



# SAMPLE PAPER



National  
Admission Test



Vidyamandir  
Intellect Quest



VMC International  
Incentive Test

FOR STUDENTS CURRENTLY IN CLASS

**10<sup>TH</sup>**

**2 YEAR PROGRAM**

**NEET**

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## Sample Paper - 2 Year Program

### Admission & Scholarship Test | Medical

Duration : 3.0 Hrs

Maximum Marks: 480

#### PAPER SCHEME :

- The paper contains **120 Objective Type Questions** divided into **four** sections: **Section - I, Section – II, Section - III and Section - IV**
- **Section I** contains **35 Multiple Choice Questions (1-35)** based on Physics. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE CHOICE is correct**.
- **Section II** contains **35 Multiple Choice Questions (36-70)** based on Chemistry. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE CHOICE is correct**.
- **Section III** contains **35 Multiple Choice Questions (71-105)** based on Biology. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE CHOICE is correct**.
- **Section IV** contains **15 Multiple Choice Questions (106-120)** based on Mental Aptitude. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE CHOICE is correct**.

#### MARKING SCHEME :

- **Section I, II, III and IV** : For each question, **4 marks** will be awarded for correct answer and **–1 negative marking** for incorrect answer.

#### GENERAL INSTRUCTIONS :

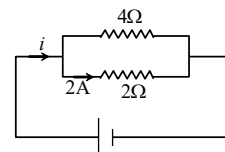
- For answering a question, an **ANSWER SHEET (OMR SHEET)** is provided separately. Please fill your **Name, Roll Number, Seat ID, Date of Birth** and the **PAPER CODE** properly in the space provided in the **ANSWER SHEET**. IT IS YOUR OWN RESPONSIBILITY TO FILL THE OMR SHEET CORRECTLY.
- A blank space has been provided on each page for rough work. You will not be provided with any supplement or rough sheet.
- The use of log tables, calculator and any other electronic device is strictly prohibited.
- Violating the examination room discipline will immediately lead to the cancellation of your paper and no excuses will be entertained.
- No one will be permitted to leave the examination hall before the end of the test.
- Please submit both the question paper and the answer sheet to the invigilator before leaving the examination hall.

**PART - I (PHYSICS)**

1. If the angle of incidence of a light ray on a plane mirror is  $40^\circ$ , the angle between incident and reflected ray is  
(A)  $50^\circ$  (B)  $100^\circ$  (C)  $80^\circ$  (D)  $90^\circ$
2. The human eye can focus objects at different distances by adjusting the focal length of the eye lens. This is due to:  
(A) presbyopia (B) accommodation  
(C) near-sightedness (D) far-sightedness
3. Which of the following correctly describes the magnetic field near a long current carrying straight wire?  
(A) The field consists of straight lines perpendicular to the wire.  
(B) The field consists of straight lines parallel to the wire.  
(C) The field consists of radial lines originating from the wire.  
(D) The field consists of concentric circles centred on the wire.
4. At the time of short circuit, the current in the circuit:  
(A) reduces substantially (B) does not change  
(C) increases heavily (D) varies continuously
5. The least distance of distinct vision for a young adult with normal vision is  
(A) 2.5 m (B) 2.5 cm (C) 25 m (D) 25 cm
6. Wind energy farms can be established only at the places where wind speed is higher than  
(A) 2 km/hr (B) 7 km/hr (C) 10 km/hr (D) 15 km/hr
7. In a nuclear power plant, uranium atoms  
(A) combine and give off heat energy (B) split and give off heat energy  
(C) burn and give off heat energy (D) split and give off electrons
8. Solar cell converts sun light energy into  
(A) heat energy (B) electrical energy  
(C) potential energy (D) kinetic energy
9. The device used for producing electric current is called a:  
(A) generator (B) galvanometer (C) ammeter (D) motor
10. Resistivity of a wire depends upon:  
(A) its length (B) its cross-section area  
(C) its dimensions (D) its material
11. The electrical power consumption when a  $220\ \Omega$  light lamp is connected across 220V :  
(A) 48400 watt (B) 220 watt (C) 1 watt (D) 22 watt

12. Find the current  $i$ , in the given circuit

- (A) 0.5 A                      (B) 1 A  
(C) 3 A                        (D) 2A



13. The speed of light in water is  $2.25 \times 10^8$  m/s. If the speed of light in vacuum be  $3 \times 10^8$  m/s, refractive index of water is

- (A) 1.33                      (B) 1.75                      (C) 1.67                      (D) 1.5

14. Solar energy is produced by the following reaction

- (A) Fission reaction                      (B) Fusion reaction  
(C) Chemical reaction                      (D) Chain reaction

15. Which form of energy is contained in wind energy?

- (A) Kinetic energy    (B) Potential energy    (C) Electric energy    (D) Thermal energy

16. Which of the following is not an energy source generated from the sea?

- (A) tidal energy                      (B) wave energy  
(C) ocean thermal energy                      (D) geothermal energy

17. Which of the following is not true regarding the construction of a dam?

- (A) dams can be constructed only in a limited number of places, preferably in hilly terrains  
(B) large area of agricultural land and human habitation are to be sacrificed as they get submerged  
(C) large eco-systems are destroyed when submerged under the water in dams  
(D) hydropower is not a renewable source of energy



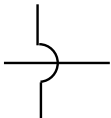

18. The phenomenon of electromagnetic induction is:

- (A) the process of charging a body  
(B) the process of generating magnetic field due to a current passing through a coil  
(C) producing induced current in a coil due to relative motion between a magnet and the coil  
(D) the process of rotating a coil of an electric motor

19. The essential difference between an AC generator and a DC generator is that

- (A) AC generator has an electromagnet while a DC generator has permanent magnet.  
(B) DC generator will generate a higher voltage.  
(C) AC generator will generate a higher voltage.  
(D) AC generator has slip rings while the DC generator has a commutator.

20. The correct symbol of resistance is:

- (A)                       (B)                       (C)                       (D) 

21. Where should an object be placed in front of a convex lens to get a real image of the size of the object?

- (A) at the principal focus of the lens                      (B) at twice the focal length  
(C) at infinity  
(D) between the optical centre of the lens and its principal focus

22. A spherical mirror and a thin spherical lens each have a focal length of  $-15$  cm. The mirror and the lens are likely to be:
- (A) both concave (B) both convex  
(C) the mirror is concave and the lens is convex  
(D) the mirror is convex, but the lens is concave
23. Which of the following lenses would you prefer to use while reading small letters found in a dictionary?
- (A) A convex lens of focal length 50 cm  
(B) A concave lens of the focal length 50 cm  
(C) A convex lens of focal length 5 cm  
(D) A concave lens of focal length 5 cm
24. The human eye forms the image of an object at its
- (A) cornea (B) iris (C) pupil (D) retina
25. The near point of a hypermetropic eye is 1m. The power of the lens required to correct this defect is (assume that the near point of the normal eye is 25 cm)
- (A)  $+4D$  (B)  $+3D$  (C)  $+2D$  (D)  $-2D$
26. For establishing a 1 MW generator using wind energy the land required will be about:
- (A) 0.5 hectare (B) 6 hectare (C) 2 hectare (D) 4 hectare
27. In biogas, which gas is present in maximum amount?
- (A) Carbon dioxide (B) Methane (C) Hydrogen (D) Oxygen
28. Two conducting wires of the same material and of equal lengths and equal diameters are first connected in series and then in parallel in a circuit across the same potential difference. The ratio of heat produced in series and parallel combinations would be
- (A) 1 : 2 (B) 2 : 1 (C) 1 : 4 (D) 4 : 1
29. A ray of light travelling from a rarer medium to a denser medium
- (A) slows down and bends towards the normal  
(B) slows down and bends away from the normal  
(C) speeds up and bends towards the normal  
(D) speeds up and bends away from the normal
30. If we shut one eye and the other remains open:
- (A) the world looks three dimensional (B) the world looks two dimensional  
(C) the world looks one dimensional (D) there is no vision
31. The change in focal length of an eye lens is caused by the action of the
- (A) pupil (B) retina (C) ciliary muscles (D) iris
32. Magnetic field is a quantity that has
- (A) only direction (B) only magnitude  
(C) both direction and magnitude (D) neither direction nor magnitude

33. If a person wants to use concave mirror for shaving, he should keep his face:
- (A) at the centre of curvature
  - (B) at the focus
  - (C) between centre of curvature and focus
  - (D) between pole and focus
34. The resistance of a conductor does not depend on:
- (A) material of the conductor
  - (B) length of the conductor
  - (C) area of cross-section of the conductor
  - (D) shape of cross-section of the conductor
35. In a nuclear fusion reaction
- (A) A heavy nucleus is broken into two lighter nuclei
  - (B) Mass of the product is little more than the sum of the masses of the original individual nuclei
  - (C) Two lighter nuclei join to make a heavier nucleus and the mass of the product is little more than the sum of the masses of the original individual nuclei
  - (D) Two lighter nuclei join to make a heavier nucleus and the mass of the product is little less than the sum of the masses of the original individual nuclei

**PART - II (CHEMISTRY)**

36. Which of these can be most appropriately categorized as a displacement reaction?
- (A)  $\text{H}_2\text{S}(\text{g}) + \text{NaOH}(\text{l}) \rightarrow \text{NaSH}(\text{s}) + \text{H}_2\text{O}(\text{l})$
  - (B)  $2\text{Cu}(\text{NO}_3)_2 \xrightarrow{\Delta} 2\text{CuO} + 4\text{NO}_2 + \text{O}_2$
  - (C)  $\text{Cu}(\text{s}) + 2\text{AgNO}_3(\text{l}) \rightarrow \text{Cu}(\text{NO}_3)_2(\text{l}) + 2\text{Ag}(\text{s})$
  - (D)  $\text{CaCO}_3(\text{s}) \rightarrow \text{CaO}(\text{s}) + \text{CO}_2(\text{g})$
37. Which of these is correctly regarded as a Strong acid?
- (A) HCl
  - (B) HNO<sub>3</sub>
  - (C) H<sub>2</sub>SO<sub>4</sub>
  - (D) All of these
38. Which of these is correct regarding bases?
- (A) A Base having pH 8 is stronger than one having pH 7.5
  - (B) A base is recognized by its ability to donate H<sup>+</sup> ions.
  - (C) Bases can turn blue litmus to red.
  - (D) Methanol (CH<sub>3</sub>OH) is a base because it has the ability to donate hydroxyl ions freely.
39. Which of these oxides is an acidic oxide?
- (A) SO<sub>2</sub>
  - (B) BaO
  - (C) K<sub>2</sub>O
  - (D) BeO
40. Which of these have only covalent bonding between atoms?
- (A) Diamond
  - (B) KNO<sub>3</sub>
  - (C) BaCl<sub>2</sub>
  - (D) Na<sub>2</sub>SO<sub>4</sub>
41. Roasting is a process defined as,
- (A) Heating a substance in excess of air to remove impurities below its melting point.
  - (B) Heating a substance in absence of air to form its oxide
  - (C) Heating a substance in excess of an inert gas to form its oxide
  - (D) Heating a substance in absence of N<sub>2</sub> to form its oxide

42. Which of these is false regarding corrosion of Copper?
- (A) Corrosion of copper is characteristically seen in moist air  
(B) Corrosion results in formation of a hydrated form of copper oxide  
(C) Corrosion of copper results in formation of basic copper carbonate  
(D) Copper does not corrode in air
43. Which of these is the correct general formula of alkynes?
- (A)  $C_nH_{2n+1}$  (B)  $C_nH_{2n}$  (C)  $C_nH_{2n-2}$  (D)  $C_nH_{2n+2}$
44. Which of the following is the correct structure for 3-pentanol?
- (A)  $CH_3CH_2CH_2CH_2CH_2OH$  (B)  $CH_3CH_2CH_2CH_2CHO$   
(C)  $\begin{array}{c} OH \\ | \\ CH_3CHCH_2CH_2CH_3 \end{array}$  (D)  $\begin{array}{c} OH \\ | \\ CH_3CH_2CHCH_2CH_3 \end{array}$
45. Which is true regarding the long form of the periodic table?
- (A) There are 18 periods of elements.  
(B) There are 7 groups of elements.  
(C) The number of valence electrons decrease on going left to right in a period  
(D) The non-metallic character of elements increases on going left to right in a period.
46. Which of these elements is gaseous at room temperature?
- (A)  $I_2$  (B)  $F_2$  (C) S (D)  $P_4$
47. Aqueous solution of which of these salts will be basic?
- (A)  $NaNO_3$  (B)  $CH_3COONa$  (C)  $Al(NO_3)_3$  (D) KCl
48. Which of these groups of elements exhibits diagonal relationship?
- (A) Ba & Al (B) Li & Mg (C) P & Si (D) S & Cl
49. Which of these is true regarding ethyne?
- (A) It can be prepared by treating calcium carbide with water  
(B) It can be prepared by treating sodium acetate with soda-lime at  $360^\circ C$   
(C) It can be prepared by treating ethanol with concentrated  $H_2SO_4$  at  $170^\circ C$   
(D) It can be prepared by all of the three methods given above.
50. For electrolytic refining of silver, the cathode is made from
- (A) Pure silver rod (B) Impure silver rod  
(C) Pure gold Rod (D) Impure platinum rod
51. When barium carbonate is decomposed on heating, the gas evolved is
- (A) CO (B)  $CO_2$  (C)  $O_2$  (D) HCl
52. What would be the correct I.U.P.A.C. name of 1,1,1-Trimethylethane?
- (A) 2-Methylpentane (B) 2, 2-Dimethylpropane  
(C) 2, 3-Dimethylpropane (D) 2, 4-Dimethylpentane

53. Esters when treated with acidified water give,  
(A) Alkanes (B) Carboxylic Acids  
(C) Ketones (D) Aldehydes
54. Which of the following compound contains aldehydic group?  
(A)  $\text{CH}_3\text{CHO}$  (B)  $\text{H}_2\text{N}-\overset{\text{O}}{\parallel}{\text{C}}-\text{CH}_2\text{CH}_3$   
(C)  $\text{H}_3\text{C}-\overset{\text{O}}{\parallel}{\text{C}}-\text{CH}_3$  (D)  $\text{CH}_3\text{COOCH}_3$
55. Cleaning action of soap and detergents is due to:  
(A) their corrosive nature on hand and fabrics  
(B) formation of aggregates called micelles  
(C) the froth generated by them  
(D) sodium ions present in them
56. The geometry of ethane molecule is  
(A) Rectangular planar (B) Tetrahedral  
(C) Trigonal bipyramidal (D) Square Pyramidal
57. Concentration of magnetic ores like  $\text{FeWO}_4$  (wolframite) is done by  
(A) Froth floatation (B) Gravity separation  
(C) Electromagnetic separation (D) Roasting
58. Which of these properties of elements decreases on going from top to bottom in a group?  
(A) Valence electrons (B) Non-metallic nature  
(C) Atomic radius (D) electro-positivity
59. Which of the following is the main constituent of coal gas?  
(A)  $\text{CH}_4$  (B)  $\text{CO}_2$  (C)  $\text{C}_3\text{H}_8$  (D)  $\text{H}_2\text{O}$
60. Aqueous solution of  $\text{CuSO}_4$  can be stored in a vessel made up of  
(A) Pt (B) Ag (C) Au (D) All of these
61. Solder is an alloy of lead (Pb) metal with  
(A) Cu (B) Sn (C) Al (D) Zn
62. The strength of an acid is determined by:  
(A) Its  $\text{OH}^-$  ion concentration (B) Concentration of  $\text{H}^+$  ions  
(C) Amount of water added to it (D) Its action on iron
63. Which of these is not a property of covalent compounds?  
(A) Their melting temperatures are generally low  
(B) They are usually insoluble in water  
(C) They conduct electricity when added to water  
(D) They are mostly amorphous (powder-like)



64. Which of these is false?
- (A) Graphite is used as a lubricant in high temperature machinery  
(B) Diamond is hard and used for glass cutting  
(C) Buckminster fullerene is a white solid at room temperature  
(D) Coal is an amorphous form of carbon containing large amounts of volatile material in it.
65. Ethanol is prepared by
- (A) Fermentation of concentrated sugar cane juice  
(B) Reaction between methanol and carbon  
(C) Reaction between  $\text{CO}_2$  and ethene  
(D) Reaction between methane and water
66. Which one of the following has the highest calorific value?
- (A) Wood (B) Bituminous coal  
(C) Anthracite coal (D) Lignite coal
67. Which one of the following fractions of petroleum has the lowest boiling point?
- (A) Kerosene (B) Diesel (C) Petrol (D) L.P.G.
68. The constituents of coal gas are:
- (A) methane, ethane and hydrogen (B) ethane, carbon monoxide  
(C) methane, ethane and carbon monoxide (D) methane carbon monoxide and hydrogen
69. The most reactive form of carbon is:
- (A) diamond (B) graphite (C) coal (D) charcoal
70. Carbon is soluble in:
- (A) conc. HBr (B) conc. HCl (C) conc.  $\text{HNO}_3$  (D) dil HCl

**PART - III (BIOLOGY)**

71. The xylem in plants is responsible for
- (A) transport of water (B) transport of food  
(C) transport of amino acids (D) transport of oxygen
72. The autotrophic mode of nutrition requires
- (A) carbon dioxide and water (B) chlorophyll  
(C) sunlight (D) all of the above
73. The breakdown of pyruvate to give carbon dioxide, water and energy takes place in
- (A) cytoplasm (B) mitochondria (C) chloroplast (D) nucleus
74. The term 'cell' was given by
- (A) Robert Brown (B) Robert Hooke (C) Leeuwenhoek (D) Rudolf Virchow

75. 'Cell theory' was proposed by  
(A) Watson and Crick (B) Schleiden and Schwann  
(C) Singer and Nicolson (D) Robert Brown and Robert Hooke
76. Which of the following is called 'powerhouse of the cell'?  
(A) Mitochondria (B) Lysosome  
(C) Ribosome (D) Endoplasmic reticulum
77. 'Suicidal bags' is the term given to which of the following?  
(A) Ribosomes (B) Lysosomes (C) Mitochondria (D) Plastids
78. Ribosomes are the site for  
(A) photosynthesis (B) protein synthesis (C) respiration (D) energy production
79. External fertilization takes place in  
(A) frog (B) hen (C) man (D) horse
80. Which one of the following is a hermaphrodite?  
(A) Hydra (B) Taenia solium (C) Pherentima (D) All of these
81. Reproduction is described as a phenomenon, by which organisms  
(A) increase in size (B) increase in number  
(C) form new tissues and organs (D) develop from zygotes
82. Parthenocarpy refers to the development of fruit  
(A) after fertilisation (B) without fertilization  
(C) union of male nucleus with antipodals (D) from the petals
83. Ovulation takes place on the  
(A) 10<sup>th</sup> day of the menstrual cycle (B) 14<sup>th</sup> day of menstrual cycle  
(C) 24<sup>th</sup> day of the menstrual cycle (D) onset of menstrual flow
84. The organisms that contain a segment of foreign DNA are known as:  
(A) GMO (B) Transgenic animals  
(C) autosomes (D) Both (A) & (B)
85. In RNA, instead of thymine and \_\_\_\_\_ is present. Fill in the blank suitably.  
(A) Adenine (B) Guanine (C) Cytosine (D) Uracil
86. Adenine & Guanine are  
(A) Purines (B) Pyrimidines (C) RNA (D) DNA
87. Human males are  
(A) homogametic (B) heterogametic (C) hermaphrodite (D) GMO
88. Each helical turn of DNA has a length of  
(A) 3.4 nm (B) 34 nm (C) 20A° (D) 10A°

89. The study of fossil plants is called:  
(A) Palaeobotany (B) Zoology (C) Botany (D) Geology
90. Dinosaurs are:  
(A) extinct mammals (B) extinct reptiles (C) extinct birds (D) extinct fishes
91. Archaeopteryx is the connecting link between:  
(A) fishes and reptiles (B) reptiles and birds  
(C) birds and mammals (D) mammals and amphibians
92. Analogous organs are similar in:  
(A) function (B) structure (C) inactive (D) both (A) and (B)
93. Homologous organs are similar in:  
(A) origin (B) structure (C) function (D) both (A) and (B)
94. Which of the following is a non-renewable resource?  
(A) Water (B) Agricultural (C) Aquatic animals (D) Fossil fuels
95. Which of the following is a renewable resource?  
(A) Fossil fuel (B) Natural gas (C) Natural vegetation (D) Petroleum
96. The solid part of earth crust is called:  
(A) atmosphere (B) hydrosphere (C) lithosphere (D) soil erosion
97. The main source of energy is:  
(A) sun light (B) petrol (C) diesel (D) biogas
98. The part of earth covered by oceans is:  
(A) 45% (B) 50% (C) 71% (D) 25%
99. The main food producing crop of India is:  
(A) rice (B) soybean (C) mustard (D) sunflower
100. Which of the following is a rich source of protein?  
(A) Wheat (B) Rice (C) Soybean (D) Maize
101. The main source of vitamins and minerals are  
(A) cereals (B) fruits and vegetables  
(C) oils (D) nuts
102. Which of the following fruit is rich in vitamin C?  
(A) Mango (B) Orange (C) Apple (D) Guava
103. Cereals are major source of:  
(A) fats (B) proteins (C) vitamins (D) carbohydrates
104. Kharif crops are grown during:  
(A) June-October (B) November-April (C) January-March (D) September only
105. Rabi crops are sown during:  
(A) November-April (B) January-March (C) June-October (D) October only

**PART - IV (MENTAL ABILITY)****Directions for Q. Nos. 106 & 107:**

The following questions are based on the following statements:

- (i) In a family of six people A, B, C, D, E and F, there are two married couples.
- (ii) A is son of B.
- (iii) D is grandmother of A and mother of B.
- (iv) F is granddaughter of E.

**106.** How many male members are there in the family?

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

**107.** What is C to A?

- (A) Brother              (B) Sister              (C) Father              (D) Mother

**108.** A has 3 children. B is the brother of C and C is the sister of D, E who is the wife of A is the mother of D. There is only one daughter of the husband of E. What is the relation between D and B?

- (A) Sister              (B) Mother              (C) Father              (D) Brother

**Directions for Q. Nos. 109 to 111:**

P, Q, R, S, T, U, V & W are the family members. Q is the sister of V and V is the brother of R. T whose father is W, wife of P. S is the husband of Q and U is the son of V. P is the father of Q.

**109.** How U is related with T?

- (A) Son                      (B) Mother              (C) Grandson              (D) Nephew

**110.** How S is related with R?

- (A) Son                      (B) Uncle                      (C) Brother-in-law              (D) Brother

**111.** How W is related with R?

- (A) Grandfather              (B) Uncle                      (C) Son                      (D) Brother

**112.** Siva, Sathish, Amar and Praveen are playing cards. Amar is to the right of Sathish, who is to the right of Siva. Who is to the right of Amar?

- (A) Praveen              (B) Sathish                      (C) Siva                      (D) Can't be determined

**113.** Pointing towards a man another man said, he is the son of my father's sister. Then what is the relation between them?

- (A) Father-Son              (B) Brother                      (C) Cousin                      (D) Uncle-Nephew

**114.** If a clock shows 04 : 28 then its mirror image will be?

- (A) 17 : 32                      (B) 07 : 32                      (C) 11 : 60                      (D) 07 : 28

**115.** Manish slept at 7 : 45 pm. If he rose at 12 : 00 noon, how many hours did he sleep ?

- (A) 4 hours 15 min              (B) 12 hours                      (C) 16 hours 15 min              (D) 6 hours 15 min

116. Find the missing number of the given series : 1, 4, 9, 16, 25, ?

- (A) 35                      (B) 36                      (C) 37                      (D) 49

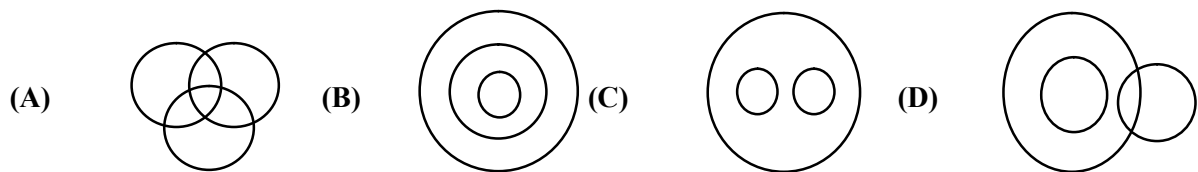
117. Find the wrong term: 2, 6, 11, 17, 23, 32, and 41

- (A) 6                      (B) 17                      (C) 23                      (D) 32

118. If HARISH is coded as ITJSBI, then how would REEMA be coded?

- (A) CNFCS                      (B) BNFFS                      (C) BFNNS                      (D) CNFFS

119. Which of the following diagram correctly represents India, Pakistan and Asia?



**Directions for Q. Nos. 120:**

Which of the Venn diagrams given in the alternatives best represents the relation between the given items?

120. Animals, Cows, Grass-eating animals





## Answers to Sample Paper | 2 Year Medical

### Sample Paper - I

PHYSICS		CHEMISTRY		BIOLOGY		MENTAL ABILITY	
1.	(C)	36.	(C)	71.	(A)	106.	(C)
2.	(B)	37.	(D)	72.	(D)	107.	(D)
3.	(D)	38.	(A)	73.	(B)	108.	(D)
4.	(C)	39.	(A)	74.	(B)	109.	(C)
5.	(D)	40.	(A)	75.	(B)	110.	(C)
6.	(D)	41.	(A)	76.	(A)	111.	(A)
7.	(B)	42.	(D)	77.	(B)	112.	(D)
8.	(B)	43.	(C)	78.	(B)	113.	(C)
9.	(A)	44.	(D)	79.	(A)	114.	(B)
10.	(D)	45.	(D)	80.	(D)	115.	(C)
11.	(B)	46.	(B)	81.	(B)	116.	(B)
12.	(C)	47.	(B)	82.	(B)	117.	(C)
13.	(A)	48.	(B)	83.	(B)	118.	(B)
14.	(B)	49.	(A)	84.	(D)	119.	(C)
15.	(A)	50.	(A)	85.	(D)	120.	(C)
16.	(D)	51.	(B)	86.	(A)		
17.	(D)	52.	(B)	87.	(B)		
18.	(C)	53.	(B)	88.	(A)		
19.	(D)	54.	(A)	89.	(A)		
20.	(B)	55.	(B)	90.	(B)		
21.	(B)	56.	(B)	91.	(B)		
22.	(A)	57.	(C)	92.	(A)		
23.	(C)	58.	(B)	93.	(D)		
24.	(D)	59.	(A)	94.	(D)		
25.	(B)	60.	(D)	95.	(C)		
26.	(C)	61.	(B)	96.	(C)		
27.	(B)	62.	(B)	97.	(A)		
28.	(C)	63.	(C)	98.	(C)		
29.	(A)	64.	(C)	99.	(A)		
30.	(B)	65.	(A)	100.	(C)		
31.	(C)	66.	(C)	101.	(B)		
32.	(C)	67.	(B)	102.	(B)		
33.	(D)	68.	(D)	103.	(D)		
34.	(D)	69.	(D)	104.	(A)		
35.	(D)	70.	(C)	105.	(A)		

## Sample Paper - 2 Year Program

### Admission & Scholarship Test | Medical

Duration : 3.0 Hrs

Maximum Marks: 480

#### PAPER SCHEME :

- The paper contains **120 Objective Type Questions** divided into **four** sections: **Section - I, Section – II, Section - III** and **Section - IV**
- **Section I** contains **35 Multiple Choice Questions (1-35)** based on Physics. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE CHOICE is correct**.
- **Section II** contains **35 Multiple Choice Questions (36-70)** based on Chemistry. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE CHOICE is correct**.
- **Section III** contains **35 Multiple Choice Questions (71-105)** based on Biology. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE CHOICE is correct**.
- **Section IV** contains **15 Multiple Choice Questions (106-120)** based on Mental Aptitude. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE CHOICE is correct**.

#### MARKING SCHEME :

- **Section I, II, III and IV** : For each question, **4 marks** will be awarded for correct answer and **–1 negative marking** for incorrect answer.

#### GENERAL INSTRUCTIONS :

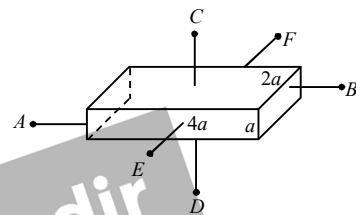
- For answering a question, an **ANSWER SHEET (OMR SHEET)** is provided separately. Please fill your **Name, Roll Number, Seat ID, Date of Birth** and the **PAPER CODE** properly in the space provided in the **ANSWER SHEET**. IT IS YOUR OWN RESPONSIBILITY TO FILL THE OMR SHEET CORRECTLY.
- A blank space has been provided on each page for rough work. You will not be provided with any supplement or rough sheet.
- The use of log tables, calculator and any other electronic device is strictly prohibited.
- Violating the examination room discipline will immediately lead to the cancellation of your paper and no excuses will be entertained.
- No one will be permitted to leave the examination hall before the end of the test.
- Please submit both the question paper and the answer sheet to the invigilator before leaving the examination hall.

**PART - I (PHYSICS)**

- In a metallic conductor current flows due to  
(A) flow of protons (B) flow of free electrons  
(C) flow of alpha particles (D) all of the above
- The work done in bringing a charge of 0.2 C from infinity to a point is 10 J. The potential at this point will be  
(A) 0.02 Volt (B) 100 Volt (C) 50 Volt (D) 2 Volt
- Work done in moving a charge of 4 coulomb from a point at 220 volt to another point at 230 volt is  
(A) 2.5 J (B) 5 J (C) 10 J (D) 40 J
- The free electrons of a metal are free to  
(A) move on the surface only (B) escape through the surface  
(C) fall into the nuclei (D) move anywhere in the metal
- If the charge on an electron is  $1.6 \times 10^{-19}$  coulomb, how many electrons should pass through a conductor in 1 second to constitute 2 ampere current?  
(A)  $6.25 \times 10^{18}$  (B)  $12.50 \times 10^{18}$  (C)  $6.25 \times 10^{19}$  (D)  $12.50 \times 10^{19}$
- A current of 2 amp flows for 1 minute between two points having potential difference of 12 volt, the work done is  
(A) 144 J (B) 24 J (C) 720 J (D) 1440 J
- For a given potential difference. The current in a wire depends  
(A) only on the material of the wire  
(B) only on the length of the wire  
(C) only on the area of cross section of the wire  
(D) on all of the above
- There are two bulbs *A* and *B* and resistance of *A* is greater than that of *B*. When the same potential difference is applied across the two bulbs then:  
(A) brightness of *A* will be more than that of *B*.  
(B) brightness of *B* will be more than that of *A*.  
(C) brightness of *A* will be equal to that of *B*.  
(D) nothing can be said about brightness of *A* and *B*.
- The slope of current (*I*) versus voltage (*V*) is called:  
(A) resistance (B) conductance (C) resistivity (D) conductivity
- The substance which has maximum resistivity (out of the following only) is:  
(A) manganese (B) constantan (C) manganin (D) nichrome
- The potential difference between the terminals of an electric heater is 60 V when it draws a current of 4A from the source. If the potential difference is increased to 120 V, it will draw a current of:  
(A) 2A (B) 4A (C) 8A (D) 16A



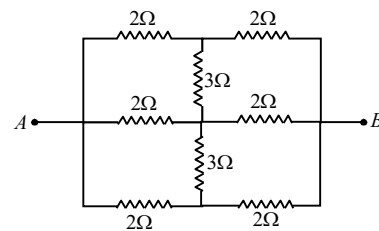
12. Resistance of a copper wire 1 m long and with cross section area  $1 \text{ mm}^2$  that is ( $10^{-6} \text{ m}^2$ ) is, (Given that resistivity of copper wire =  $1.6 \times 10^{-8} \Omega \text{ m}$ )  
 (A)  $0.16 \Omega$  (B)  $1.6 \Omega$  (C)  $0.016 \Omega$  (D)  $16 \Omega$
13. Two resistors  $A$  and  $B$  have resistances  $R_A$  and  $R_B$  respectively with  $R_A < R_B$ . The resistivities of their materials are  $\rho_A$  and  $\rho_B$ , then the relation between  $\rho_A$  and  $\rho_B$  is  
 (A)  $\rho_A > \rho_B$  (B)  $\rho_A = \rho_B$  (C)  $\rho_A < \rho_B$   
 (D) The information is not sufficient to find the relation between  $\rho_A$  and  $\rho_B$
14. A piece of wire of resistance  $R$  is cut into five equal parts. These parts are then connected in parallel. If the equivalent resistance of this combination is  $R'$ , then the ratio  $R / R'$  is  
 (A)  $1/25$  (B)  $1/5$  (C)  $5$  (D)  $25$
15. A conductor with rectangular cross-section has dimensions ( $a \times 2a \times 4a$ ) as shown in the figure. Resistance across  $AB$  is  $x$ , across  $CD$  is  $y$  and across  $EF$  is  $z$ . Then  
 (A)  $x = y = z$  (B)  $x > y > z$   
 (C)  $y > z > x$  (D)  $x > z > y$



16. When two resistances are joined in parallel their resultant is  $1.2 \text{ ohm}$ . One of the resistance wire is broken and the effective resistance becomes  $2 \text{ ohm}$ . The resistance of the broken wire was  
 (A)  $0.75 \Omega$  (B)  $2 \Omega$  (C)  $1.2 \Omega$  (D)  $3 \Omega$
17.  $n$  equal resistors when added in series give equivalent resistance  $S$ . When added in parallel the equivalent resistance will be  
 (A)  $nS$  (B)  $\frac{S}{n}$  (C)  $n^2S$  (D)  $\frac{S}{n^2}$

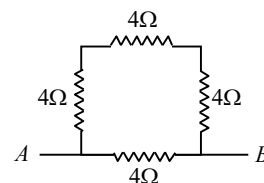
18. In the given circuit diagram, the equivalent resistance between point  $A$  and  $B$  is

- (A)  $\frac{8}{3} \Omega$  (B)  $\frac{4}{3} \Omega$   
 (C)  $9 \Omega$  (D)  $\frac{13}{11} \Omega$



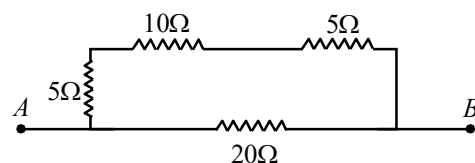
19. The equivalent resistance of the following circuit across  $AB$  is

- (A)  $4 \Omega$  (B)  $3 \Omega$   
 (C)  $2 \Omega$  (D)  $8 \Omega$



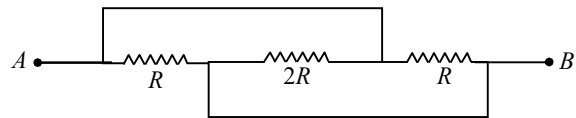
20. In the circuit shown in the figure, equivalent resistance between points  $A$  and  $B$  is

- (A)  $10 \Omega$  (B)  $25 \Omega$   
 (C)  $4 \Omega$  (D)  $8 \Omega$



21. The effective equivalent resistance between  $A$  and  $B$  in the figure is

- (A)  $\frac{3}{2}R$                       (B)  $\frac{2}{3}R$   
 (C)  $\frac{2}{5}R$                       (D)  $2R$



22. A resistance of 2 ohms is connected in series with another resistance of 4 ohms. A potential difference of 12 volts is applied across the combination. Potential difference across 2 ohms resistance is

- (A) 2 volts                      (B) 4 volts                      (C) 6 volts                      (D) 8 volts

23. The number of bulbs of resistance  $6\ \Omega$  each which should be joined in parallel to draw a current of 2 A from a battery of 3 volts is

- (A) 5                      (B) 6                      (C) 3                      (D) 4

24. Consider the following statements

- (I) In series connection, the same current flows through each element  
 (II) In parallel connection, the same potential difference gets applied across each element

- (A) Both (I) and (II) are correct                      (B) (I) is correct but (II) is wrong  
 (C) (I) is wrong but (II) is correct                      (D) both (I) and (II) are wrong

25. When two resistors are joined in series, the equivalent resistance is  $90\ \Omega$ . When the same resistors are joined in parallel, the equivalent resistance is  $20\ \Omega$ . The resistances of the two resistors are

- (A)  $25\ \Omega, 65\ \Omega$                       (B)  $30\ \Omega, 60\ \Omega$                       (C)  $40\ \Omega, 50\ \Omega$                       (D)  $45\ \Omega, 45\ \Omega$

26. An electric fuse can prevent accidents arising from:

- (A) an over load but not due to a short circuit  
 (B) a short circuit but not due to an overload  
 (C) an overload as well as a short circuit  
 (D) neither an overload nor a short circuit

27. A uniform wire of resistance  $50\ \Omega$  is cut into 5 equal parts. These parts are now connected in parallel. The equivalent resistance of the combination is:

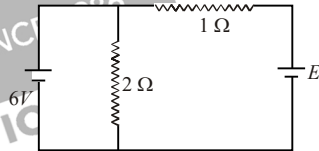

- (A)  $2\ \Omega$                       (B)  $10\ \Omega$                       (C)  $250\ \Omega$                       (D)  $6250\ \Omega$

28. The colours recommended for wires carrying live, neutral and earth lines taken in the same order are:

- (A) red, black, green                      (B) red, green, black  
 (C) black, green, red                      (D) black, red, green

29. In electric fittings in a house

- (A) the live wire goes through the switch  
 (B) the neutral wire goes through the switch  
 (C) the earth wire goes through the switch  
 (D) no wire goes through the switch

30. Which of the following describes the common domestic power supplied in India?  
 (A) 220 V, 100 Hz (B) 110 V, 100 Hz  
 (C) 220 V, 50 Hz (D) 110V, 50 Hz
31. A circuit contains three resistors  $R_1, R_2$  and  $R_3$  in series and a cell of emf  $V$  Volts, if the potential difference across  $R_1, R_2$  and  $R_3$  be  $V_1, V_2$  and  $V_3$  then:  
 (A)  $V = V_1 + V_2 + V_3$  (B)  $\frac{1}{V} = \frac{1}{V_1} + \frac{1}{V_2} + \frac{1}{V_3}$   
 (C)  $V = \frac{V_1V_2 + V_2V_3 + V_3V_1}{V_1 + V_2 + V_3}$  (D)  $V = \frac{V_1V_2V_3}{V_1 + V_2 + V_3}$
32. An ammeter is always connected in ..... and voltmeter in ..... The suitable words, in order, for the blanks are:  
 (A) series, series (B) parallel, parallel  
 (C) parallel, series (D) series, parallel
33. On which of the following no plus or minus sign is marked.  
 (A) a cell (B) an ammeter (C) a voltmeter (D) a resistor
34. Current passing through  $1\Omega$  resistance is zero. Then the emf  $E$  is  
 (A) 8 V (B) 6 V  
 (C) 12 V (D) 4 V
- 
35. From left to right the following symbols represent  
  
 (A) open switch, closed switch, wire joint, variable resistance  
 (B) closed switch, open switch, wire joint, variable resistance  
 (C) closed switch, open switch, variable resistance, wire joint  
 (D) open switch, variable resistance, closed switch, wire joint

## PART - II (CHEMISTRY)

36. The correct formula of washing soda is  
 (A)  $\text{Na}_2\text{CO}_3$  (B)  $\text{Na}_2\text{CO}_3 \cdot \text{H}_2\text{O}$   
 (C)  $\text{Na}_2\text{CO}_3 \cdot 9\text{H}_2\text{O}$  (D)  $\text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}$
37. Aqueous solution of which of the following salts turns red litmus blue?  
 (A)  $\text{Na}_2\text{CO}_3$  (B)  $\text{NaHCO}_3$  (C)  $\text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}$  (D) All of these
38. If tartaric acid is not added in baking powder, the cake will taste bitter due to the presence of  
 (A) sodium hydrogen carbonate (B) carbon dioxide  
 (C) sodium carbonate (D) all of these

39. Soda-acid fire extinguisher extinguishes the fire
- (A) by cutting the supply of air
  - (B) by removing the combustible substance
  - (C) by raising the ignition temperature
  - (D) By producing  $\text{SO}_2$  gas
40. The simplest formula of bleaching powder is
- (A)  $\text{Ca}(\text{OCl}_2)$
  - (B)  $\text{CaOCl}_2$
  - (C)  $\text{CaOCl}_2 \cdot \text{H}_2\text{O}$
  - (D)  $\text{Ca}(\text{OCl}_2) \cdot 2\text{H}_2\text{O}$
41. Elements belongs to the same group have similar properties because
- (A) they have similar electronic configuration of the outermost shell
  - (B) their atomic numbers go on increasing as we move down the group
  - (C) all of them are metallic elements
  - (D) they have same texture
42. The dead burnt plaster is
- (A)  $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$
  - (B)  $\text{CaSO}_4 \cdot \frac{1}{2}\text{H}_2\text{O}$
  - (C)  $\text{CaSO}_4$
  - (D)  $3\text{CaSO}_4 \cdot \text{H}_2\text{O}$
43. Bleaching powder is soluble in cold water giving a milky solution due to
- (A) available chlorine
  - (B) lime present in it
  - (C) calcium carbonate formation
  - (D) the absorption of carbon dioxide from atmosphere
44. In which of the following pair, both the substances are chemically same?
- (A) milk of lime and lime water
  - (B) dead burnt plaster and gypsum
  - (C) alumina and gypsum
  - (D) gypsum and plaster of Paris
45. A solution turns red litmus blue, the pH of solution is likely to be
- (A) 1
  - (B) 4
  - (C) 5
  - (D) 10
46. Ethane with the molecular formula  $\text{C}_2\text{H}_6$  has
- (A) 6 covalent bonds
  - (B) 7 covalent bonds
  - (C) 8 covalent bonds
  - (D) 9 covalent bonds
47. Butanone is a four-carbon compound with the functional group
- (A) carboxylic acid
  - (B) aldehyde
  - (C) ketone
  - (D) alcohol
48. While cooking if the bottom of the vessel is getting blackened on the outside, it means that
- (A) the food is not cooked completely
  - (B) the fuel is not burning completely
  - (C) the fuel is wet
  - (D) the fuel is burning completely

49. The gas evolved when ethanol reacts with sodium metal is  
(A)  $H_2$  (B)  $CO_2$  (C)  $H_2O$  (D)  $CO$
50. Which of the following reactions is called esterification?  
(A)  $CH_3COOH + NaHCO_3 \rightarrow CH_3COONa + H_2O + CO_2$   
(B)  $C_2H_5OH \rightarrow C_2H_4 + H_2O$   
(C)  $C_2H_5OH + CH_3COOH \rightarrow CH_3COOC_2H_5 + H_2O$   
(D)  $CH_3COOC_2H_5 + NaOH \rightarrow CH_3COONa + C_2H_5OH$
51. Which of the following is incorrectly matched?  
(A) vinegar  $\rightarrow$  carboxylic acid (B)  $C_2H_6 \rightarrow$  alkane  
(C) ethanol  $\rightarrow$  alcohol (D) methanol  $\rightarrow$  ketone
52. The number of single and double bonds (total) present in ethanoic acid is  
(A) 5 (B) 6 (C) 7 (D) 8
53. The number of structural isomers for an alkane with a molecular mass 72 g/mole is  
(A) 2 (B) 3 (C) 4 (D) 5
54. What happens when dilute hydrochloric acid is added to iron fillings? Tick the correct answer.  
(A) Hydrogen gas and iron chloride are produced.  
(B) Chlorine gas and iron hydroxide are produced.  
(C) No reaction takes place. (D) Iron salt and water are produced.
55. The reaction,  $2Na + Cl_2 \rightarrow 2NaCl$  is an example of  
(A) combination reaction (B) decomposition reaction  
(C) displacement reaction (D) double decomposition reaction
56. Which of the following reactions involves the combination of two elements?  
(A)  $CaO + CO_2 \rightarrow CaCO_3$  (B)  $4Na + O_2 \rightarrow 2Na_2O$   
(C)  $SO_2 + \frac{1}{2}O_2 \rightarrow SO_3$  (D)  $NH_3 + HCl \rightarrow NH_4Cl$
57. When lead nitrate is heated it breaks down into lead monoxide, nitrogen dioxide and oxygen.  
 $2Pb(NO_3)_2 \rightarrow 2PbO + 4NO_2 + O_2$ . The reaction is an example of  
(A) combination reaction (B) decomposition reaction  
(C) double decomposition reaction (D) displacement reaction
58. Which of the following is a displacement reaction?  
(A)  $NaOH + HNO_3 \rightarrow NaNO_3 + H_2O$   
(B)  $Cu + 2AgNO_3 \rightarrow Cu(NO_3)_2 + 2Ag$   
(C)  $2Hg + O_2 \rightarrow 2HgO$   
(D)  $FeCl_3 + 3NaOH \rightarrow 3NaCl + Fe(OH)_3$

59. Which of the following reactions will not take place?
- (A)  $\text{Zn} + \text{FeSO}_4 \rightarrow \text{ZnSO}_4 + \text{Fe}$       (B)  $2\text{KI} + \text{Cl}_2 \rightarrow 2\text{KCl} + \text{I}_2$   
(C)  $\text{Zn} + \text{MgSO}_4 \rightarrow \text{ZnSO}_4 + \text{Mg}$       (D)  $\text{Mg} + \text{CuSO}_4 \rightarrow \text{MgSO}_4 + \text{Cu}$
60. The reaction in which two compounds exchange their ions to form two new compounds is called
- (A) a displacement reaction      (B) decomposition reaction  
(C) an isomerization reaction      (D) double displacement reaction
61. The IUPAC name of compound,
- $$\begin{array}{c} \text{CH}_2 - \text{CH} - \text{CH}_2 \\ | \quad | \quad | \\ \text{OH} \quad \text{OH} \quad \text{OH} \end{array}$$
- (A) 1,2,3-trihydroxypropane      (B) 3-hydroxypentane-1,5-diol  
(C) 1,2,3-hydroxypropane      (D) propane-1,2,3-triol
62. When the gases sulphur dioxide and hydrogen sulphide mix, it forms water, the reaction is  $\text{SO}_2 + 2\text{H}_2\text{S} \rightarrow 2\text{H}_2\text{O} + 3\text{S}$ . Here, hydrogen sulphide acts as
- (A) an oxidizing agent      (B) a reducing agent  
(C) a dehydrating agent      (D) a catalyst
63. In the reaction,  $2\text{FeCl}_2 + \text{Cl}_2 \rightarrow 2\text{FeCl}_3$ , chlorine may be regarded as
- (A) an oxidizing agent      (B) a reducing agent  
(C) a catalyst      (D) a substance that provides an inert medium
64. Which of the following statement is incorrect?
- (A) metals have lustre  
(B) all metal oxides are basic in nature  
(C) metals have 1, 2 or 3 electrons in the outermost shell  
(D) metals are malleable
65. Which of the following is second most abundant metal in the Earth's crust?
- (A) copper      (B) aluminum      (C) iron      (D) zinc
66. Metallurgy is a process of
- (A) extracting metal from sand      (B) extracting metal from its ore  
(C) extracting metal from the sea      (D) extracting metal from its pure salt
67. Matrix is defined as
- (A) the unwanted foreign material present in the ore  
(B) the flux added to remove the unwanted impurities from ore  
(C) the slag formed as a result of the reaction of flux with gangue  
(D) the material used in the reduction of metal oxide to metal
68. Which of the following is not an ore of aluminium?
- (A) cryolite      (B) feldspar      (C) bauxite      (D) azurite

69. The function of adding cryolite in the extraction of aluminium from pure alumina is
- (A) to increase the fusion temperature
  - (B) to decrease the conductivity of alumina
  - (C) to decrease the fusion temperature and increase the electrical conductivity
  - (D) to dissolve alumina in water
70. Which of the following pair is incorrect?
- (A) malachite – copper
  - (B) siderite – iron
  - (C) calamine – aluminium
  - (D) galena – lead

**PART - III (BIOLOGY)**

71. Which of the following events does not occur exclusively during light reaction of photosynthesis?
- (A) Photolysis of water
  - (B) Transduction of light energy
  - (C) Absorption of solar energy
  - (D) Reduction of  $\text{CO}_2$
72. Which one of these reactions occurs during photosynthesis?
- (A) Carbon dioxide is reduced and water is oxidized
  - (B) Water is reduced and carbon dioxide is oxidized
  - (C) Carbon dioxide and water are both oxidized
  - (D) Carbon dioxide and water are both reduced
73. From a catabolic reaction energy obtained by a cell is stored immediately in the form of
- (A) Pyruvic acid
  - (B) Glucose
  - (C) ATP
  - (D) ADP
74. Respiration is a/an
- (A) Biochemical process
  - (B) Physico-chemical process
  - (C) Physical process
  - (D) Oxidation process
75. Rate of breathing in an aquatic organism
- (A) Is much slower than that seen in terrestrial organisms
  - (B) Is much faster than that seen in terrestrial organisms
  - (C) Breathing does not occur
  - (D) Equals to that seen in terrestrial organisms
76. In which of the following process  $\text{CO}_2$  is released?
- (A) Glycolysis
  - (B) Photosynthesis
  - (C) Alcohol fermentation
  - (D) Lactic acid fermentation
77. In oxygenated blood, one molecule of hemoglobin can carry how many molecules of oxygen?
- (A) 2
  - (B) 4
  - (C) 8
  - (D) 1
78. Chemical released by blood platelets is
- (A) Heparin
  - (B) Fibrinogen
  - (C) Thromboplastin
  - (D) Prothrombin

79. Which of the following blood corpuscle is agranulocytic in nature?  
(A) Eosinophils (B) Basophils (C) Lymphocytes (D) Neutrophils
80. Which of the following have three chambered and two chambered hearts respectively?  
(A) Birds and amphibians (B) Reptiles and amphibians  
(C) Amphibians and fish (D) Birds and reptiles
81. The only artery which carries deoxygenated blood, receives blood by pumping of which part of the heart?  
(A) Left ventricle (B) Left auricle  
(C) Right ventricle (D) Right auricle
82. Contraction of left ventricle pumps blood into  
(A) Right auricle (B) Pulmonary artery  
(C) Pulmonary vein (D) Dorsal aorta
83. Urine leaves the kidney through  
(A) Urethra (B) Collecting duct (C) Renal vein (D) Ureter
84. Nitrogenous wastes are formed from the breakdown of  
(A) Ammonia (B) Fat (C) Amino acids (D) Water
85. The function of glomerulus in kidney is  
(A) Blood filtration (B) Reabsorption of salt  
(C) Reabsorption of water (D) All the above
86. What will happen if one of the kidneys of a person is removed?  
(A) The person will die.  
(B) Urea will go on accumulating in blood.  
(C) The person will survive and remain normal  
(D) Urination will stop
87. Uriniferous tubules are mainly concerned with  
(A) Concentration of urine  
(B) passage of urine  
(C) Reabsorption of useful substances from glomerular filtrate  
(D) Removal of urea from blood
88. The plant hormone which is essential for cell division is  
(A) Ethylene (B) Auxin (C) Gibberellin (D) Cytokinin
89. Which of these plant hormones is a growth inhibitor ?  
(A) Ethylene (B) Auxin (C) Abscisic acid (D) Cytokinin
90. Master endocrine gland of the body is  
(A) Testis (B) Pituitary (C) Thyroid (D) Adrenal



91. People suffering from diabetes mellitus are unable to secrete  
(A) Insulin (B) Adrenaline (C) Thyroxin (D) Vasopressin
92. The seat of intelligence and voluntary actions in the brain is  
(A) Diencephalon (B) Cerebellum  
(C) Cerebrum (D) Medulla oblongata
93. In *Spirogyra*, asexual reproduction takes place by:  
(A) Breaking up of filaments into smaller bits  
(B) Division of a cell into two cells  
(C) Division of a cell into many cells  
(D) Formation of young cells from older cells
94. The ability of an organism to develop whole body from a broken piece or fragment is called:  
(A) Binary fission (B) Budding  
(C) Multiple fission (D) Regeneration
95. Length of pollen tube depends on the distance between:  
(A) Pollen grain and upper surface of stigma  
(B) Pollen grain on upper surface of stigma and ovule  
(C) Pollen grain in anther and upper surface of stigma  
(D) Upper surface of stigma and lower part of style
96. Asexual reproduction takes place through budding in:  
(A) *Amoeba* (B) *Yeast* (C) *Plasmodium* (D) *Leishmania*
97. The process of release of an egg from the ovary is called:  
(A) Fertilization (B) Reproduction (C) Ovulation (D) Pollination
98. The character which was not selected by Mendel for his experiment:  
(A) Length of the stem (B) Shape of the pod  
(C) Length of the pod (D) Colour of unripe pod
99. Mendel chose garden peas (*Pisum sativum*) to study because:  
(A) They were easy to grow  
(B) They were available in many distinguishable varieties with contrasting sets of characters  
(C) In them, self and cross pollination could be done easily  
(D) All of the above
100. Genetics is a branch of biology, dealing with:  
(A) Heredity in living beings (B) Variations in living beings  
(C) Both heredity and variations (D) Evolution of living beings
101. The pairs of characters used by Mendel during his experiment on garden pea were:  
(A) Ten (B) Six (C) Seven (D) Three

102. Out of the pair of contrasting characters, one is dominant and the other is recessive. This principle is popularly known as:
- (A) Law of dominance (B) Law of segregation  
(C) Law of independent assortment (D) Law of purity of gametes
103. Which of the following statements about food chain and energy flow through ecosystem is false?
- (A) Food web includes two or more food chains  
(B) All organisms that are not producers are consumers  
(C) A single organism can feed at several trophic levels  
(D) Decomposers feed at all trophic levels except the producer level
104. Accumulation of non-biodegradable chemicals in the food chains in increasing amount at each higher trophic level is known as
- (A) Eutrophication (B) Pollution  
(C) Biomagnification (D) Accumulation
105. Disposable plastic plates, glasses should not be used because
- (A) They are made of light weight material  
(B) They are made of toxic material  
(C) They are made of heat resistant material  
(D) They are made of non-biodegradable material

**PART - IV (Mental Aptitude)****Directions for Q. Nos. 106 to 107:**

X is mother of Y but Y is not the daughter of X. S is son of G and brother of T. T is sister of Y.

106. What is the relationship between G and T?
- (A) Father – Daughter (B) Mother – Daughter  
(C) Brother – Sister (D) Can't be found
107. What is the relationship between G and X?
- (A) Husband – Wife (B) Brother – Sister  
(C) Uncle – Niece (D) No relation
108. Pointing to Ravindra, Manish said, "I am the only son of one of the sons of his father." How is Ravindra related to Manish?
- (A) Nephew (B) Uncle  
(C) Father or Uncle (D) Father

**Directions for Q. Nos. 109 to 113:**

Six persons – A, B, C, D, E and F – stand in a row. A is to the left of B. C is to the right of D. E and F have two persons standing between them and neither of these two persons is C or A.

109. What is the total number of possible arrangements?

- (A) 2 (B) 4 (C) 6 (D) 5

110. Who among the following stand at the extreme ends of the row?  
(A) E and F (B) E and C (C) A and C (D) F and A
111. If A sits to the immediate left of E, then who sits to the immediate right of B?  
(A) D (B) F (C) C (D) E
112. If A or C is permitted to sit between E and F, other conditions remaining the same, what is the total number of possible arrangements?  
(A) 36 (B) 48 (C) 18 (D) 24
113. Who among the following sits to the immediate left of C, if B sits to the immediate right of E?  
(A) D (B) F (C) B (D) E
114. L is to South – West of K, M is to the East of L and South – East of K and N is to the North of M in line with LK. In which direction of K is N located?  
(A) North (B) East  
(C) South – East (D) North – East
115. Bablu ranked sixteenth from the top and twenty ninth from the bottom among those who passed an examination. Six boys did not participate in the competition and five failed in the examination. How many boys were there in that class?  
(A) 44 (B) 50 (C) 55 (D) 40
116. A certain number of horses and an equal number of men are going somewhere. Half of the owners are on their horses back while the remaining ones are walking along leading their horses. If the number of legs walking on the ground is 70, how many horses are there?  
(A) 10 (B) 12 (C) 14 (D) 16
117. A total of 324 coins of 20 paise and 25 paise make sum of Rs. 71 the number of 25 paise coins is  
(A) 120 (B) 124 (C) 144 (D) 200
118. Mukesh left home for the bus stop 10 minutes earlier than usual. It takes 10 minutes to reach the stop. He reached the stop at 1.45 a.m. What time does he usually leave home for the bus stop?  
(A) 1.40 a.m. (B) 1.45 a.m.  
(C) 1.55 a.m. (D) Data inadequate
119. If 4th day of any month was Sunday, what will be the day on 27th day of the same month?  
(A) Monday (B) Tuesday (C) Wednesday (D) Saturday.
120. Find the missing alphabet A, C, F, ?, O  
(A) G (B) J (C) H (D) K

**Answers to Sample Paper | 2 Year Medical**
**Sample Paper - II**

PHYSICS	CHEMISTRY	BIOLOGY	MENTAL ABILITY
1. (B)	36. (D)	71. (D)	106. (A)
2. (C)	37. (D)	72. (A)	107. (A)
3. (D)	38. (C)	73. (C)	108. (C)
4. (D)	39. (A)	74. (B)	109. (B)
5. (B)	40. (B)	75. (B)	110. (C)
6. (D)	41. (A)	76. (C)	111. (A)
7. (D)	42. (C)	77. (B)	112. (A)
8. (B)	43. (B)	78. (C)	113. (B)
9. (B)	44. (A)	79. (C)	114. (D)
10. (D)	45. (D)	80. (C)	115. (C)
11. (C)	46. (B)	81. (C)	116. (C)
12. (C)	47. (C)	82. (D)	117. (B)
13. (D)	48. (B)	83. (D)	118. (B)
14. (D)	49. (A)	84. (C)	119. (B)
15. (D)	50. (C)	85. (A)	120. (B)
16. (D)	51. (D)	86. (C)	
17. (D)	52. (C)	87. (C)	
18. (B)	53. (B)	88. (D)	
19. (B)	54. (A)	89. (C)	
20. (A)	55. (A)	90. (B)	
21. (C)	56. (B)	91. (A)	
22. (B)	57. (B)	92. (C)	
23. (D)	58. (B)	93. (A)	
24. (A)	59. (C)	94. (D)	
25. (B)	60. (D)	95. (B)	
26. (C)	61. (D)	96. (B)	
27. (A)	62. (B)	97. (C)	
28. (A)	63. (A)	98. (C)	
29. (A)	64. (B)	99. (D)	
30. (C)	65. (C)	100. (C)	
31. (A)	66. (B)	101. (C)	
32. (D)	67. (A)	102. (A)	
33. (D)	68. (D)	103. (D)	
34. (B)	69. (C)	104. (C)	
35. (A)	70. (C)	105. (D)	

## Sample Paper - 2 Year Program

### Admission & Scholarship Test | Medical

Duration : 3.0 Hrs

Maximum Marks: 480

**PAPER SCHEME :**

- The paper contains **120 Objective Type Questions** divided into **four sections: Section - I, Section – II, Section - III and Section - IV**
- **Section I** contains **35 Multiple Choice Questions (1-35)** based on Physics. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE CHOICE is correct.**
- **Section II** contains **35 Multiple Choice Questions (36-70)** based on Chemistry. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE CHOICE is correct.**
- **Section III** contains **35 Multiple Choice Questions (71-105)** based on Biology. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE CHOICE is correct.**
- **Section IV** contains **15 Multiple Choice Questions (106-120)** based on Mental Aptitude. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE CHOICE is correct.**

**MARKING SCHEME :**

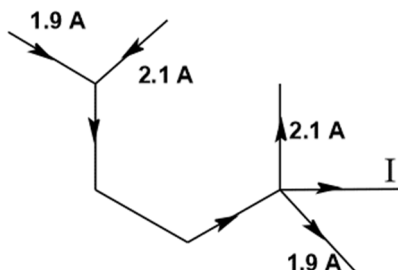
- **Section I, II, III and IV** : For each question, **4 marks** will be awarded for correct answer and **-1 negative marking** for incorrect answer.

**GENERAL INSTRUCTIONS :**

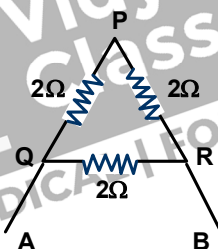
- For answering a question, an **ANSWER SHEET (OMR SHEET)** is provided separately. Please fill your **Name, Roll Number, Seat ID, Date of Birth** and the **PAPER CODE** properly in the space provided in the **ANSWER SHEET**. IT IS YOUR OWN RESPONSIBILITY TO FILL THE OMR SHEET CORRECTLY.
- A blank space has been provided on each page for rough work. You will not be provided with any supplement or rough sheet.
- The use of log tables, calculator and any other electronic device is strictly prohibited.
- Violating the examination room discipline will immediately lead to the cancellation of your paper and no excuses will be entertained.
- No one will be permitted to leave the examination hall before the end of the test.
- Please submit both the question paper and the answer sheet to the invigilator before leaving the examination hall.

## PART - I (PHYSICS)

1. If the length and cross section of a wire are doubled, then  
 (A) Its resistance will increase two times (B) Its resistance will decrease four times  
 (C) Its resistance will increase four times (D) Its resistance will remain unchanged
2. Electric currents with certain values are flowing in various branches of the following circuit: The value of current 'I' in the circuit is



- (A) 1.9 A (B) 0.2 A (C) 0 A (D) 2.1 A
3. Find the equivalent resistance between A and B



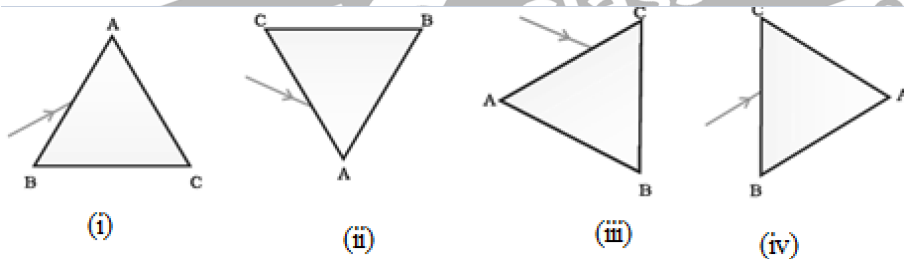
- (A)  $3/2 \Omega$  (B)  $4/3 \Omega$  (C)  $2/3 \Omega$  (D)  $3/4 \Omega$
4. Two bulbs (of 100 W and 200 W) have been connected in parallel and 200 V AC fed to them from common part. Which bulb will have more current flowing through it?  
 (A) Bulb of 200 W (B) Both will have same current  
 (C) Bulb of 100 W (D) Unpredictable
5. Two resistors of  $6\Omega$  and  $9\Omega$  are connected in series to a 120 V source. The power consumed by the  $6\Omega$  resistor is  
 (A) 384 W (B) 576 W (C) 1500 W (D) 1800 W
6. Through the tube of radius R, 10,000  $\alpha$ -particles pass per minute. The value of electric current through the tube is (approximately)  
 (A)  $0.5 \times 10^{-12}$  A (B)  $2 \times 10^{-12}$  A (C)  $0.5 \times 10^{-18}$  A (D)  $2 \times 10^{-18}$  A
7. Equivalent resistance that cannot be obtained by the combination of three resistance of  $4\Omega$  each is  
 (A)  $12 \Omega$  (B)  $1.33 \Omega$  (C)  $6 \Omega$  (D)  $3 \Omega$
8. When a wire of length 50 cm and cross section area  $1 \text{ mm}^2$  is connected with a battery of 2 volt, a current of 4 amp flows in it. The resistivity of the wire is  
 (A)  $2 \times 10^{-7}$  ohm m (B)  $5 \times 10^{-7}$  ohm m (C)  $4 \times 10^{-6}$  ohm m (D)  $1 \times 10^{-6}$  ohm m

9. A Transformer
- (A) converts AC to DC
  - (B) converts DC to AC
  - (C) increases or decreases (step up or step down) AC voltage
  - (D) increases or decreases (step up or step down) DC voltage
10. Magnetic Field inside a long Solenoid is \_\_\_\_\_.
- (A) radial
  - (B) uniform
  - (C) Both (A) and (B)
  - (D) circular
11. The Right Hand Thumb rule (Grip rule) is used to find
- (A) force on a charged particle passing through the magnetic field.
  - (B) force on a current carrying conductor placed in a magnetic field.
  - (C) direction of induced current.
  - (D) direction of B around a current carrying straight conductor.
12. The direction of magnetic lines of force produced by passing a direct current in a conductor is:
- (A) perpendicular to the line conductor and coming outwards
  - (B) parallel to conductor
  - (C) surrounding the conductor and of circular nature
  - (D) perpendicular to the conductor and coming inwards
13. Force acting on a stationary charge Q in the magnetic field B is
- (A)  $BQV$
  - (B)  $BV/Q$
  - (C) zero
  - (D)  $BQ/V$
14. Which of the following statement is not correct about two parallel conductors carrying equal currents in the same direction?
- (A) Each of the conductors will experience a force.
  - (B) The two conductors will repel each other.
  - (C) There are concentric lines of force around each conductor.
  - (D) Each of the conductors will move if not prevented from doing so.
15. A magnetic field may:
- (A) change the velocity of a charged particle
  - (B) change the speed of a charged particle
  - (C) change the kinetic energy of a charged particle
  - (D) stop a moving charged particle
16. In an Electric Motor, the direction of current in the coil changes once in each ;
- (A) two rotations
  - (B) one rotation
  - (C) half rotation
  - (D) one-fourth rotation
17. Most of the energy we use originally comes from
- (A) the sun
  - (B) the air
  - (C) the soil
  - (D) the oceans
18. Electrical energy can be produced from:
- (A) mechanical energy
  - (B) chemical energy
  - (C) radiant energy
  - (D) all of the above

19. Coal, petroleum, natural gas, and propane are fossil fuels. They are called fossil fuels because:
- (A) they are burned to release energy and they cause air pollution  
(B) they were formed from the buried remains of plants and animals that lived hundreds of millions of years ago  
(C) they are non-renewable and will run out (D) they are mixed with fossils to provide energy
20. Gasoline is produced by refining which fossil fuel?
- (A) natural gas (B) coal (C) petroleum (D) propane
21. Propane is used instead of natural gas on many farms and in rural areas. Why is propane often used instead of natural gas?
- (A) its safer (B) its portable (C) its cleaner (D) its cheaper
22. What sector of the Indian economy consumes most of the nation's petroleum?
- (A) residential (B) commercial (C) industrial (D) transportation
23. Natural gas is transported mainly by
- (A) pipelines (B) trucks (C) barges (D) all three equally
24. Global warming focuses on an increase in the level of which gas in the atmosphere?
- (A) ozone (B) sulfur dioxide (C) carbon dioxide (D) nitrous oxide
25. A light ray is made to incident on a glass plate with angle of incidence  $15^\circ$  and then reflected. Then the angle of deviation is
- (A)  $45^\circ$  (B)  $130^\circ$  (C)  $150^\circ$  (D)  $90^\circ$
26. The angle between incident ray and reflected ray is  $70^\circ$ . What is the angle of incidence?
- (A)  $45^\circ$  (B)  $30^\circ$  (C)  $55^\circ$  (D)  $35^\circ$
27. Two plane mirrors are inclined to each other at an angle. A ray of light is reflected first at one mirror and then at the other.
- (A) the total deviation of ray is  $360^\circ$   
(B) the total deviation produced by system of mirrors is dependent on the angle of incidence on the first mirror  
(C) the total deviation produced by system of mirrors depends upon the angle which the two mirror are inclined to each other.  
(D) the total deviation of ray is always  $90^\circ$ .
28. Refraction of light takes place when light travels from
- (A) vacuum into water only (B) air into water only  
(C) rarer to denser medium (D) any medium to water only
29. The diameter of spherical mirror in which reflection takes place is called
- (A) radius of curvature (B) centre of curvature  
(C) linear aperture. (D) focal length.
30. The image formed by a convex mirror of real object is larger than the object. This happen
- (A) When  $u < 2f$  (B) When  $u > 2f$   
(C) for all values of  $u$  (D) for no value of  $u$



31. When object is placed between principal focus and pole for a concave mirror the image is formed at  
 (A) pole (B) principal focus  
 (C) center of curvature (D) behind the mirror
32. The line passing through pole and center of curvature is  
 (A) pole (B) principal axis (C) center of curvature (D) radius of curvature.
33. A person cannot see distinctly objects kept beyond 2 m. This defect can be corrected by using a lens of power  
 (A) + 0.5 D (B) - 0.5 D (C) + 0.2 D (D) - 0.2 D
34. A student sitting on the last bench can read the letters written on the blackboard but is not able to read the letters written in his text book. Which of the following statements is correct?  
 (A) The near point of his eyes has receded away  
 (B) The near point of his eyes has come closer to him  
 (C) The far point of his eyes has come closer to him  
 (D) The far point of his eyes has receded away
35. A prism ABC (with BC as base) is placed in different orientations. A narrow beam of white light is incident on the prism as shown in Figure. In which of the following cases, after dispersion, the third colour from the top corresponds to the colour of the sky?



- (A) (i) (B) (ii) (C) (iii) (D) (iv)

### PART - II (CHEMISTRY)

36. A solution reacts with crushed egg shells to give a gas that turns lime-water milky. The solution is  
 (A) NaCl (B) HCl (C) LiCl (D) KCl
37. 10 ml of a solution of NaOH is found to be completely neutralized by 8 mL of a given solution of HCl. If we take 20 ml of the same solution of NaOH, the amount of HCl solution (the same solution as before) required to neutralize it will be  
 (A) 4 ml (B) 8 ml (C) 12 ml (D) 16 ml
38. Which one of the types of medicines is used for treating indigestion?  
 (A) antibiotic (B) analgesic (C) antacid (D) antiseptic
39. Which of the following gases is evolved when baking soda reacts with an acid?  
 (A) H<sub>2</sub> (B) O<sub>2</sub> (C) CO<sub>2</sub> (D) CH<sub>4</sub>
40. Which of the following is not an acidic salt?  
 (A) baking soda (B) ammonium chloride  
 (C) copper sulphate (D) ammonium nitrate

41. The acid having highest  $H^+$  ion concentration is one with  
(A) pH = 7.0 (B) pH = 1.2 (C) pH = 2.3 (D) pH = 8.2
42. Aqueous solution of which of the following turns blue litmus red?  
(A)  $NaNO_3$  (B)  $CuSO_4$  (C)  $NH_4OH$  (D)  $CH_3COONa$
43. The acid produced in our stomach is  
(A) HCl (B)  $H_2SO_4$  (C)  $HNO_3$  (D)  $CH_3COOH$
44. Which of the following is a weak acid?  
(A) HCl (B)  $H_2CO_3$  (C)  $H_2SO_4$  (D)  $HNO_3$
45. Which one of the following is a strong base?  
(A)  $NH_4OH$  (B)  $Ca(OH)_2$  (C)  $Mg(OH)_2$  (D) KOH
46. Ethanoic acid is obtained by the \_\_\_\_\_ of ethanol  
(A) combination (B) oxidation (C) reduction (D) substitution
47. The highest boiling point is of  
(A) ethane (B) ethanol (C) propanone (D) ethanoic acid
48. In the reaction  
$$CH_3CH_2OH \xrightarrow{\text{hot conc. } H_2SO_4} CH_2 = CH_2 + H_2O$$
here conc.  $H_2SO_4$  acts as  
(A) an oxidizing agent (B) provides acidic medium  
(C) a dehydrating agent (D) a drying agent
49. Glacial acetic acid is a  
(A) frozen acetic acid (B) 5-8% of solution of acetic acid in water  
(C) mixture of acetic acid and alcohol (D) mixture of acetic acid and benzene
50. Which of the following reactions is called saponification?  
(A)  $CH_3COOH + C_2H_5OH \rightarrow CH_3COOC_2H_5 + H_2O$   
(B)  $2CH_3COOH + Na_2CO_3 \rightarrow 2CH_3COONa + H_2O + CO_2$   
(C)  $CH_3COOC_2H_5 \xrightarrow{NaOH} C_2H_5OH + CH_3COO^-Na^+$   
(D)  $CH_3CH_2OH + [O] \rightarrow CH_3COOH$
51. When ethanoic acid reacts with ethanol, a sweet smelling product is formed. The functional group in the product is  
(A) aldehyde (B) ketone (C) alcohol (D) ester
52. Which allotrope of carbon contains hexagonal layer structure?  
(A) diamond (B) fullerene (C) graphite (D) coal
53. In the following equation,  
$$Na_2CO_3 + XHCl \rightarrow 2NaCl + CO_2 + H_2O$$
the value of X is  
(A) 1 (B) 2 (C) 3 (D) 4

54. The equation  
 $\text{Cu} + \text{XHNO}_3 \rightarrow \text{Cu}(\text{NO}_3)_2 + \text{YNO}_2 + 2\text{H}_2\text{O}$  the values of X and Y are  
(A) 3 and 1 respectively (B) 8 and 6 respectively  
(C) 4 and 2 respectively (D) 7 and 1 respectively
55. In the equation,  $\text{NaOH} + \text{HNO}_3 \rightarrow \text{NaNO}_3 + \text{H}_2\text{O}$ ,  $\text{HNO}_3$  is acting as  
(A) an oxidizing agent (B) an acid  
(C) a reducing agent (D) a dehydrating agent
56. Which of the following is not a balanced equation?  
(A)  $\text{Ca}(\text{OH})_2 + \text{CO}_2 \rightarrow \text{CaCO}_3 + \text{H}_2\text{O}$   
(B)  $\text{Fe} + \text{CuSO}_4 \rightarrow \text{FeSO}_4 + \text{Cu}$   
(C)  $\text{KClO}_3 \xrightarrow{\Delta} 2\text{KCl} + 2\text{O}_2$   
(D)  $3\text{BaCl}_2 + 2\text{H}_3\text{PO}_4 \rightarrow \text{Ba}_3(\text{PO}_4)_2 + 6\text{HCl}$
57. Which of the statements about the reaction given below is/are incorrect?  
 $\text{PbO} + \text{C} \rightarrow \text{Pb} + \text{CO}_2$   
(i) lead oxide is getting reduced (ii) carbon is getting oxidised  
(iii) carbon dioxide is getting oxidized (iv) lead is getting reduced  
(A) (i) and (ii) (B) (i) and (iii) (C) (iii) and (iv) (D) all of these
58.  $\text{Fe}_2\text{O}_3 + 2\text{Al} \rightarrow \text{Al}_2\text{O}_3 + 2\text{Fe}$   
the above reaction is an example of a  
(A) combination reaction (B) double displacement reaction  
(C) decomposition reaction (D) displacement reaction
59. A student added dilute HCl to a test tube containing zinc granules and made following observations:  
(i) the zinc surface became dull and black  
(ii) a gas evolved which burnt with a pop sound  
(iii) the solution remained colourless  
The correct observation are  
(A) (i) and (ii) (B) (i) and (iii) (C) (ii) and (iii) (D) (i), (ii) and (iii)
60. Mendeleev classified elements in:  
(A) increasing order of atomic number. (B) increasing order of atomic masses.  
(C) decreasing order of atomic masses. (D) decreasing order of atomic number.
61. A dilute solution of sodium carbonate was added to two test tubes one containing dil. HCl (1) and the other containing dilute NaOH (2). The correct observation was  
(A) a brown coloured gas liberated in test tube A  
(B) a brown coloured gas liberated in test tube B  
(C) a colourless gas liberated in test tube A  
(D) a colourless gas liberated in test tube B

62. On moving from top to bottom in a group, in the periodic table, valency  
(A) increase (B) decreases  
(C) remains same (D) first increases, then decreases
63. The correct formula for rust is  
(A)  $\text{Fe}_2\text{O}_3$  (B)  $\text{Fe}_3\text{O}_4$  (C)  $\text{Fe}_2\text{O}_3 \cdot x\text{H}_2\text{O}$  (D)  $\text{Fe}_3\text{O}_4 \cdot x\text{H}_2\text{O}$
64. Aluminium is extracted by  
(A) heating sodium aluminum silicate to high temperature  
(B) treating cryolite with sodium hydroxide solution under pressure  
(C) heating aluminium oxide with coke in a furnace  
(D) the electrolysis of molten alumina
65. When iron filings are heated in a steam of dry hydrogen chloride, the compound formed is  $\text{FeCl}_x$  where 'x' is  
(A) 1 (B) 2 (C) 3 (D) 4
66. In three oxides of iron,  $\text{Fe}_x\text{O}_y$ , x and y have the values
- |     | x | y | x | y | x | y |
|-----|---|---|---|---|---|---|
| (A) | 1 | 1 | 3 | 2 | 4 | 3 |
| (B) | 1 | 1 | 2 | 3 | 3 | 4 |
| (C) | 3 | 5 | 2 | 1 | 3 | 2 |
| (D) | 5 | 3 | 1 | 2 | 2 | 3 |
67. Which of the following statements about iron is not true?  
(A) the metal is magnetic  
(B) iron forms an alloy called steel  
(C) iron dissolves readily in concentrated nitric acid  
(D) cast iron is brittle
68. When sodium hydroxide solution is added to a freshly prepared solution of ferrous sulphate a green precipitate of ferrous hydroxide is formed, which on standing becomes reddish-brown because  
(A) ferric salts are unstable  
(B) the mixture becomes dirty  
(C) ferrous hydroxide decomposes to ferric oxide  
(D) green ferrous hydroxide oxidizes to reddish-brown ferric hydroxide in air
69. The type of iron produced in the blast furnace is  
(A) pig iron (B) wrought iron  
(C) stainless steel (D) steel
70. The reducing agent used in the blast furnace to reduce  $\text{Fe}_2\text{O}_3$  to Fe is  
(A) coke (B) carbon  
(C) lime stone (D) carbon monoxide

## PART - III (BIOLOGY)

71. The capillaries are joint to form  
(A) Arterioles (B) Arteries (C) Veins (D) Venules
72. Plasma from which fibrinogen has been removed is called  
(A) Blood (B) Serum (C) Lymph (D) Tissue fluid
73. Cells that play a major role in blood clotting are  
(A) Erythrocytes (B) Leucocytes (C) Lymphocytes (D) Platelets
74. At high altitude, in human beings there is  
(A) Decrease in number of RBCs (B) Increase in number of RBCs  
(C) Decrease in number of WBCs (D) Increase in number of WBCs
75. The epiglottis guards the opening of  
(A) Oesophagus (B) Eustachian tubes  
(C) Larynx (D) Trachea
76. Exchange of gases between alveolar air and alveolar capillaries occurs by  
(A) Osmosis (B) Diffusion (C) Active transport (D) Reverse osmosis
77. A biosphere reserve, conserves and preserves  
(A) wild animals (B) wild land (C) natural vegetation (D) All of these
78. Lungs have a large number of alveoli for  
(A) Maintaining a spongy texture and proper shape  
(B) More surface area for diffusion of gases  
(C) More nerve supply  
(D) More space to increase volume of inspired air
79. Rate of photosynthesis is dependent on:  
(A) Light quality (B) Light intensity (C) Duration of light (D) All of these
80. A plant is kept in a dark cupboard for about 48 hours before conducting any experiment on photosynthesis to  
(A) Remove chlorophyll from the leaves (B) Remove starch from the plant  
(C) Ensure that no photosynthesis occurs (D) Ensure that the leaves are free from starch
81. If the rate of respiration becomes more than the rate of photosynthesis, plants will  
(A) Continue to live, but will not be able to store food  
(B) Be killed instantly  
(C) Grow more vigorously because more energy will be available  
(D) Stop growing and gradually die of starvation
82. During photosynthesis, oxygen comes from  
(A) Water (B) Carbon dioxide  
(C) Light energy (D) Energy carbon dioxide and water

83. Animals eat food  
(A) To get energy (B) For repair of the body  
(C) To get resistance against diseases (D) All the above
84. Which blood vessel takes blood away from the kidney?  
(A) Renal portal vein (B) Renal vein  
(C) Afferent arteriole (D) Efferent arteriole
85. Glomerulus and Bowman's capsule constitute  
(A) Blood vessels (B) Malpighian body  
(C) Green gland (D) Malpighian tubule
86. Maximum amount of water from the glomerular filtrate is absorbed in  
(A) Descending limb of loop of Henle (B) Ascending limb of loop of Henle  
(C) Distal convoluted tubule (D) Proximal convoluted tubule
87. Excretion commonly involves  
(A) Removal of all by-products during catabolism  
(B) Removal of by-products during anabolism  
(C) Removal of nitrogenous waste (D) All the above
88. Flame cells are the excretory organs in  
(A) Prawn (B) *Planaria* (C) Silver fish (D) *Hydra*
89. Cytokinins are mostly produced in  
(A) Ripened fruits (B) Seeds (C) Lateral buds (D) Young leaves
90. Plant hormone involved in breaking dormancy of seeds is  
(A) Ethylene (B) Gibberellin (C) Auxin (D) Cytokinin
91. Type of movement shown by touch me not (*Mimosa*) plant  
(A) Phototropism (B) Hydrotropism (C) Nastic movement (D) Geotropism
92. Floods can be prevented by  
(A) afforestation (B) cutting the forests (C) tilling the land (D) removing the top soil
93. Plant hormone present in meristematic tissue is  
(A) Ethylene (B) Gibberellin (C) Abscisic acid (D) Cytokinin
94. Which among the following disease is not sexually transmitted?  
(A) Syphilis (B) Tuberculosis  
(C) HIV-AIDS (D) Gonorrhoea
95. Name the structure formed due to fertilization:  
(A) Gametes (B) Sperms (C) Zygote (D) Ovum
96. Spore formation occurs in:  
(A) *Yeast* (B) *Hydra* (C) *Amoeba* (D) *Rhizopus*

97. End of reproductive capacity in woman at the age of 45-55 years is known as:  
(A) Menopause (B) Puberty (C) Menarche (D) Gestation
98. Fusion of a male gamete with female gamete to form of zygote is termed as:  
(A) Pollination (B) Fertilization (C) Parthenogenesis (D) Gestation
99. Who, among the following, is called father of genetics:  
(A) Mendel (B) de Vries (C) Darwin (D) Lamarck
100. What shall be the ratio in F<sub>2</sub> generation in dihybridcross :  
(A) 3 : 1 (B) 1 : 2 : 1 (C) 9 : 3 : 3 : 1 (D) 1 : 1
101. If a plant is hybrid tall and has produced tall as well as dwarf plants in F<sub>2</sub> generation, it represents the law of:  
(A) Dominance (B) Law of segregation  
(C) Independent assortment (D) Free recombination
102. In human beings, male is  
(A) Heterogametic (B) Homogametic  
(C) Either heterogametic or homogametic (D) Both heterogametic and homogametic
103. Of the 23 pairs of chromosomes in human cells, how many autosomes are present in female?  
(A) 23 pairs (B) 22 pairs (C) 20 pairs (D) only one pair
104. If energy received by plants is 2000J, how much energy will be received by tertiary consumer?  
(A) 2000 J (B) 200 J (C) 20 J (D) 2 J
105. Which rays strike on earth due to depletion of ozone layer?  
(A) Ultraviolet (B) Infrared (C) Visible light (D) X-rays

**PART - IV (MENTAL ABILITY)**

106. I am the only son of my parents. The man in picture on the wall is my Father's son. Who is he in the picture?  
(A) Himself (B) Father (C) Brother (D) None of these

**Directions for Q. Nos. 107 or 108: Study the given information and answer the following questions.**

In a family, there are six members A, B, C, D, E and F. A and B are a married couple, A being the male member. D is the only son of C, who is the brother of A. E is the sister of D. B is the daughter-in-law of F, whose husband has died.

107. Who is C to B?  
(A) Brother (B) Brother-in-law  
(C) Nephew (D) Son-in-law
108. How many male members are there in the family?  
(A) One (B) Two  
(C) Three (D) Four

**Directions for Q. Nos. 109 or 110: Study the given information and answer the following questions.**

Five persons are standing in a queue. One of the two persons at the extreme ends is a Professor and the other is a Businessman. An Advocate is standing to the right of a student. An Author is to the immediate left of the Businessman. The Student is between the Professor and Advocate.

109. Counting from the left the Author is at which place?  
 (A) First (B) Second (C) Third (D) Fourth
110. Which of the following is in the exactly middle of the queue?  
 (A) Professor (B) Advocate (C) Student (D) Businessman

**Directions (Q. Nos. 111): Read the statements given below and answer.**

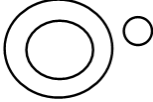
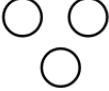


- (i) A, B and C are three boys while R, S and T are three girls. They are sitting such that the boys are facing the girls.
- (ii) A and R are diagonally opposite to each other.
- (iii) C is not sitting at any of the ends.
- (iv) T is left to R but opposite to C.
111. Who is sitting opposite to B?  
 (A) A (B) C (C) R (D) S
112. While facing east you turned to your left and walk 10m, then turned to your left and walk 10 m and now you turn  $45^\circ$  towards your right and goes straight to cover 25 m. Now in which direction are you from your starting point?  
 (A) North-East (B) South-West  
 (C) South-East (D) North-West

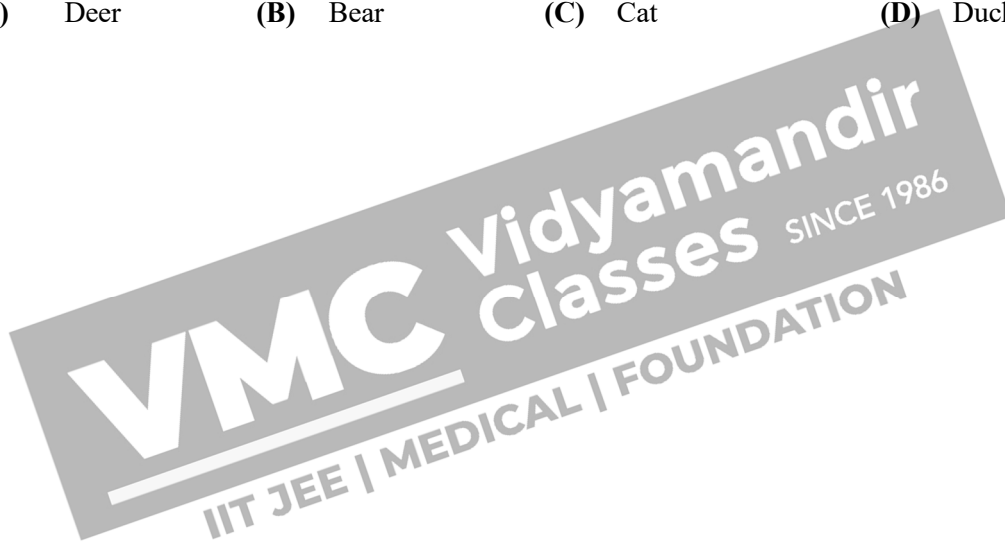
**Directions for Q. Nos. 113 to 115: Study the given information and answer the following questions.**

A and B are good in Cricket and Hockey. B and C are good in Chess and Badminton. C, D and E are good in Cricket, Baseball and Volleyball. E and F are good in Weightlifting.

113. Who are good in Cricket?  
 (A) A, B, F (B) F, E, C (C) D, E, F (D) A, B, C
114. Who is not playing Cricket?  
 (A) C (B) D (C) E (D) F
115. Who is not playing Baseball?  
 (A) C (B) F (C) E (D) D
116. Five boys took part in a race. Raj finished before Mohit but behind Gaurav. Ashish finished before Sanchit but behind Mohit, who won the race?  
 (A) Raj (B) Gaurav (C) Mohit (D) Ashish
117. Find the upcoming term  
 0, 3, 8, 15, 24, 35, 48 .....
- (A) 51 (B) 55 (C) 56 (D) 63



118. If the word 'THREAD' is written in a code as 'SIQFZE', how would 'NUMBER' be written in that code?  
(A) MVLCD (B) OTNAFQ (C) MTLAFQ (D) OVNCD
119. Which of the following diagrams indicates the best relation between Bulb, Lamp and Light?  
(A)  (B)   
(C)  (D) 
120. 'Calf' is related to 'Cow' in the same way as 'Kitten' is related to:  
(A) Deer (B) Bear (C) Cat (D) Duck



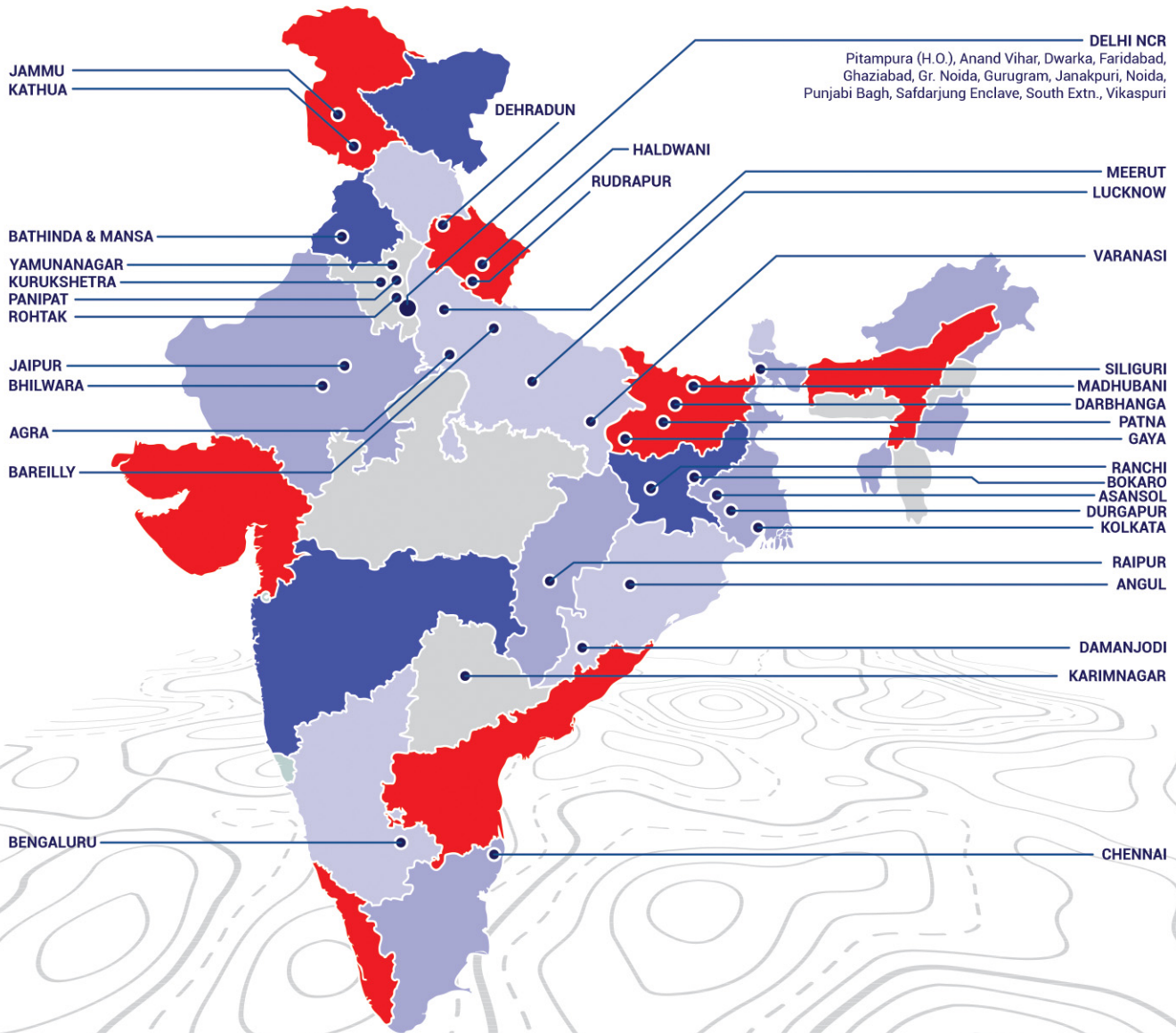


## Answers to Sample Paper | 2 Year Medical

### Sample Paper – III

PHYSICS		CHEMISTRY		BIOLOGY		(MENTAL ABILITY)	
1.	(D)	36.	(B)	71.	(D)	106.	(A)
2.	(C)	37.	(D)	72.	(B)	107.	(B)
3.	(B)	38.	(C)	73.	(D)	108.	(C)
4.	(A)	39.	(C)	74.	(B)	109.	(D)
5.	(A)	40.	(A)	75.	(D)	110.	(B)
6.	(C)	41.	(B)	76.	(B)	111.	(C)
7.	(D)	42.	(B)	77.	(D)	112.	(D)
8.	(D)	43.	(A)	78.	(B)	113.	(D)
9.	(C)	44.	(B)	79.	(D)	114.	(D)
10.	(B)	45.	(D)	80.	(D)	115.	(B)
11.	(D)	46.	(B)	81.	(C)	116.	(B)
12.	(C)	47.	(D)	82.	(A)	117.	(D)
13.	(C)	48.	(C)	83.	(D)	118.	(A)
14.	(B)	49.	(A)	84.	(B)	119.	(C)
15.	(A)	50.	(C)	85.	(B)	120.	(C)
16.	(C)	51.	(D)	86.	(D)		
17.	(A)	52.	(C)	87.	(C)		
18.	(D)	53.	(B)	88.	(B)		
19.	(B)	54.	(C)	89.	(D)		
20.	(C)	55.	(B)	90.	(B)		
21.	(B)	56.	(C)	91.	(C)		
22.	(D)	57.	(C)	92.	(A)		
23.	(A)	58.	(D)	93.	(D)		
24.	(C)	59.	(C)	94.	(B)		
25.	(C)	60.	(B)	95.	(C)		
26.	(D)	61.	(C)	96.	(D)		
27.	(C)	62.	(C)	97.	(A)		
28.	(C)	63.	(C)	98.	(B)		
29.	(C)	64.	(D)	99.	(A)		
30.	(D)	65.	(B)	100.	(C)		
31.	(D)	66.	(B)	101.	(B)		
32.	(B)	67.	(C)	102.	(A)		
33.	(B)	68.	(D)	103.	(B)		
34.	(A)	69.	(A)	104.	(D)		
35.	(B)	70.	(D)	105.	(A)		

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