



# Aakash Institute

Regd. Office: Aakash Tower, Plot No.-4, Sec-11, MLU, Dwarka, New Delhi-110075  
Ph.: 011-47623456 Fax : 011-47623472

## Admission-cum-Scholarship Test (Sample Paper)

(For Integrated Two Years Medical Entrance Exams. 2012-2014)

(Syllabus of the Test : Physics, Chemistry & Biology of Class X)

Roll No.: \_\_\_\_\_

Test Booklet Code: **A**

Time : 1½ Hrs.

Max.Marks : 300

### INSTRUCTIONS TO THE CANDIDATES

1. The initial 10 minutes are earmarked for the candidates to carefully read the instructions. (Note : The candidates are not allowed to either look inside the question booklet or start answering during these initial 10 minutes.)
2. The question booklet and answer sheet are issued separately at the start of the examination.
3. This question booklet contains 75 questions.
4. Read each question carefully.
5. Determine the correct answer, one out of the four available choices given under each question.
6. It is mandatory to use Ball Point Pen to darken to appropriate circle in the answer sheet.
7. For each correct answer, **four** marks will be awarded. For each wrong answer, 1 mark will be deducted.

#### For Example

Q. 12 : In the Question Booklet is: Which one of the following is linear in Geometry ?

#### (Answer Sheet)

- (1) SO<sub>2</sub>
- (2) CO<sub>2</sub>
- (3) NO<sub>2</sub>
- (4) KO<sub>2</sub>

Q.12. ① ② ③ ④

Thus as the correct answer is choice 2, the candidate should darken completely (with a blue/black Ball point pen only) the circle corresponding to choice 2 against Question No. 12 on the Answer Sheet. If more than one circle is darkened for a given question such answer will be rejected.

8. Do not use white-fluid or any other rubbing material on answer sheet. No change in the answer once marked is allowed. Before handing over the answer sheet to the invigilator, candidate should check that **Roll No.** and **Test-Booklet code** have been filled and marked correctly.
9. Rough work should be done only on the space provided in the question booklet.
10. Immediately after the prescribed examination time is over, the **Answer sheet and Question booklet are to be returned to the invigilator.** If the candidate wants to leave the examination hall before time, he/she should hand over the question paper and answer sheet to the invigilator. However, no student can leave the examination hall before half time.

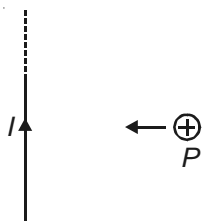
## PHYSICS

Choose the correct answer :

1. A wire X has half the diameter and half the length of a wire Y of similar material. The ratio of resistance of X to that of Y is
  - (1) 8 : 1
  - (2) 4 : 1
  - (3) 2 : 1
  - (4) 1 : 1
2. What is the time taken by light to cross a glass of thickness 4 mm and refractive index  $n = 3$ ?
  - (1)  $4 \times 10^{-11}$  s
  - (2)  $2 \times 10^{-11}$  s
  - (3)  $16 \times 10^{-11}$  s
  - (4)  $8 \times 10^{-10}$  s
3. The focal length of the lens in the human eye is maximum, when it is looking at an object at
  - (1) Infinity
  - (2) 25 cm from the eye
  - (3) 100 cm from the eye
  - (4) A very small distance from the eye
4. A person cannot see the objects beyond 100 cm. The power of the lens required to correct his vision will be
  - (1) +2 D
  - (2) -1 D
  - (3) +5 D
  - (4) 0.5 D
5. Two resistances are joined in parallel whose equivalent resistance is  $\frac{3}{5} \Omega$ . One of the resistance wires is broken and the effective resistance becomes  $3 \Omega$ . The resistance of the wire that broke was
  - (1)  $\frac{4}{3} \Omega$
  - (2)  $2 \Omega$
  - (3)  $\frac{6}{5} \Omega$
  - (4)  $\frac{3}{4} \Omega$
6. Which of the following is a renewable source of energy?
  - (1) Coal
  - (2) Natural gas
  - (3) Wood
  - (4) Petroleum
7. The main component of Biogas is
  - (1) Carbon dioxide
  - (2) Hydrogen
  - (3) Methane
  - (4) Butane
8. An electron having a charge  $e$  moves with a velocity  $v$  in positive X-direction. An electric field acts on it in positive Y-direction. The force on the electron acts in
  - (1) Positive Y-axis
  - (2) Negative Y-axis
  - (3) Positive Z-axis
  - (4) Negative Z-axis
9. The fission of a nucleus is achieved by bombarding it with
  - (1) Protons
  - (2) Neutrons
  - (3) Electrons
  - (4) X-rays
10. No current flows between two charged bodies, if they have same
  - (1) Capacity
  - (2) Potential
  - (3) Charge
  - (4) Mass
11. The full form of CNG is
  - (1) Condensed Natural Gas
  - (2) Chlorinated Natural Gas
  - (3) Compressed Natural Gas
  - (4) Combined Natural Gas
12. The equivalent resistance between points A and B is
 
  - (1)  $\frac{r}{4}$
  - (2)  $\frac{r}{2}$
  - (3)  $r$
  - (4)  $\frac{3r}{2}$

Space For Rough Work

13. A proton is approaching towards a long straight current carrying wire as shown. The direction of the force experienced by it is



- (1) Downwards in the plane of paper  
 (2) Upwards in the plane of paper  
 (3) Downwards perpendicular to the plane of paper  
 (4) Upwards perpendicular to the plane of paper
14. Which of the following is commonly used in search lights and vehicle headlights to get powerful parallel beams of lights?  
 (1) Convex lens (2) Convex mirror  
 (3) Concave lens (4) Concave mirror
15. 'Danger' signal lights are red in colour because  
 (1) Red colour is least scattered by fog or smoke  
 (2) Red colour is moderately scattered by fog or smoke  
 (3) Red colour is most scattered by fog or smoke  
 (4) Scattering does not matter
16. Which one of the following regulates and controls the amount of light entering the eye?  
 (1) Lens  
 (2) Outer surface of cornea  
 (3) Inner surface of cornea  
 (4) Pupil
17. Sometimes, the crystalline lens of people during old age becomes milky and cloudy. This defect is called  
 (1) Myopia (2) Hypermetropia  
 (3) Presbyopia (4) Cataract

18. The magnetic field lines  
 (1) Always intersect  
 (2) Are closed curves  
 (3) Tend to crowd far away from the poles of a magnet  
 (4) Do not pass through vacuum
19. Two lamps, one rated 40 W at 220 V and the other 60 W at 220 V, are connected in parallel to the electric supply at 220 V. The current drawn from the electric supply is  
 (1) 0.45 A (2) 0.95 A  
 (3) 0.03 A (4) 0.85 A
20. Electric current has both magnitude and direction. It is a  
 (1) Vector quantity (2) Scalar quantity  
 (3) Constant quantity (4) Unitless quantity
21. In the nuclear reaction :  
 ${}_4\text{Be}^9 + {}_2\text{He}^4 \rightarrow {}_{a/2}\text{X}^a + {}_0n^1$ . The value of a is  
 (1) 16 (2) 12  
 (3) 10 (4) 14
22. Statement 1 : Image formed by a convex lens, when the object is at focus  $F_1$  is virtual and erect.  
 Statement 2 : Image formed by a concave lens, when the object is at infinity is real and inverted.  
 (1) Only statement 1 is correct  
 (2) Only statement 2 is correct  
 (3) Both statements 1 and 2 are correct  
 (4) Both statements 1 and 2 are incorrect
23. A concave lens has focal length of 12 cm. At what distance should the object be placed from the lens, so that it forms an image at 20 cm from the lens?  
 (1) 15 cm (2) 30 cm  
 (3) 45 cm (4) 60 cm

Space For Rough Work

24. A plane glass slab is kept over various coloured letters, the colour of the letter which appears least raised when observed normally from outside the slab is
- (1) Blue (2) Violet  
(3) Green (4) Red
25. A metallic wire of  $40\ \Omega$  resistance is drawn to double its length. Its new resistance will be
- (1)  $20\ \Omega$  (2)  $80\ \Omega$   
(3)  $160\ \Omega$  (4)  $320\ \Omega$

## CHEMISTRY

26. Aquaregia contains concentrated HCl and  $\text{HNO}_3$  in the ratio of
- (1) 1 : 3 (2) 3 : 1  
(3) 1 : 2 (4) 2 : 1
27. Which of the following is an incorrect statement?
- (1) Aluminium forms an amphoteric oxide  
(2) Zinc is less reactive than copper  
(3) Highly reactive metals are strong reducing agents  
(4) All ores are minerals
28. The decreasing order of basic nature of the following oxides is
- (1)  $\text{Na}_2\text{O} > \text{Al}_2\text{O}_3 > \text{P}_2\text{O}_5 > \text{SO}_2$   
(2)  $\text{Na}_2\text{O} > \text{P}_2\text{O}_5 > \text{SO}_2 > \text{Al}_2\text{O}_3$   
(3)  $\text{P}_2\text{O}_5 > \text{SO}_2 > \text{Al}_2\text{O}_3 > \text{Na}_2\text{O}$   
(4)  $\text{Na}_2\text{O} > \text{Al}_2\text{O}_3 > \text{SO}_2 > \text{P}_2\text{O}_5$
29. The colour of anhydrous copper sulphate is
- (1) Blue (2) Purple  
(3) White (4) Red
30. Tooth enamel is made up of
- (1) Potassium phosphate  
(2) Calcium phosphate  
(3) Magnesium phosphate  
(4) Barium phosphate
31. The decomposition of silver chloride is catalysed by
- (1) Cold water (2) Sunlight  
(3) Ice (4) Enzyme
32. Element X forms a chloride with the formula  $\text{XCl}_3$ , X would most likely be in the same group of the Periodic Table as
- (1) Al (2) Mg  
(3) Na (4) Cl
33. In the given reaction, 'x' stands for
- $$2\text{Al} + x\text{H}_2\text{SO}_4 \rightarrow \text{Al}_2(\text{SO}_4)_3 + 3\text{H}_2$$
- (1) 2 (2) 3  
(3) 1 (4) 5
34. The gas liberated when zinc is treated with dil.  $\text{H}_2\text{SO}_4$  is
- (1)  $\text{SO}_3$  (2)  $\text{SO}_2$   
(3)  $\text{H}_2$  (4)  $\text{H}_2\text{S}$
35. Atomic size increases down the group due to an
- (1) Increase in the nuclear charge  
(2) Increase in the number of electrons  
(3) Increase in the number of protons  
(4) Increase in the number of shells
36. The product of acid catalysed dehydration of alcohol is an
- (1) Alkene (2) Alkane  
(3) Ester (4) Ether

Space For Rough Work

37. The pH of human blood is  
 (1) 7.4 (2) 9  
 (3) 4 (4) 1.2
38. The reaction between a carboxylic acid and an alcohol gives a/an  
 (1) Aldehyde (2) Ester  
 (3) Ketone (4) Phenol
39. An element X (atomic number = 22) belongs to the 4<sup>th</sup> period of periodic table. The number of shells present in the element X is  
 (1) 4 (2) 2  
 (3) 6 (4) 8
40.  $\text{ZnCO}_3 \xrightarrow{\Delta} \text{ZnO} + \text{CO}_2 \uparrow$   
 In this reaction zinc carbonate gets converted into zinc oxide below its melting point. The name of this process is  
 (1) Roasting (2) Smelting  
 (3) Calcination (4) Auto reduction
41. Methane undergoes monosubstitution reaction with  $\text{Cl}_2$  in the presence of sunlight. The maximum number of substituted products possible in this chain reaction are  
 (1) 1 (2) 2  
 (3) 3 (4) 4
42. Bronze is an alloy of  
 (1) Cu + Sn (2) Cu + Zn  
 (3) Zn + Sn (4) Pb + Sn
43. Which of the following has the highest value of pH?  
 (1)  $\text{HNO}_3$  (2) NaOH  
 (3)  $\text{Mg}(\text{OH})_2$  (4)  $\text{CH}_3\text{COOH}$
44. Elements x and y have the electronic configuration:  
 $x = 2, 8, 3$   
 $y = 2, 5$   
 The compound formed by the combination of the elements x and y will be  
 (1)  $x_3y$  (2)  $xy_3$   
 (3)  $xy$  (4)  $x_2y$
45. Which of the following elements has the highest metallic character?  
 (1) Na (2) Mg  
 (3) K (4) Ar
46. An element X ( $Z = 16$ ) having electronic configuration 2, 8, 6 belongs to which group of the periodic table?  
 (1) 6<sup>th</sup> (2) 14<sup>th</sup>  
 (3) 8<sup>th</sup> (4) 16<sup>th</sup>
47. 
$$\begin{array}{c} \text{A} + \text{B} \xrightarrow[\Delta]{\text{H}^+} \text{C} \\ \downarrow \text{H}^+ \quad \text{(acid)} \quad \text{(with fruity smell)} \\ \text{D (follow the general formula } \text{C}_n\text{H}_{2n}\text{)} \end{array}$$
  
 What are A and D here?  
 (1)  $\text{C}_2\text{H}_5\text{OH}, \text{C}_2\text{H}_4$   
 (2)  $\text{C}_2\text{H}_5\text{COOH}, \text{C}_2\text{H}_4$   
 (3)  $\text{CH}_3\text{CHO}, \text{C}_2\text{H}_4$   
 (4)  $\text{CH}_3\text{COOH}, \text{C}_2\text{H}_4$
48. Which of the following represents the general formula of carboxylic acids (alkanoic acids)?  
 (1)  $\text{C}_n\text{H}_{2n+1}\text{O}_2$  (2)  $\text{C}_n\text{H}_{2n-2}\text{O}_2$   
 (3)  $\text{C}_n\text{H}_{2n+2}\text{O}_2$  (4)  $\text{C}_n\text{H}_{2n}\text{O}_2$
49. The number of water of crystallisation in Gypsum is  
 (1) 1/2 (2) 3  
 (3) 2 (4) 4
50. Railway tracks or cracked machine parts are joined by  
 (1) Chloro alkali process  
 (2) Galvanization process  
 (3) Thermit process  
 (4) Mond's process

Space For Rough Work

|                |
|----------------|
| <b>BIOLOGY</b> |
|----------------|

51. The site of photosynthesis in plants is the  
 (1) Mitochondria (2) Chloroplast  
 (3) Leucoplast (4) Nucleus
52. Amoeba takes in food using  
 (1) Cilia (2) Pseudopodia  
 (3) Food vacuole (4) Tentacles
53. The part of the brain that controls respiration, heartbeat and peristalsis is  
 (1) Cranium (2) Cerebrum  
 (3) Cerebellum (4) Medulla
54. \_\_\_\_\_ are biodiversity hot-spots.  
 (1) Wetlands (2) Garden  
 (3) Deserts (4) Forests
55. Glycolysis is an universal metabolic pathway for the breakdown of glucose into pyruvate. It is accompanied  
 (1) By the formation of ATP  
 (2) By the formation of ADP  
 (3) By the formation of lactic acid  
 (4) By the formation of CO<sub>2</sub>
56. How many chromosomes are present in a human diploid cell?  
 (1) 48 pairs (2) 23 pairs  
 (3) 22 pairs (4) 46 pairs
57. *Spirogyra* multiplies asexually through  
 (1) Budding (2) Regeneration  
 (3) Fragmentation (4) Spore formation
58. The structural and functional unit of the nervous system is called  
 (1) Nerve (2) Nephron  
 (3) Neuron (4) Pons
59. Which of the following is a plant hormone?  
 (1) Insulin (2) Thyroxin  
 (3) Oestrogen (4) Cytokinin
60. A correct food chain is  
 (1) Producers → herbivores → carnivores  
 (2) Herbivores → producers → carnivores  
 (3) Producers → carnivores → herbivores  
 (4) Herbivores → carnivores → producers
61. Ozone is a molecule that contains  
 (1) Three molecules of oxygen  
 (2) Two molecules of oxygen  
 (3) Three atoms of oxygen  
 (4) Three elements of oxygen
62. Which of the following animals are adapted for dual mode of life *i.e.* living in water as well as on land?  
 (1) Reptiles (2) Amphibians  
 (3) Pisces (4) Aves
63. Mendel conducted the famous breeding experiments with  
 (1) *Spirogyra* (2) *Pisum sativum*  
 (3) *Hibiscus* (4) *Bryophyllum*
64. Fusion of male and female gametes is called  
 (1) Menstruation (2) Puberty  
 (3) Fertilization (4) Pollination
65. A contraceptive device used to prevent pregnancy is  
 (1) Copper T (2) Condom  
 (3) Oral-pills (4) Surgery
66. A natural growth inhibitor in plants is  
 (1) Auxin (2) Gibberellin  
 (3) Cytokinin (4) Abscisic acid

**Space For Rough Work**

67. Ozone layer protects us from  
(1) Radiowave radiations  
(2) Infrared radiations  
(3) Ultraviolet radiations  
(4) Microwaves
68. Absorption in small intestine is facilitated by  
(1) Enzymes (2) Villi  
(3) Digestive juices (4) Peristalsis
69. Gaseous exchange takes place in  
(1) Alveoli (2) Bronchi  
(3) Bronchioles (4) Trachea
70. How much energy is transferred from one trophic level to the next?  
(1) 5% (2) 10%  
(3) 20% (4) 30%
71. Which part of the digestive system secretes "Starch" splitting enzyme?  
(1) Liver (2) Gall bladder  
(3) Intestine (4) Salivary glands
72. Blood pressure is measured with an instrument called the  
(1) Stethoscope  
(2) Sphygmomanometer  
(3) Artificial kidney  
(4) Anemometer
73. The formation of urine takes place in the  
(1) Ureters (2) Kidney  
(3) Urethra (4) Urinary bladder
74. The female reproductive part present in the centre of a flower is the  
(1) Carpel (2) Style  
(3) Stigma (4) Pollens
75. Which of the following is a motile gamete?  
(1) Stamen (2) Pollen  
(3) Ovum (4) Bud



**Space For Rough Work**



Test Booklet Code: **A**

# Aakash Institute

Regd. Office: Aakash Tower, Plot No.-4, Sec-11, MLU, Dwarka, New Delhi-110075  
Ph.: 011-47623456 Fax : 011-47623472

## Admission-cum-Scholarship Test (Sample Paper)

(For Integrated Two Years Medical Entrance Exams. 2012-2014)

### Answers

- |         |         |         |         |         |
|---------|---------|---------|---------|---------|
| 1. (3)  | 16. (4) | 31. (2) | 46. (4) | 61. (3) |
| 2. (1)  | 17. (4) | 32. (1) | 47. (1) | 62. (2) |
| 3. (1)  | 18. (2) | 33. (2) | 48. (4) | 63. (2) |
| 4. (2)  | 19. (1) | 34. (3) | 49. (3) | 64. (3) |
| 5. (4)  | 20. (2) | 35. (4) | 50. (3) | 65. (1) |
| 6. (3)  | 21. (2) | 36. (1) | 51. (2) | 66. (4) |
| 7. (3)  | 22. (4) | 37. (1) | 52. (2) | 67. (3) |
| 8. (2)  | 23. (2) | 38. (2) | 53. (4) | 68. (2) |
| 9. (2)  | 24. (4) | 39. (1) | 54. (4) | 69. (1) |
| 10. (2) | 25. (3) | 40. (3) | 55. (1) | 70. (2) |
| 11. (3) | 26. (2) | 41. (4) | 56. (2) | 71. (4) |
| 12. (1) | 27. (2) | 42. (1) | 57. (3) | 72. (2) |
| 13. (1) | 28. (1) | 43. (2) | 58. (3) | 73. (2) |
| 14. (4) | 29. (3) | 44. (3) | 59. (4) | 74. (1) |
| 15. (1) | 30. (2) | 45. (3) | 60. (1) | 75. (2) |