# CENTRE FOR SOCIAL RESPONSIBILITY AND LEADERSHIP



## SAMPLE PAPER – Pre-Medical

## For class- XIth appearing students

## IMPORTANT INSTRUCTIONS

**A.  GENERAL INSTRUCTIONS**

1.  The Test is of **2 hours duration.**
2.  The Test Paper contains 60 Questions. **The Maximum Marks are 240.**
3.  The Test Paper consists of Four Parts - **Part I (Aptitude), Part II (Physics), Part III (Chemistry) and Part IV (Biology).**
4.  Each Part consists of 15 Multiple Choice Type Questions with only one option correct.
5.  +4 marks will be given for each correct answer and –1mark for each wrong answer in Multiple choice type questions.
6.  There is only one correct response for each question. Filling up more than one response in each question will be treated as wrong response and marks for wrong response will be deducted accordingly as per given instructions.

**B.  RESTRICTIONS DURING THE TEST**

1.  Calculators are not allowed in this test.
2.  Use of mobile phones in the examination hall is strictly prohibited.
3.  Log tables and electronic gadgets in any form are not allowed.
4.  No additional sheets will be provided for rough work.

**C.  HELPFUL HINTS**

1.  Work quickly and accurately.
2.  If you are not sure of an answer, mark your best choice and avoid wild guessing.

# APTITUDE (PART-I)

1. Which of the following diagrams indicates the best relation between Factory, Product and Machinery?

   (a) 

   (b) 

   (c) 

   (d) 
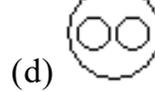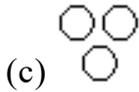
2. A clock is started at noon. By 10 min past 5, the hour hand has turned through:
   (a) 145º
   (b) 150º
   (c) 155º
   (d) 160º

3. A two-digit number is such that the product of the digits is 8. When 18 is added to the number, then the digits are reversed. The number is:
   (a) 18
   (b) 24
   (c) 42
   (d) 81

4. A man is 24 years older than his son. In two years, his age will be twice the age of his son. The present age of his son is:
   (a) 14 years
   (b) 18 years
   (c) 20 years
   (d) 22 years

5. If $5^a = 3125$, then the value of $5^{(a-3)}$ is:
   (a) 25
   (b) 125
   (c) 625
   (d) 1625

6. A fruit seller had some apples. He sells 40% apples and still has 420 apples. Originally, he had:
   (a) 588 apples
   (b) 600 apples
   (c) 672 apples
   (d) 700 apples

7. The angle of elevation of a ladder leaning against a wall is 60° and the foot of the ladder is 4.6 m away from the wall. The length of the ladder is:
   (a) 2.3 m
   (b) 4.6 m
   (c) 7.8 m
   (d) 9.2 m

8. If all circles are round, and all squares are not round, which of the following statements is true?
   (a) All squares are circles.
   (b) Some squares are circles.
   (c) No squares are circles.
   (d) Some circles are squares.

9. What is the next number in the series 3, 6, 18, 72, ...?
   (a) 360
   (b) 480
   (c) 300
   (d) 420

10. Pointing to a girl, Kirti Said, "She is the daughter of my brother's wife". How is the girl related to Kirti?
    (a) Nephew
    (b) Niece
    (c) Sister-in-law
    (d) Mother

11. In the following question, find out which of the answer figure (a), (b), (c) and (d) completes the figure matrix?

Problem figure:
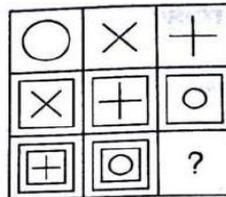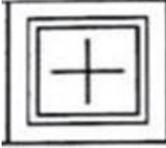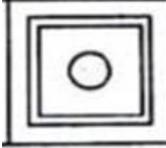




(a)        (b)        (c)        (d)
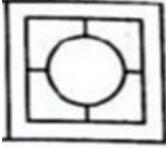
12. In each of the following question, find the number of triangles in the given figure.



    (a) 5
    (b) 6
    (c) 8
    (d) 10

13. The number of opposite side of the face having number 3 will be :
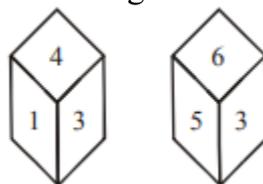


    (a) 1
    (b) 2
    (c) 4
    (d) 5

14. Y is in the East of X which is in the North of Z. If P is in the South of Z, then in which direction of Y, is P?
    (a) North
    (b) South
    (c) South-East
    (d) None of these

15. What should come in the place of question mark (?) in the following alpha-numeric series?
    C-3, E-5, G-7, I-9, ?, ?
    (a) X-24, M-21
    (b) K-11, M-13
    (c) O-15, X-24
    (d) M-18, K-14

# PHYSICS (PART-II)

16. Area under $v - t$ graph represents a physical quantity which has the unit
    (a) $m^2$                          (b) m
    (c) $m^3$                          (d) $m\ s^{-1}$

17. A passenger in a moving train tosses a coin which falls behind him. It means that motion of the train is
    (a) accelerated                    (b) uniform
    (c) retarded                       (d) along circular tracks

18. The gravitational force between two objects is F. If masses of both objects are halved without changing distance between them, then the gravitational force would become
    (a) F/4                            (b) F/2
    (c) F                              (d) 2 F

19. Which one of the following forms of energy leads to least environmental pollution in the process of its harnessing and utilisation?
    (a) Nuclear energy                 (b) Thermal energy
    (c) Solar energy                   (d) Geothermal energy

20. Fuel used in thermal power plants is
    (a) water                          (b) uranium
    (c) biomass                        (d) fossil fuels

21. Water stored in a dam possesses
    (a) no energy                      (b) electrical energy
    (c) kinetic energy                 (d) potential energy

22. Note is a sound
    (a) of mixture of several frequencies    (b) of mixture of two frequencies only
    (c) of a single frequency          (d) always unpleasant to listen

23. In the curve (Fig.) half the wavelength is
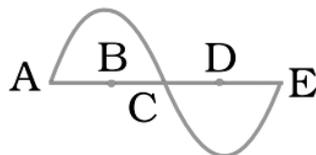


    (a) A B                            (b) B D
    (c) D E                            (d) A E

24. A 10 mm long awl pin is placed vertically in front of a concave mirror. A 5 mm long image of the awl pin is formed at 30 cm in front of the mirror. The focal length of this mirror is
    (a) – 30 cm                        (b) – 20 cm
    (c) – 40 cm                        (d) – 60 cm

25. Magnification produced by a rear view mirror fitted in vehicles
    (a) is less than one
    (b) is more than one
    (c) is equal to one
    (d) can be more than or less than one depending upon the position of the object in front of it

26. 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

27. To convert an AC generator into DC generator
    (a) split–ring type commutator must be used
    (b) slip rings and brushes must be used
    (c) a stronger magnetic field has to be used
    (d) a rectangular wire loop has to be used

28. Electrical resistivity of a given metallic wire depends upon
    (a) its length
    (b) its thickness
    (c) its shape
    (d) nature of the material

29. Which of the following represents voltage?
    (a) $\dfrac{\text{Work done}}{\text{Current} \times \text{Time}}$
    (b) Work done × Charge
    (c) $\dfrac{\text{Work done} \times \text{Time}}{\text{Current}}$
    (d) Work done × Charge × Time

30. For a current in a long straight solenoid N – and S – poles are created at the two ends. Among the following statements, the incorrect statement is
    (a) The field lines inside the solenoid are in the form of straight lines which indicates that the magnetic field is the same at all points inside the solenoid
    (b) The strong magnetic field produced inside the solenoid can be used to magnetise a piece of magnetic material like soft iron, when placed inside the coil
    (c) The pattern of the magnetic field associated with the solenoid is different from the pattern of the magnetic field around a bar magnet
    (d) The N – and S – poles exchange position when the direction of current through the solenoid is reversed

# CHEMISTRY (PART-III)

31. Arrange the following elements in the order of their decreasing metallic character
Na, Si, Cl, Mg, Al
(a) Cl > Si >Al > Mg >Na
(b) Na > Mg > Al > Si > Cl
(c) Na > Al > Mg > Cl > Si
(d) Al > Na > Si > Ca > Mg

32. The boiling points of diethyl ether, acetone and n-butyl alcohol are 35°C, 56°C and 118°C respectively. Which one of the following correctly represents their boiling points in kelvin scale?
(a) 306 K, 329 K, 391 K
(b) 308 K, 329 K, 392 K
(c) 308 K, 329 K, 391 K
(d) 329 K, 392 K, 308 K

33. Which of the following are homogeneous in nature?
(i) ice
(ii) wood
(iii) soil
(iv) air
(a) (i) and (iii)
(b) (ii) and (iv)
(c) (i) and (iv)
(d) (iii) and (iv)

34. Which of the following are chemical changes?
(i) Decaying of wood
(ii) Burning of wood
(iii) Sawing of wood
(iv) Hammering of a nail into a piece of wood

(a) (i) and (ii)
(b) (ii) and (iii)
(c) (iii) and (iv)
(d) (i) and (iv)

35. Which of the given elements A, B, C, D and E with atomic number 2, 3, 7, 10 and 30 respectively belong to the same period?
(a) A, B, C
(b) B, C, D
(c) A, D, E
(d) B, D, E

36. Which of the following has maximum number of atoms?
(a) 18g of $H_2O$
(b) 18g of $O_2$
(c) 18g of $CO_2$
(d) 18g of $CH_4$

37. The ion of an element has 3 positive charges. Mass number of the atom is 27 and the number of neutrons is 14. What is the number of electrons in the ion?
(a) 13
(b) 10
(c) 14
(d) 16

38. The electron distribution in an aluminium atom is
(a) 2, 8, 3
(b) 2, 8, 2
(c) 8, 2, 3
(d) 2, 3, 8

39. Structural formula of ethyne is

    (a) $H-C\equiv C-H$

    (b) $H_3-C\equiv C-H$

    (c) $\underset{H}{\overset{H}{\diagdown}}C=C\underset{H}{\overset{H}{\diagup}}$

    (d) $\overset{H}{\underset{H}{H-C}}-\overset{H}{\underset{H}{C-H}}$

40. Which of the following are combination reactions?

    (i) $2KClO_3 \xrightarrow{Heat} 2KCl + 3O_2$

    (ii) $MgO + H_2O \rightarrow Mg(OH)_2$

    (iii) $4Al + 3O_2 \rightarrow 2Al_2O_3$

    (iv) $Zn + FeSO_4 \rightarrow ZnSO_4 + Fe$

    (a) (i) and (iii)               (b) (iii) and (iv)
    (c) (ii) and (iv)              (d) (ii) and (iii)

41. If a few drops of a concentrated acid accidentally spills over the hand of a student, what should be done?

    (a) Wash the hand with saline solution
    (b) Wash the hand immediately with plenty of water and apply a paste of sodium hydrogen carbonate
    (c) After washing with plenty of water apply solution of sodium hydroxide on the hand
    (d) Neutralise the acid with a strong alkali

42. In which of the following compounds, — OH is the functional group?

    (a) Butanone                (b) Butanol
    (c) Butanoic acid           (d) Butanal

43. Which of the following property is generally not shown by metals?

    (a) Electrical conduction   (b) Sonorous in nature
    (c) Dullness                (d) Ductility

44. Which of the following metals exist in their native state in nature?

    (i) Cu                      (ii) Au

    (iii) Zn                    (iv) Ag

    (a) (i) and (ii)            (b) (ii) and (iii)
    (c) (ii) and (iv)           (d) (iii) and (iv)

45. A molecule of ammonia ($NH_3$) has

    (a) only single bonds       (b) only double bonds
    (c) only triple bonds       (d) two double bonds and one single bond

# BIOLOGY (PART-IV)

46. Chromosomes are made up of
    (a) DNA                             (b) protein
    (c) DNA and protein           (d) RNA

47. New species may be formed if
    (i) DNA undergoes significant changes in germ cells
    (ii) chromosome number changes in the gamete
    (iii) there is no change in the genetic material
    (iv) mating does not take place
    (a) (i) and (ii)                 (b) (i) and (iii)
    (c) (ii), (iii) and (iv)          (d) (i), (ii) and (iii)

48. Which cell does not have perforated cell wall?
    (a) Tracheids                    (b) Companion cells
    (c) Sieve tubes                 (d) Vessels

49. While doing work and running, you move your organs like hands, legs etc. Which among the following is correct?
    (a) Smooth muscles contract and pull the ligament to move the bones
    (b) Smooth muscles contract and pull the tendons to move the bones
    (c) Skeletal muscles contract and pull the ligament to move the bones
    (d) Skeletal muscles contract and pull the tendon to move the bones

50. Which is not a function of epidermis?
    (a) Protection from adverse condition     (b) Gaseous exchange
    (c) Conduction of water            (d) Transpiration

51. The maleness of a child is determined by
    (a) the X chromosome in the zygote
    (b) the Y chromosome in zygote
    (c) the cytoplasm of germ cell which determines the sex
    (d) sex is determined by chance

52. In which group of animals, coelom is filled with blood?
    (a) Arthropoda                  (b) Annelida
    (c) Nematoda                  (d) Echinodermata

53. Find out the false statement
    (a) Aves are warm blooded, egg laying and have four chambered heart
    (b) Aves have feather covered body, fore limbs are modified as wing and breathe through lungs
    (c) Most of the mammals are viviparous
    (d) Fishes, amphibians and reptiles are oviparous

54. Select the correct statement
    (a) Heterotrophs do not synthesise their own food
    (b) Heterotrophs utilise solar energy for photosynthesis
    (c) Heterotrophs synthesise their own food
    (d) Heterotrophs are capable of converting carbon dioxide and water into carbohydrates

55. The correct sequence of reproductive stages seen in flowering plants is
    (a) gametes, zygote, embryo, seedling          (b) zygote, gametes, embryo, seedling
    (c) seedling, embryo, zygote, gametes          (d) gametes, embryo, zygote, seedling

56. A few drops of iodine solution were added to rice water. The solution turned blue-black in colour. This indicates that rice water contains
    (a) complex proteins          (b) simple proteins
    (c) fats          (d) starch

57. In a synapse, chemical signal is transmitted from
    (a) dendritic end of one neuron to axonal end of another neuron
    (b) axon to cell body of the same neuron
    (c) cell body to axonal end of the same neuron
    (d) axonal end of one neuron to dendritic end of another neuron

58. Spinal cord originates from
    (a) cerebrum          (b) medulla
    (c) pons          (d) cerebellum

59. Characters that are transmitted from parents to offspring during reproduction show
    (a) only similarities with parents
    (b) only variations with parents
    (c) both similarities and variations with parents
    (d) neither similarities nor variations

60. In a flower, the parts that produce male and female gametes (germ cells) are
    (a) stamen and anther          (b) filament and stigma
    (c) anther and ovary          (d) stamen and style

# ANSWER KEY

## Pre-Medical

| S.NO. | APTITUDE | S.NO. | PHYSICS | S.NO. | CHEMISTRY | S.NO. | BIOLOGY |
|-------|----------|-------|---------|-------|-----------|-------|---------|
| 1 | D | 16 | B | 31 | B | 46 | C |
| 2 | C | 17 | A | 32 | C | 47 | A |
| 3 | B | 18 | A | 33 | C | 48 | A |
| 4 | D | 19 | C | 34 | A | 49 | D |
| 5 | A | 20 | D | 35 | B | 50 | C |
| 6 | D | 21 | D | 36 | D | 51 | B |
| 7 | D | 22 | A | 37 | B | 52 | A |
| 8 | C | 23 | B | 38 | A | 53 | D |
| 9 | A | 24 | B | 39 | A | 54 | A |
| 10 | B | 25 | A | 40 | D | 55 | A |
| 11 | A | 26 | A | 41 | B | 56 | D |
| 12 | D | 27 | A | 42 | B | 57 | D |
| 13 | B | 28 | D | 43 | C | 58 | B |
| 14 | D | 29 | A | 44 | C | 59 | C |
| 15 | B | 30 | C | 45 | A | 60 | C |