_2 + Cu$
(D) $2KI + Br_2 \rightarrow 2KBr + I_2$

82. Give the values of a, b, c and d which are required to balance the equation given below.
$aKOH(aq) + bH_2SO_4(aq) \rightarrow cK_2SO_4(aq) + dH_2O(l)$
(A) 1,1,1,2 (B) 2,2,1,2 (C) 1,2,1,1 (D) 2,1,1,2

83. Which of the following is Lewis acid _____
(A) $NH_3$ (B) $H_2SO_4$ (C) $H_3O$ (D) $AlCl_3$

84. In which compound is nitrogen in its lowest oxidation state?
(A) $N_2O$ (B) NO (C) $NO_2$ (D) $N_2O_2$

85. 10 mL of 0.1 M HCl is mixed with 10Ml of 0.1M NaOH and the resulting solution is diluted to 100 mL, the pH of the resulting solution would be approximately
(A) 8 (B) 6 (C) 7 (D) 9

86. Which of the following is not a physical change?
(A) Boiling of water to give water vapour
(B) Melting of ice to give water.
(C) Dissolution of salt in water.
(D) Combustion of Liquefied Petroleum Gas (LPG).

87. Which of the following statements about the given reaction are correct?
$3Fe(s) + 4H_2O(g) \rightarrow Fe_3O_4(s) + 4H_2(g)$
(i) Iron metal is getting oxidized. (ii) water is getting reduced.
(iii) Water is acting as reducing agent. (iv) water is acting as oxidizing agent.
(A) (i), (ii) and (iii) (B) (iii) and (iv) (C) (i), (ii) and (iv) (D) (ii) and (iv)

88. Which of the following are exothermic processes?
(i) Reaction of water with quick lime (ii) Dilution of sulphuric acid
(iii) Evaporation of water (iv) Sublimation of camphor (crystals)
(A) (i) and (ii) (B) (ii) and (iii) (C) (i) and (iv) (D) (iii) and (iv)

89. A dilute ferrous sulphate solution was gradually added to the beaker containing acidified permanganate solution. The light purple colour of the solution fades and finally disappears. Which of the following is the correct explanation for the observation?
(A) $KMnO_4$ is an oxidizing agent, it oxidizes $FeSO_4$.
(B) $FeSO_4$ acts as an oxidizing agent and oxidizes $KMnO_4$.
(C) The colour disappears due to dilution, no reaction is involved.
(D) $KMnO_4$ is an unstable compound and decomposes in presence of $FeSO_4$ to a colorless compound.

90. Barium chloride on reacting with ammonium slulphate forms barium sulphate and ammonium chloride. Which of the following correctly represents the type of the reaction involved?
(i) Displacement reaction (ii) Precipitation reaction
(iii) Combination reaction (iv) Double displacement reaction
(A) (i) only (B) (ii) only (C) (iv) only (D) (ii) and (iv)

91. Electrolysis of water is a decomposition reaction, the mole ratio of hydrogen and oxygen gases liberated during electrolysis of water is
(A) 1:1 (B) 2 : 1 (C) 4 : 1 (D) 1 : 2

92. The following reaction is used for the preparation of oxygen gas in the laboratory
$2KClO_3(s) \xrightarrow[\text{Catlyst}]{\text{Heat}} 2KCl(s) + 3O_2(g)$ which of the following statement (s) is (are) correct about the reaction
(A) It is a decomposition reaction and endothermic in nature.
(B) It is a combination reaction.
(C) It is decomposition reaction and accompanied by release of heat.
(D) It is a photochemical decomposition reaction and exothermic in nature.

93. In which of the following chemical equations, the abbreviations represent the correct states of the reactants and products involved at reaction temperature
(A) $2H_2(l) + O_2(l) \longrightarrow 2H_2O(g)$ (B) $2H_2(g) + O_2(l) \longrightarrow 2H_2O(l)$
(C) $2H_2(g) + O_2(l) \longrightarrow 2H_2O(l)$ (D) $2H_2(g) + O_2(g) \longrightarrow 2H_2O(l)$

94. Which of the following are combination reactions?
(i) $2KClO_3 \xrightarrow{Heat} 2KCl + 3O_2$ (ii) $MgO + H_2O \longrightarrow Mg(OH)_2$
(iii) $4Al + 3O_2 \longrightarrow 2Al_2O_3$ (iv) $Zn + FeSO_4 \longrightarrow ZnSO_4 + Fe$
(A) (i) and (iii) (B) (iii) and (iv) (C) (ii) and (iv) (D) (ii) and (iii)

95. What happens when a solution of an acid is mixed with a solution of a base in a test tube?
(i) The temperature of the solution increases. (ii) The temperature of the solution decreases.
(iii) The temperature of the solution remains the same. (iv) Salt formation takes place.
(A) (i) only (B) (i) and (iii) (C) (ii) and (iii) (D) (i) and (iv)

96. An aqueous solution turns red litmus solution blue. Excess addition of which of the following solution would reverse the change
(A) Baking powder (B) Lime
(C) ammonium hydroxide solution (D) Hydrochloric acid

97. Which of the following salts does not contain water of crystallization?
(A) Blue vitriol (B) Baking soda (C) Washing soda (D) Gypsum

98. Calcium phosphate is present in tooth enamel. Its nature is
(A) Basic (B) acidic (C) Neutral (D) amphoteric

99. Which of the following statements is correct about an aqueous solution of an acid and of a base
(i) Higher the pH, stronger the acid. (ii) Higher the pH, weaker the acid.
(iii) Lower the pH, stronger the base. (iv) Lower the pH, weaker the base.
(A) (i) and (iii) (B) (ii) and (iii) (C) (i) and (iv) (D) (ii) and (iv)

100. Which of the following phenomenon occur, when a small amount of acid is added to water?
(i) Ionisation (ii) Neutralisation (iii) Dilution (iv) Salt formation
(A) (i) and (ii) (B) (i) and (iii) (C) (ii) and (iii) (D) (ii) and (iv)

101. Which of the following substance will not give carbon dioxide on treatment with dilute acid?
(A) Marble (B) Limestone (C) Baking soda (D) Lime

102. Which of the following is not a mineral acid?
(A) Hydrochloric acid (B) Citric acid (C) Sulphuric acid (D) Nitric acid

103. Which of the following statements is not correct?
(A) All metal carbonates react with acid to give a salt, water, and carbon dioxide
(B) All metal oxides react with water to give salt and acid
(C) Some metals react with acids to give salt and hydrogen
(D) Some non metal oxides react with water to form an acid

104. Which of the following is (are) true when HCl(g) is passed through water?
(i) It does not ionize in the solution as it is a covalent compound
(ii) It ionizes in the solution
(iii) It gives both hydrogen and hydroxyl ions in the solution
(iv) It forms hydronimum ion in the solution due to the combination of hydrogen ion with water molecule
(A) (i) only (B) (iii) only (C) (ii) and (iv) (D) (iii) and (iv)

105. Which of the following are present in a dilute aqueous solution of hydrochloric acid?
(A) $H_3O^+ + Cl^-$ (B) $H_3O^+ + OH^-$ (C) $Cl^- + OH^-$ (D) unionized HCl

106. Which of the following property is generally not shown by metals?
(A) Electrical conduction (B) sonorous in nature (C) Dullness (D) Ductility

107. Aluminum is used for making cooking utensils. Which of the following properties of Aluminum are responsible for the same?
(i) Good thermal conductivity (ii) Good electrical conductivity
(iii) Ductility (iv) High melting point
(A) (i) and (ii) (B) (i) and (iii) (C) (ii) and (iii) (D) (i) and (iv)

108. Which one of the following metals does not react with cold as well as hot water?
(A) Na (B) Ca (C) Mg (D) Fe

109. What happens when calcium is treated with water?
(i) It does not react with water
(ii) It reacts violently with water
(iii) It reacts less violently with water
(iv) Bubbles of hydrogen gas formed stick to the surface of calcium
(A)(i) and (iv) (B) (i) and (iii) (C) (i) and (ii) (D) (iii) and (iv)

110. Generally metals react with acids to give salt and hydrogen gas. Which of the following acids does not give hydrogen gas on reacting with metals (except Mn and Mg)?
(A) $H_2SO_4$ (B) HCl (C) $HNO_3$ (D) All of these

# Biology Section - III

**Straight Objective Type**

Biology contains 45 multiple choice questions numbered 111 to 180 Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.

111. Trypsin is an enzyme that breaks down
(A) Proteins (B) Fats (C) Starch (D) Maltose

112. Vernalization takes place in response to
(A) Low light intensity (B) High light intensity (C) Low temperature (D) High temperature

113. Identify the disease is transmitted through sexual contact?
(A) Cancer (B) Gonorrhoea (C) Diabetes (D) Hydrophobia

114. A pregnant woman has an equal chance of her baby being blood group A or blood group AB. Which one of the following shows the possible genotypes of the woman and the father of her child?
(A) $I^A I^A$ and $I^B I^O$ (B) $I^A I^B$ and $I^B I^O$ (C) $I^A I^O$ and $I^B I^O$ (D) $I^O I^B$ and $I^A I^O$

115. In peas, a pure tall plant (TT) is crossed with a pure short plant (tt). The ratio of pure tall plants to pure short plants in $F_2$ generation will be:
(A) 1 : 3 (B) 3 : 1 (C) 1 : 1 (D) 2 : 1

116. When air is blown from mouth into a test-tube containing lime water, the lime water turned milky due to the presence of
(A) oxygen (B) carbon dioxide (C) nitrogen (D) water vapour

117. Which of the following acts as both endocrine and exocrine gland?
(A) Pancreas (B) Thyroid (C) Adrenal (D) Liver

118. In a normal healthy woman, menstruation occurs every _____ days.
(A) 14 (B) 28 (C) 10 (D) 270

119. Which is the correct sequence of parts in human alimentary canal?
(A) Mouth → stomach → small intestine → oesophagus → large intestine
(B) Mouth →oesophagus → stomach → large intestine → small intestine
(C) Mouth → stomach → oesophagus → small intestine → large intestine
(D) Mouth → oesophagus → stomach → small intestine → large intestine

120. A revolt “Narmada Bachao Andolan” was launched under the leadership of
(A) Amrita Devi (B) Gaura Devi
(C) Medha patkar (D) Sundar Lal Bahuguna

121. Deficiency of Insulin results in
(A) Diabetes insipidus (B) Diabetes mellitus (C) Both A & B (D) Goitre

122. What is meant by emasculation?
(A) Pollination between flowers of same plant
(B) Pollination between the flowers of different plants
(C) Removal of the anthers
(D) Artificial pollination

123. A short length of a DNA molecule contains 100 adenine and 100 cytosine bases. The total number of nucleotides in this DNA fragment is
(A) 400 (B) 200 (C) 600 (D) 240

124. ---------- refers to the sequence of events in an ecosystem, where one organism eats another and then is eaten by another organism.
(A) Biogeochemical cycle (B) Nutrient cycle (C) Interaction (D) Food chain

125. A massive multi-crore project " Ganga Action Plan" was implemented in the year
(A) 1985 (B) 1972 (C) 1731 (D) 1970

126. The diastolic pressure in a healthy person is
(A) 60 mm Hg (B) 80 mm Hg (C) 100 mm Hg (D) 120 mm Hg

127. Which part of the Brain comprises of Pneumotaxic centre?
(A) Cerebrum (B) Olfactory lobe (C) Pons varolii (D) Medulla oblongata

128. Any cell, tissue or an organ removed from a plant for the purpose of tissue culturing is called
(A) Stock (B) Scion (C) Explant (D) Embryoid

129. Theory of acquired characters was proposed by
(A) Lamarck (B) Weismann (C) Darwin (D) De Vries

130. In an aquatic food chain the maximum amount of DDT accumulates in the body of ?
(A) Phytoplankton (B) Zooplankton
(C) Fish feeding on planktons (D) Bird feeding on fish

131. The movement of water out of the descending limb and the collecting tubule serves to
(A) Decrease the concentration of the urine (B) Increase the concentration of the urine
(C) No change in the concentration of the urine (D) Increase the glucose concentration

132. Lack of oxygen in muscles often leads to cramps among cricketers. This results due to
(A) conversion of pyruvate to ethanol (B) conversion of pyruvate to lactic acid
(C) conversion of pyruvate to glucose (D) conversion of pyruvate to galactose

133. Leydig cells of the testis secrete a hormone called
(A) FSH (B) Growth hormone (C) Prolactin (D) Testosterone

134. The fossil remains of *Archaeopteryx* is said to be a connecting link between
(A) Amphibians (B) Reptiles and birds
(C) Fish and amphibians (D) Reptiles and mammals

135. Which plant hormone promotes cell division?
(A) Auxin (B) Cytokinin (C) Gibberellin (D) Abscissic acid

136. 'Chipko Andolan' is related with
(A) Soil conservation (B) Forest conservation
(C) Green house effect (D) Water conservation

137. The instrument used to measure the Blood pressure is
(A) Doppler foetal monitor (B) Infusion pump
(C) Spygmomanometer (D) Laryngoscopy

138. The blood calcium level is lowered in the blood by the hormone
(A) Thyroxine (B) Prolactin
(C) Calcitonin (D) Insulin

139. ---------- is a surgical procedure for male sterilization or permanent contraception.
(A) Vasectomy (B) Tubectomy
(C) Tubal ligation (D) Ovariectomy

140. ----------are those which are similar in their morphology, anatomy, genetics and embryology but dissimilar in their functions.
(A) Analogous Organs (B) Homologous Organs
(C) Both A & B (D) None of the above

141. Eutrophication or Algal Bloom leads to the death of fishes due to
(A) Increased oxygen content (B) Increased fungi content
(C) Decreased algae content (D) Decreased oxygen content

142. The disadvantages normally associated with dam constructions is/are
(A) Need to relocate large number of people (B) Consume large amount of public money
(C) Deforestation and different types of pollution (D) All of the above

143. Name the plasma protein that function in blood clotting
(A) Haeme (B) Globulin (C) Fibrinogen (D) Globulin

144. The Brain and the Spinal cord together comprises the
(A) Central nervous system (B) Peripheral nervous system
(C) Autonomous nervous system (D) Sympathetic nervous system

145. ---------- is defined as the point in time in a woman when menstrual cycles permanently stops due to the natural depletion of ovarian oocytes due to aging.
(A) Menopause (B) Menarche (C) Ovulation (D) Oogenesis

146. The Theory of Natural selection was given by
(A) Lamarck (B) August Weismann (C) J. B. S. Haldane (D) Charles Darwin

147. 5$^{th}$ June is celebrated as
(A) World forest day (B) World environment day
(C) World red cross day (D) World food day

148. Stakeholders from the following is/are
(A) Forest department of the government which owns the land and controls the forest resources
(B) People who live in or around forests and depend on forest resources
(C) Industrialists and Environmentalists
(D) All the above

149. The Sudden jerky withdrawal of hand or leg when pricked by a pin is an example of
(A) Muscle Twitch (B) Reflex action (C) Both A & B (D) None of these

150. Allosomes are
(A) Somatic chromosomes (B) Sex chromosomes
(C) type of oxysomes (D) type of centrosome

151. Which of the following hormone helps in maintaining Biological clock or Circadian rhythms?
(A) Relaxin (B) Melatonin (C) Thyroxine (D) Insulin

152. If a normal cell of human body contains 46 pairs of chromosomes then the numbers of chromosomes in a sex cell of a human being is most likely to be:
(A) 60 (B) 23 (C) 22 (D) 40

153. The presence of which microorganism in Ganga water indicates contamination?
(A) Lactobacillus bacteria (B) Streptococcus (C) Coliform bacteria (D) Mucor spores

154. Amirata Devi Bishnoi scarified her life to the protection of
(A) Sal trees (B) Pine trees (C) khejri trees (D) Alpine meadows

155. Which of the following shows multiple fission ?
(A) Hydra (B) Yeast (C) Spirogyra (D) Plasmodium

156. What will happen if bile duct is choked?
(A) Faeces become dry
(B) Acid will not be produced
(C) There will be a little digestion in the large intestine
(D) Little absorption of fat occur

157. Which among the following chemicals is used for causing defoliation of forest trees?
(A) 2, 4-Dichlorophenoxy acetic acid
(B) Super Phosphate
(C) KOH
(D) Urea

158. Angiosperms are commonly called as
(A) Flowering Plants
(B) Non-flowering plants
(C) Amphibians of plant kingdom
(D) None of these

159. Binomial nomenclature of man
(A) Escherichia coli
(B) Panthera tigris
(C) Homo sapiens
(D) Periplanata americana

160. In a Food chain Plants are
(A) Primary consumer (B) Producers (C) Tertiary consumer (D) Decomposer

161. “Chipko movement” started in
(A) Reni in Garhwal
(B) Khejrali village
(C) Chennai in Tamilnadu
(D) None of these

162. The maximum quantity of air one can expire after maximum inspiration is known as
(A) Residual air (B) Vital capacity (C) Tidal volume (D) Total lung capacity

163. In a neuron the nodes of Ranvier are places where
(A) Medullary sheath is discontinuous
(B) Cyton are discontinuous
(C) Axon is absent
(D) None of these

164. Identify the incorrect statement
(A) Menstruation only occurs if the released ovum is not fertilized
(B) Lack of menstruation may be indicative of pregnancy
(C) During pregnancy, the events of menstrual cycle continue
(D) In the absence of fertilization, corpus luteum degenerates

165. Anti-Diuretic hormone is also called
(A) Insulin (B) Vasopressin (C) Glucagon (D) Prolactin

166. Biotic factors refer to
(A) Gases produced by industries
(B) Nutrient deficient soil
(C) Living organisms
(D) Fossil fuels

167. In a natural ecosystem, decomposers include
(A) Bacteria and fungi
(B) Photosynthetic algae
(C) Macroscopic animals
(D) All the above

168. Plasma protein that help form antibodies
(A) Albumin (B) Fibrinogen (C) Globulins (D) None of these

169. Abscissic acid is a plant hormone involved in
(A) Dormancy of seeds
(B) Root elongation
(C) Shoot elongation
(D) Increased cell division

170. Monocot leaves exhibit
(A) Reticulate Venation (B) Pinnately Reticulate
(C) Parallel Venation (D) Palmately Reticulate

171. Study of fossils come under
(A) Organic evolution (B) Paleogeography (C) Palaeontology (D) Herpetology

172. Nature's cleaners are
(A) Producers (B) Consumers (C) Decomposers (D) Carnivores

173. Ranthambore National Park is situated in
(A) Maharashtra (B) Rajasthan (C) Gujarat (D) U. P.

174. Bile pigments are
(A) Bilirubin (B)Biliverdin (C) Both A & B (D) None of these

175. In mammals, the brain centre which regulates body temperature is situated in
(A) Cerebellum (B) Cerebellar lobes (C) Hypothalamus (D) Medulla oblongata

176. Ovulation is trigerred by a sudden surge in
(A) LH (B) Insulin (C) prolactin (D) FSH

177. A connecting link between plants and animals
(A) *Dimetrodon* (B) *Dodo* (C) *Euglena* (D) *Sphenodon*

178. In a food chain, generally maximum numbers are those of
(A) Producers (B) Primary consumers
(C) Tertiary consumers (D) Climax carnivores

179. First National Park in India is
(A) Kanha National Park (B) Periyar National Park
(C) Corbett National Park (D) Bandipur National Park

180. Vitamin - A can be classified as a
(A) Water soluble Vitamin (B) Polysaccharides (C) Fat soluble vitamin (D) Protein

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## ANSWERKEY

### Section - I
### IQ

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1.C | 2 D | 3 B | 4.B | 5.D | 6.D | 7 B | 8 D | 9 D | 10.B |
| 11.A | 12.A | 13.B | 14.B | 15.A | 16.A | 17.C | 18.D | 19.B | 20.D |
| 21.D | 22.A | 23.C | 24.C | 25.A | 26.B | 27.B | 28.D | 29 B | 30.A |

### Section - II
### Physics

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 31.B | 32.A | 33.B | 34.C | 35.B | 36.C | 37. B | 38.A | 39.B | 40.A |
| 41.B | 42.B | 43.B | 44.A | 45.D | 46. B | 47.A | 48. B | 49.C | 50.A |
| 51. D | 52.B | 53. A | 54. C | 55.A | 56. D | 57.C | 58.C | 59.B | 60.A |
| 61. D | 62.D | 63.C | 64. A | 65.D | 66. D | 67.C | 68.B | 69. B | 70.C |

### Section – III
### Chemistry

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 71.B | 72.C | 73.B | 74.C | 75.C | 76.B | 77.D | 78.D | 79.D | 80.D |
| 81.D | 82.D | 83.D | 84.A | 85.C | 86.D | 87.C | 88.A | 89A | 90D |
| 91.B | 92.A | 93.D | 94.D | 95.D | 96.D | 97.B | 98.A | 99.A | 100.B |
| 101.D | 102.B | 103.B | 104.C | 105.A | 106.C | 107.D | 108.D | 109.D | 110.C |

### Section – IV
### Biology

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 111.A | 112.C | 113.B | 114.A | 115.C | 116.B | 117.A | 118.B | 119.D | 120.C |
| 121.B | 122.C | 123.A | 124.D | 125.A | 126.B | 127.C | 128.C | 129.A | 130.D |
| 131.B | 132.B | 133.D | 134.B | 135.B | 136.B | 137.C | 138.C | 139.A | 140.B |
| 141.D | 142.D | 143.C | 144.A | 145.A | 146.D | 147.B | 148.D | 149.B | 150.B |
| 151.B | 152.B | 153.C | 154.C | 155.D | 156. D | 157.A | 158.A | 159.C | 160.B |
| 161.A | 162.B | 163.A | 164.C | 165.B | 166.C | 167.A | 168.C | 169.A | 170.C |
| 171.C | 172.C | 173.B | 174.C | 175.C | 176.A | 177.C | 178.A | 179.C | 180.C |