



Sample Paper

2 Year (Medical)

Duration: 2 Hrs

Maximum Marks: 280

For Students Presently in Class 10 (Stream: Medical)

GENERAL INSTRUCTIONS:

- The paper contains 70 Objective Type Questions divided into four sections: **Section - I (Physics), Section - II (Chemistry), Section - III (Biology) and Section - IV (Mental Ability).**
- **Section - I** contain **20 Multiple Choice Questions**. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE CHOICE** is correct.
- **Section - II** contains **20 Multiple Choice Questions**. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE CHOICE** is correct.
- **Section - III** contain **20 Multiple Choice Questions**. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE CHOICE** is correct.
- **Section - IV** contains **10 Multiple Choice Questions**. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE CHOICE** is correct.

MARKING SCHEME:

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

SECTION – I [PHYSICS]

1. v_1 is velocity of light in first medium, v_2 is velocity of light in second medium, then refractive index of second medium with respect to first medium is:
(A) v_1 / v_2 (B) v_2 / v_1 (C) $\sqrt{v_1 / v_2}$ (D) $\sqrt{v_2 / v_1}$
2. The refractive index of glass and water with respect to air are $3/2$ and $4/3$ respectively. The refractive index of glass with respect to water is:
(A) $8/9$ (B) $9/8$ (C) 2 (D) $1/2$
3. If μ_j represents refractive index when a light ray goes from medium i to medium j , then the product ${}_2\mu_1 \times {}_3\mu_2 \times {}_4\mu_3$ is equal to:
(A) ${}_3\mu_1$ (B) ${}_3\mu_2$ (C) $\frac{1}{{}_1\mu_4}$ (D) ${}_4\mu_2$
4. What is the basic reason for the shining of a diamond?
(A) Reflection (B) Refraction
(C) Dispersion of light (D) Total internal reflection
5. Total internal reflection of a ray of light is possible when the (i_c = critical angle, i = angle of incidence)
(A) Ray goes from denser medium to rarer medium and $i < i_c$
(B) Ray goes from denser medium to rarer medium and $i > i_c$
(C) Ray goes from rarer medium to denser medium and $i > i_c$
(D) Ray goes from rarer medium to denser medium and $i < i_c$
6. A convex lens of focal length A and a concave lens of focal length B are placed in contact. The focal length of the combination is:
(A) $A + B$ (B) $(A - B)$ (C) $\frac{AB}{(A + B)}$ (D) $\frac{AB}{(B - A)}$
7. Near and far points of a human eye are:
(A) zero and 25 cm (B) 25 cm and 50 cm
(C) 50 cm and 100 cm (D) 25 cm and infinite
8. Which of the following is used in optical fibres?
(A) Total internal reflection (B) Scattering
(C) Diffraction (D) Refraction
9. A convex lens is making full image of an object. If half of lens is covered by an opaque object, then:
(A) half image is not seen (B) full image of same intensity is seen
(C) full image of decreased intensity is seen (D) half image of same intensity is seen
10. When a thin convex lens is put in contact with a thin concave lens of the same focal length (f), the resultant combination has a focal length equal to:
(A) $f/2$ (B) $2f$ (C) 0 (D) ∞
11. Loss of the ability of eye to focus on near and far objects with advancing age is called:
(A) Presbyopia (B) Astigmatism (C) Hypermetropia (D) Myopia

12. A normal eye is not able to see objects closer than 25 cm because:
(A) The focal length of the eye is 25 cm
(B) The distance of the retina from the eye lens is 25 cm
(C) The eye is not able to decrease the distance between the eye lens and the retina beyond a limit
(D) The eye is not able to decrease the focal length beyond a limit
13. Myopia can be removed by using a lens of:
(A) concave lens (B) convex lens (C) cylindrical lens (D) by surgical removal
14. A person is looking at the image of his face in a mirror by holding it close to his face. The image is virtual. When he moves the mirror away from his face, the image is inverted. What type of mirror is he using?
(A) Plane mirror (B) Convex mirror (C) Concave mirror (D) None of these
15. A lens of power +2.0D is placed in contact with another lens of power -1.0D, the combination will behave like:
(A) A converging lens of focal length 100 cm
(B) A diverging lens of focal length 100 cm
(C) A converging lens of focal length 50 cm
(D) A diverging lens of focal length 50 cm
16. A concave mirror produces a real image twice the size of the object when placed at a distance of 22.5 cm from it. At what distance from the mirror should the object be placed so that the image becomes three times the size of the object?
(A) 20 cm (B) 25 cm (C) 30 cm (D) 40 cm
17. The angle between incident ray and reflected ray is 70° . What is the angle of incidence?
(A) 45° (B) 30° (C) 55° (D) 35°
18. 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.
19. 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
20. 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

SECTION – II [CHEMISTRY]

21. Which of the following represents a double displacement reaction?
(A) $2\text{H}_2 + \text{O}_2 \longrightarrow 2\text{H}_2\text{O}$ (B) $2\text{Mg} + \text{O}_2 \longrightarrow 2\text{MgO}$
(C) $\text{AgNO}_3 + \text{NaCl} \longrightarrow \text{AgCl} \downarrow + \text{NaNO}_3$ (D) $\text{H}_2 + \text{Cl}_2 \longrightarrow 2\text{HCl}$
22. The reaction $\text{H}_2 + \text{Cl}_2 \longrightarrow 2\text{HCl}$ is a:
(A) Decomposition reaction (B) Combination reaction
(C) Double displacement reaction (D) Displacement reaction

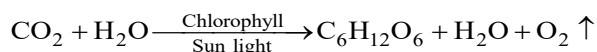
23. Which of the following is a redox reaction?
(A) $\text{CaCO}_3 \longrightarrow \text{CaO} + \text{CO}_2$ (B) $\text{H}_2 + \text{Cl}_2 \longrightarrow 2\text{HCl}$
(C) $\text{CaO} + 2\text{HCl} \longrightarrow \text{CaCl}_2 + \text{H}_2\text{O}$ (D) $\text{NaOH} + \text{HCl} \longrightarrow \text{NaCl} + \text{H}_2\text{O}$
24. $\text{Fe}_2\text{O}_3 + 2\text{Al} \longrightarrow \text{Al}_2\text{O}_3 + 2\text{Fe}$. This reaction is an example of:
(A) Combination reaction (B) Double displacement reaction
(C) Decomposition reaction (D) Displacement reaction
25. When Iron nails are added to an aqueous solution of copper sulphate, a chemical change occurs. Which of the following is not true about this reaction?
(A) Blue colour of the solution fades (B) Iron nails become brownish in colour
(C) It is a displacement reaction (D) Iron nails dissolve completely
26. According to Arrhenius concept, an acid gives:
(A) H^+ in water (B) OH^- in water (C) Both (A) & (B) (D) OH^- in acid medium
27. Which of the following is a basic salt?
(A) SnCl_2 (B) NaCl (C) NH_4Cl (D) CH_3COONa
28. What happens when copper rod is dipped in iron sulphate solution?
(A) Copper displaces iron
(B) Blue colour of copper sulphate solution is obtained
(C) No reaction takes place
(D) reaction is exothermic
29. Some stale food gives a bad taste and a bad smell because of:
(A) Corrosion (B) Displacement (C) Heating (D) Rancidity
30. Quick lime (CaO -calcium oxide) reaction with water is regarded as exothermic. A student mixes these two products in a test tube and touches its side surface. Which of the following statement correctly describes the student's observation?
(A) the test tube becomes cold due to release of heat.
(B) the test tube becomes hot due to release of heat.
(C) the test tube becomes hot due to absorption of heat.
(D) the test tube becomes cold due to absorption of heat.
31. Identify the element which is most reactive.
 $\text{A}_2\text{O}_3 + 2\text{B} \rightarrow \text{B}_2\text{O}_3 + 2\text{A}$
 $3\text{CSO}_4 + 2\text{B} \rightarrow \text{B}_2(\text{SO}_4) + 3\text{C}$
 $3\text{DO} + 2\text{A} \rightarrow \text{A}_2\text{O} + 3\text{D}$
(A) A (B) B (C) D (D) None of these
32. The chemical reaction between quicklime and water is characterized by:
(A) evolution of hydrogen gas (B) formation of slaked lime precipitate
(C) lowering in temperature of mixture (D) change in colour of the product
33. Which one of the following is an endothermic reaction?
(A) combustion of carbon (B) adding ammonium chloride to water
(C) reaction between NaOH and HCl (D) reaction between $\text{Ca}(\text{OH})_2$ and H_2SO_4

34. One of the following does not happen during a chemical reaction. This is:
- (A) breaking of old chemical bonds and formation of new chemical bonds
 - (B) formation of new substance with different properties
 - (C) atoms of one element change into those of another element to form new products
 - (D) a rearrangement of atoms takes place to form new products.
35. Barium chloride on reacting with ammonium sulphate forms barium sulphate and ammonium chloride. Which of the following correctly represents the type of 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) & (iv)
36. In which of the following reaction 'Zn' undergo oxidation?
- (A) $\text{Zn}^{2+} + 2\text{e}^- \rightarrow \text{Zn}$
 - (B) $\text{H}_2 \rightarrow 2\text{H}^+ + 2\text{e}^-$
 - (C) $2\text{H}^+ + 2\text{e}^- \rightarrow \text{H}_2$
 - (D) $\text{Zn} \rightarrow \text{Zn}^{2+} + 2\text{e}^-$
37. In the reaction $\text{PbO} + \text{C} \rightarrow \text{Pb} + \text{CO}$
- (A) PbO is oxidized
 - (B) C acts as an oxidizing agent
 - (C) C acts as a reducing agent.
 - (D) This reaction does not represent redox reaction
38. When copper wire is put in a solution of AgNO_3 :
- (A) copper metal is displaced
 - (B) the colourless solution turns blue
 - (C) the copper metal is deposited on the silver
 - (D) all the above
39. Following reaction represents a redox reaction in this process $2\text{Na} + \text{Cl}_2 \rightarrow 2\text{NaCl}$:
- (A) Na get oxidized
 - (B) Cl_2 get oxidized
 - (C) Cl_2 is oxidizing agent
 - (D) Both (A) and (C)
40. According to electronic concept:
- (A) Oxidation is gain of electron(s)
 - (B) Electron donating species is called oxidizing agent
 - (C) Reduction is gain of electron(s)
 - (D) Electron accepting species is called reducing agent

SECTION – III [BIOLOGY]

41. Which of the following is a preferred source of energy for living organism?
- (A) Carbohydrate (B) protein (C) fat (D) Minerals
42. What is correct regarding photosynthesis?
- (A) Conversion of CO_2 into Glucose in presence of sunlight
 - (B) Fixation of inorganic carbon into organic carbon with the help of solar energy.
 - (C) Fixation of organic compound into more complex organic compound
 - (D) Both (A) and (B)

43. In given following reaction find the source of oxygen



- (A) CO_2 (B) H_2O
 (C) Both CO_2 and H_2O (D) Chlorophyll
44. Find the correct sequence of process in light reaction:
 (A) Absorption of sunlight by chlorophyll $\rightarrow$ Photolysis of water $\rightarrow$ Production of Assimilatory power.
 (B) Photolysis of water $\rightarrow$ Absorption of sunlight by chlorophyll $\rightarrow$ Production of $\text{NADPH}_2 + \text{ATP}$
 (C) Breaking up of water $\rightarrow$ Production of Assimilatory power $\rightarrow$ Producing of Glucose
 (D) Photolysis $\rightarrow$ Calvin cycle $\rightarrow$ Respiration
45. Which reaction correctly represents photolysis of water during light reaction?
 (A) $\text{H}_2\text{O} \rightarrow \text{H}^+ + \text{OH}^-$ (B) $2\text{H}_2\text{O} + 4\text{H}^+ + 4\text{e}^- + \text{O}_2$
 (C) $\text{H}_2\text{O} \rightarrow \text{H}_2 + [\text{O}_2^-]$ (D) $\text{H}_2\text{O} \rightarrow 2\text{H}^+ + [\text{O}^-]$
46. Which of the following events in the mouth cavity will be affected if salivary amylase is lacking in the saliva?
 (A) Starch breaking down into sugars.
 (B) Proteins breaking down into amino acids.
 (C) Absorption of vitamins.
 (D) Fats breaking down into fatty acids and glycerol.
47. One cell-thick vessels are called:
 (A) Arteries (B) Veins (C) Capillaries (D) Pulmonary artery
48. Which of the following enzyme helps in digestion of sugars in buccal cavity?
 (A) Pepsin (B) Rennin (C) Amylase (D) Lipase
49. The longest part of the large intestine is known as:
 (A) Duodenum (B) Jejunum (C) Rectum (D) Colon
50. The Bile juice is released in small intestine from gall bladder, which part of food does it helps to digest?
 (A) Sugars (B) Nucelic Acids (D) Vitamin C (D) Fats
51. Which of the following disorders is caused due to deficiency of vitamin A?
 (A) Cataract (B) Scurvy
 (C) Night Blindness (D) Color blindness
52. Rhythmic contraction of which muscles associated with ribs help in respiration?
 (A) Muscles of Diaphragm (B) Inter Costal Muscles
 (C) Muscles of stomach (D) Both (A) and (B)
53. In which organelle does the 3 carbon compound pyruvic acid breaks to form Carbon-dioxide, water and ATP?
 (A) Endoplasmic reticulum (B) Golgi Body
 (C) Mitochondria (D) Lysosome
54. When ATP is hydrolysed into ADP and P_i in presence of water, how much energy is released?
 (A) 15.5kJ (B) 30.5kJ (C) 60.5kJ (D) 90.5kJ
55. Which animal among the following has more number of auricles than adult Frog?
 (A) Fishes (B) Man (C) Crocodile (D) None

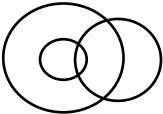
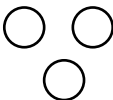
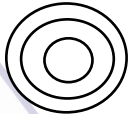
56. Which blood vessel transports deoxygenated blood collected from body into the right chamber of heart?
(A) Venacava (B) Pulmonary Vein
(C) Pulmonary Artery (D) Aorta
57. The value of Systolic Pressure in a healthy human Being is:
(A) 80mmHg (B) 120mm Hg (C) 80 Pascal (D) 20 Pascal
58. Which of the following structure is not the part of human excretory system?
(A) Uriniferous tubule (B) Uterus
(C) Ureter (D) Urethra
59. Which of the following structure is responsible for reabsorption of water?
(A) Ureter (B) Tubular part of nephron
(C) Bowman's Capsule (D) Glomerulus
60. In which of the following animals, blood goes only once through the heart in one cycle of passage through the body?
(A) Birds (B) Amphibians (C) Fishes (D) Mammals

SECTION – IV [MENTAL ABILITY]

Directions for Q. Nos. 61 to 63:

Raju is a carpenter. He has five tools with which he works. They are A, B, C, D and E. Each of them has a different weight as given below:

- (i) A weighs twice as much as B
(ii) B weighs four and half as much as D
(iii) C weighs half as much as D
(iv) D weighs half as much as E
(v) E weighs less than A but more than C
61. Which of the following is the most light in weight?
(A) A (B) D (C) B (D) C
62. Which of the following is most heavy in weight?
(A) A (B) B (C) C (D) D
63. Which of the following represents the descending order of weights of tools?
(A) B, D, E, A, C (B) A, B, E, D, C (C) B, D, E, C, A (D) E, C, D, A, B
64. Nisha returned home three days earlier than the time she had told her mother, her sister Joya reached five days later than the day Nisha was supposed to return. If Joya returned on Thursday on what day did Nisha return?
(A) Tuesday (B) Wednesday (C) Saturday (D) Friday
65. 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
66. Ravi's age is just double to the age of Mohan. Shyam is 3 years younger to Ravi. If Mohan's age is 5 years, then the age of Shyam will be:
(A) 5 years (B) 7 years (C) 8 years (D) 6 years

67. Pointing to a photograph, a man said, "I have no brother or sister but that man's father is my father's son". Whose photograph was it?
(A) His nephews (B) His father's (C) His son's (D) His own
68. Which of the following diagrams indicates the best relation between Mercury, Zinc and Metal?
(A)  (B)  (C)  (D) 
69. A girl is facing south. She turns 60° in the clockwise direction and then turns 105° in the anticlockwise direction. In which direction is she now facing?
(A) South – East (B) East (C) North – East (D) South–West
70. A man walked 3 metre towards north, turned west and walked 2 metre then turned north and walked 1 metre and finally turned east and walked 5 metre. How far is he from the starting point?
(A) 5 metre (B) 8 metre (C) 10 metre (D) 12 metre

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