

ATOMIC ENERGY CENTRAL SCHOOL NO. 2, MUMBAI

MULTIPLE CHOICE QUESTION EXAMINATION - 4 (31.10.2023)

Time Allowed : 3 hours

CLASS : X

Maximum Marks : 120

Attempt all questions.

Section A - Mathematics

- 1  $(2+\sqrt{5})$  is [1]  
a) an irrational number                      b) not real number  
c) a rational number                              d) an integer
- 2 The number 1.732 is [1]  
a) whole number                                  b) integer  
c) rational number                                d) an irrational number
- 3 If HCF (26,169) = 13, then LCM (26,169) = [1]  
a) 13                      b) 26                      c) 52                      d) 338
- 4 The zeroes of the polynomial  $p(x) = x^2 + 4x + 3$  are given by: [1]  
a) - 1, 3                      b) 1, - 3                      c) 1, 3                      d) - 1, - 3
- 5 The number of polynomials having zeroes - 3 and 5 is: [1]  
a) infinite    b) at most two    c) only one    d) exactly two
- 6 The zeros of the polynomial  $4x^2 + 5\sqrt{2}x - 3$  are [1]  
a)  $-3\sqrt{2}, \sqrt{2}$     b)  $\frac{-3\sqrt{2}}{2}, \frac{\sqrt{2}}{4}$     c)  $-3\sqrt{2}, \frac{\sqrt{2}}{2}$     d) None of these
- 7 The graphs of the equations  $5x - 15y = 8$  and  $3x - 9y = \frac{24}{5}$  are [1]  
two lines which are  
a) intersecting exactly at one point                      b) coincident  
c) perpendicular to each other                              d) parallel
- 8 If  $x - y = 2$  and  $\frac{2}{x+y} = \frac{1}{5}$  then [1]

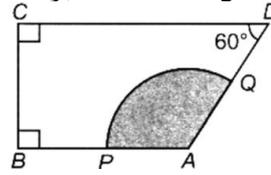
- a)  $x = 6, y = 4$  b)  $x = 7, y = 5$  c)  $x = 5, y = 3$  d)  $x = 4, y = 2$
- 9 If the lines represented by equations  $3x + 2my = 2$  and  $2x + 5y + 1 = 0$  are parallel, then the value of  $m$  is: [1]  
 a)  $\frac{2}{5}$  b)  $\frac{15}{4}$  c)  $\frac{3}{2}$  d)  $-\frac{5}{4}$
- 10 If  $x = 1$  is a common root of  $ax^2 + ax + 2 = 0$  and  $x^2 + x + b = 0$  then,  $ab$  [1]  
 a) 2 b) 1 c) 3 d) 4
- 11 The quadratic equation  $2x^2 - \sqrt{5}x + 1 = 0$  has [1]  
 a) two equal real roots b) no real root  
 c) two distinct real roots d) more than 2 real roots
- 12 The discriminant of the quadratic equation  $2x^2 - 4x + 3 = 0$  is: [1]  
 a) - 8 b) 10 c) 8 d)  $2\sqrt{2}$
- 13 The next term of the A.P.:  $\sqrt{7}, \sqrt{28}, \sqrt{63}$  is: [1]  
 a)  $\sqrt{84}$  b)  $\sqrt{97}$  c)  $\sqrt{112}$  d)  $\sqrt{70}$
- 14 A thief runs away from a police station with a uniform speed of 100 m/minute. After one minute a policeman runs behind the thief to catch him. He goes at speed of 100 m/minute in first minute and increases his speed 10 m each succeeding minute. After how many minutes, the policeman will catch the thief? [1]  
 a) 5 mins b) 4 mins c) 2 mins d) 3 mins
- 15 The  $n^{th}$  term of an A.P., the sum of whose  $n$  terms is  $S_n$ , is [1]  
 a)  $S_n - S_{n-1}$  b)  $S_n + S_{n-1}$  c)  $S_n + S_{n+1}$  d)  $S_n - S_{n+1}$
- 16 If in two triangles ABC and PQR,  $\angle A = \angle Q$  and  $\angle R = \angle B$ , then which of the following will be NOT true. [1]  
 a)  $\frac{AB}{PQ} = \frac{BC}{RP}$  b)  $\frac{BC}{PR} = \frac{AC}{PQ}$  c)  $\frac{BC}{RP} = \frac{AB}{QR}$  d)  $\frac{AB}{QR} = \frac{AC}{PQ}$



- a)  $\frac{1}{9}$       b)  $\frac{1}{81}$       c)  $\frac{1}{27}$       d)  $\frac{1}{3}$
- 26  $\sqrt{\frac{1+\sin\theta}{1-\sin\theta}}$  is equal to [1]
- a)  $\tan\theta - \sec\theta$       b)  $-\sec\theta - \tan\theta$   
c)  $\sec\theta + \tan\theta$       d)  $\sec\theta - \tan\theta$
- 27  $\sec^4 A - \sec^2 A$  is equal to [1]
- a)  $\tan^2 A - \tan^4 A$       b)  $\tan^4 A - \tan^2 A$   
c)  $\tan^3 A + \tan A$       d)  $\tan^4 A + \tan^2 A$
- 28  $9\sec^2 A - 9\tan^2 A =$  [1]
- a) 8      b) 9      c) 0      d) 1
- 29 A contractor planned to install a slide for the children to play in a park. If he prefers to have a slide whose top is at a height of 1.5 m and is inclined at an angle of  $30^\circ$  to the ground, then the length of the slide would be [1]
- a)  $\sqrt{3}$  m      b) 3 m      c) 1.5 m      d)  $2\sqrt{3}$  m
- 30 If the area of a sector of a circle bounded by an arc of length  $5\pi$  cm is equal to  $20\pi$  cm<sup>2</sup>, then find its radius [1]
- a) 10 cm      b) 16 cm      c) 12 cm      d) 8 cm
- 31 The hour hand of a clock is 6 cm long. The area swept by it between 11.20 am and 11.55 am is [1]
- a) 10 cm<sup>2</sup>      b) 11 cm<sup>2</sup>      c) 5.5 cm<sup>2</sup>      d) 2.75 cm<sup>2</sup>
- 32 In a circle of radius 14 cm, an arc subtends an angle of  $120^\circ$  at the centre. If  $\sqrt{3} = 1.73$  then the area of the segment of the circle is [1]
- a) 124.63 cm<sup>2</sup> b) 130.57 cm<sup>2</sup> c) 120.56 cm<sup>2</sup> d) 118.24 cm<sup>2</sup>
- 33 If AB is a chord of a circle of length  $5\sqrt{3}$  cm with centre O and radius 5 cm, then area of sector OAB is [1]

- a)  $\frac{25\pi}{3} \text{ cm}^2$     b)  $25\pi \text{ cm}^2$     c)  $\frac{8\pi}{3} \text{ cm}^2$     d)  $\frac{3\pi}{8} \text{ cm}^2$

34 In the given figure (not drawn to scale),  $AP = AQ = 3 \text{ cm}$ , the [1]



area of the shaded region is \_\_\_\_\_.

- a)  $3\pi \text{ cm}^2$     b)  $7\pi \text{ cm}^2$     c)  $9\pi \text{ cm}^2$     d)  $6\pi \text{ cm}^2$

35 A piece of wire 20cm long is bent into the form of an arc of a circle subtending an angle of  $60^\circ$  at its centre. The radius of the circle is [1]

- a)  $\frac{20}{6+\pi} \text{ cm}$     b)  $\frac{30}{6+\pi} \text{ cm}$     c)  $\frac{60}{\pi} \text{ cm}$     d)  $\frac{15}{6+\pi} \text{ cm}$

36 If the altitude of the sun is  $60^\circ$ , the height of a tower which casts a shadow of length 90 m is [1]

- a) 60 m    b)  $90\sqrt{3} \text{ m}$     c) 90 m    d)  $60\sqrt{3} \text{ m}$

37 On the level ground, the angle of elevation of a tower is  $30^\circ$ . On moving 20 m nearer, the angle of elevation is  $60^\circ$ . The height of the tower is [1]

- a) 15 m    b) 20 m    c) 10 m    d)  $10\sqrt{3} \text{ m}$

38 A kite is flying at a height of 30 m from the ground. The length of string from the kite to the ground is 60 m. Assuming that there is no slack in the string, the angle of elevation of the kite at the ground is [1]

- a)  $30^\circ$     b)  $45^\circ$     c)  $90^\circ$     d)  $60^\circ$

39 A plane is observed to be approaching the airport. It is at a distance of 12 km from the point of observation and makes an angle of elevation of  $30^\circ$  there at. Its height above the ground is [1]

- a) 10 km    b) 12 km    c) 6 km    d) none of these

40 The string of a kite in air is 50 m long and it makes an angle of  $60^\circ$  with the horizontal. Assuming the string to be straight, the height of the kite from the ground is: [1]

- a)  $50\sqrt{3}$  m    b)  $\frac{50}{\sqrt{3}}$  m    c)  $\frac{100}{\sqrt{3}}$  m    d)  $25\sqrt{3}$  m

### Section B- Science

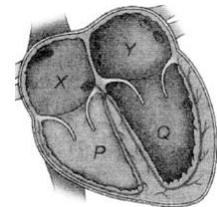
- 41 Identify the balanced chemical equation. [1]  
a)  $\text{BaCl}_2 + 2\text{Al}_2(\text{SO}_4)_3 \rightarrow 2\text{AlCl}_3 + 3\text{BaSO}_4$   
b)  $3\text{BaCl}_2 + 2\text{Al}_2(\text{SO}_4)_3 \rightarrow 2\text{AlCl}_3 + 3\text{BaSO}_4$   
c)  $3\text{BaCl}_2 + \text{Al}_2(\text{SO}_4)_3 \rightarrow 2\text{AlCl}_3 + 3\text{BaSO}_4$   
d)  $\text{BaCl}_2 + \text{Al}_2(\text{SO}_4)_3 \rightarrow \text{AlCl}_3 + \text{BaSO}_4$
- 42 Which of the following is an exothermic reaction? [1]  
a) Reactants  $\times$  heat  $\rightarrow$  Products  
b) Reactants - heat  $\rightarrow$  Products  
c) Reactants  $\rightarrow$  Products - heat  
d) Reactants  $\rightarrow$  Products + heat
- 43 A white precipitate formed by the reaction of barium chloride with sodium sulphate solution is due to [1]  
a)  $\text{BaSO}_3$     b)  $\text{BaSO}_4$     c)  $\text{BaO}$     d)  $\text{BaS}$
- 44 Toothpastes are generally [1]  
a) natural    b) acidic    c) basic    d) neutral
- 45 Which gas is liberated when HCl is added to a sample of solid  $\text{Na}_2\text{CO}_3$ ? [1]  
a) Carbon dioxide    b) Nitride  
c) Carbon monoxide    d) Carbide
- 46 Which one of the following types of medicines is used for treating indigestion? [1]  
a) Antacid    b) Antiseptic    c) Antibiotics    d) Analgesic
- 47 Washing soda is a [1]



53 To prepare a good temporary mount of the petunia leaf peel showing many stomata, the student has to get the peel from the [1]

- a) tip of the leaf
- b) upper surface of the leaf
- c) lower surface of the leaf
- d) point of attachment of the leaf to its petiole.

54 Refer to the given figure of heart and select the correct statement. [1]



- a) The blood from Y reaches lungs.
- b) The blood from body enters heart through P.
- c) Y receives blood from lungs.
- d) Q receives deoxygenated blood from Y.

55 The internal (cellular) energy reserve in autotrophs is [1]

- a) Glycogen
- b) Starch
- c) Protein
- d) Fatty acid

56 Which one of the following is involved in reflex action? [1]

- a) spinal cord
- b) Brain
- c) Endocrine gland
- d) Exocrine gland

57 Which part of the brain is concerned with muscular coordination in the body? [1]

- a) Cerebellum
- b) parietal lobe
- c) Pons
- d) Temporal lobe

58 The junction between the axon of one neuron and dendrite of the next is called [1]

- a) A synapse
- b) A joint
- c) Junction point
- d) Constant bridge

59 Which neuron carries impulses from receptor to brain? [1]

- a) Both Sensory neuron and Motor neuron
- b) Motor neuron
- c) Neither Sensory neuron and Motor neuron
- d) Sensory neuron

- 60 In Spirogyra, asexual reproduction takes place by [1]  
a) division of a cell into many cells  
b) division of a cell into two cells  
c) formation of young cells from older cells  
d) breaking up of filaments into smaller bits
- 61 Offspring formed as a result of sexual reproduction exhibit [1]  
more variations because  
a) genetic material comes from two parents of different species  
b) genetic material comes from many parents  
c) sexual reproduction is a lengthy process  
d) genetic material comes from two parents of the same species
- 62 Factors responsible for the rapid spread of bread mould on [1]  
slices of bread are  
i) a large number of spores  
ii) availability of moisture and nutrients in bread  
iii) presence of tubular branched hyphae  
iv) formation of round shaped sporangia  
a) iii and iv    b) i and ii    c) ii and iv    d) i and iii
- 63 To perform an experiment to identify the different parts of an [1]  
embryo of a dicot seed, first of all you require a dicot seed.  
Select dicot seeds from the following group. Wheat, gram,  
maize, pea, barley, ground - nut.  
a) Gram, maize and ground nut    b) Wheat, gram and pea  
c) Gram, pea and ground nut    d) Maize, pea and barley
- 64 In peas, a pure tall plant (TT) is crossed with a short plant (tt). [1]  
The ratio of pure tall plants to short plants in  $F_2$  is  
a) 3 : 1    b) 1 : 1    c) 1 : 3    d) 2 : 1
- 65 Mendel selected garden peas as his experimental material [1]  
because  
i. Pea plants possess a number of well-defined

contrasting characters.

- ii. Pea plants contain unisexual flowers.
- iii. Pea plants have a short life cycle.
- iv. Pea plants produce many seeds in one generation.
  - a) (i) and (iv) only
  - b) (i) and (ii) only
  - c) (i) and (iii) only
  - d) (i), (iii) and (iv) only

- 66 In a monohybrid cross between two heterozygous individuals, percentage of heterozygous individuals obtained in  $F_1$  generation is [1]  
a) 25% b) 50% c) 75% d) 100%
- 67 The genetic constitution of an organism is called [1]  
a) Genotype b) Phenotype c) Trait d) Genome
- 68 For an incident angle  $i$  refraction angle was found to be  $r_1$  and  $r_2$  ( $r_2 > r_1$ ) for two medium A and B respectively. Then [1]  
a) A is denser than B  
b) We cannot identify the denser medium  
c) Both are equally dense d) B is denser than A
- 69 A ray of light travelling in air goes into water. The angle of refraction will be: [1]  
a) equal to the angle of incidence b) 90 degrees  
c) smaller than the angle of incidence  
d) greater than the angle of incidence
- 70 Consider a convex lens having a radius of curvature of 0.3 m. At what distance from the lens a 0.1 m tall object be positioned so it forms an image at 0.15 m from the lens. Calculate the size of the image formed. [1]  
a) 20 cm b) 13 cm c) 18 cm d) 10 cm
- 71 Figures (a), (b), (c) and (d) respectively correspond to [1]





- c) Loan given by the bank d) Asset owned by the lender
- 84 Loan from banks and cooperatives is an example of: [1]  
a) Informal sector loan                      b) Private sector loan  
c) Primary sector loan                      d) Formal sector loan
- 85 What is the reason for the popularity of banks and cooperatives? [1]  
a) They do a good amount of advertisement  
b) Banks provide loans at a very less rate of interest  
c) Decreasing the number of money lenders  
d) People are made to know door to door
- 86 Who is the founder of the Grameen Bank in Bangladesh? [1]  
a) Muhammad Yunus                      b) Muhammad Amir  
c) Muhammad Salim                      d) Muhammad Yousuf
- 87 Money is accepted as a medium of exchange because the currency is authorised by: [1]  
a) Central bank                      b) People of the country  
c) World bank                      d) The government of the country
- 88 \_\_\_\_\_ is the success story that met the credit needs of the poor, at reasonable rates, in Bangladesh. [1]  
a) Reserve Bank                      b) Common Bank  
c) Grameen Bank                      d) Cooperative Bank
- 89 The exchange of goods for goods is known as: [1]  
a) e - banking                      b) banking  
c) barter exchange                      d) promissory bills
- 90 In rural areas, farmers usually take crop loans: [1]

- a) in the case of a calamity      b) at the end of the season  
 c) at the beginning of the season d) in case of crop failure
- 91 The main watchdog of international trade is: **[1]**  
 a) IMF                      b) World Bank      c) WTO                      d) IFC
- 92 Globalisation has led to improvement in living conditions:- **[1]**  
 (a) of all the people  
 (b) of people in the developed countries  
 (c) of workers in the developing countries  
 (d) none of the above.
- 93 World Bank was established in the year of: **[1]**  
 a) 1946                      b) 1945                      c) 1944                      d) 1947
- 94 Removing unnecessary trade restrictions and making the **[1]**  
 economy more competitive is known as:  
 a) Socialisation    b) Globalisation  
 c) Liberalisation    d) Privatisation
- 95 .One major government initiative to attract foreign companies **[1]**  
 to invest in India is:  
 (a) To raise the standard of education  
 (b) to promote unemployment in the public sector  
 (c) To build special economic zones (d) both (a) and (c)
- 96 Fair globalisation means: **[1]**  
 a) the benefits of globalisation must be shared equally  
 b) Globalisation is not fair  
 c) benefits of globalisation must be taken away by the rich  
 section of the people  
 d) benefits of globalisation must be shared unequally



- a) Sustainable Development Fund
  - b) Consumer Welfare Fund
  - c) International Monetary Fund
  - d) International Bank for Reconstruction and Development
- 103 China's reduced role and America's rising importance; the centre of the world trade shifted to \_\_\_\_\_. [1]
- a) Sweden            b) Europe      c) China          d) Ireland
- 104 The system of fixed exchange rate collapsed and was replaced by which new system? [1]
- a) Gold exchange rate            b) Floating exchange rate
  - c) Monetary exchange rate      d) Dollar exchange rate
- 105 Which system started an era of unprecedented economic growth in the Western industrial nations and in Japan? [1]
- a) Floating exchange rate system
  - b) The Woods Bretton System
  - c) Fixed exchange rate system
  - d) The Bretton Woods System
- 106 Which rates fluctuate depending on demand and supply of currencies in foreign exchange markets, in principle without interference by governments? [1]
- a) Mortgage exchange            b) Monetary exchange
  - c) Floating exchange            d) Fixed exchange
- 107 Who worked in American plantations during the 18th century: [1]
- a) Emigrants from Europe   b) Slaves captured from Africa
  - c) Unemployed population of America   d) None of these
- 108 \_\_\_\_\_ and other Asian countries became an attractive [1]

- destination for investment by foreign MNC's.
- a) America      b) China      c) Russia      d) Australia
- 109 The peasants of Ireland became dependent on \_\_\_\_\_. [1]  
a) potato      b) indigo      c) coffee      d) tea
- 110 Economists has identify three types of flows within [1]  
international economic exchanges. Which of the given is not a  
part of that flow?  
a) The flow of trade      b) The movement of capital  
c) The flow of labour      d) The flow of technology
- 111 Which of the following did not take part in the First World [1]  
War?  
(a) Portugal      (b) Germany      (c) France      (d) England
- 112 Who adopted the concept of assembly line to manufacture [1]  
automobiles?  
(a) T. Cuppola      (b) Henry Ford  
(c) Samuel Morse      (d) Christopher Columbus
- 113 Why did China become an attractive destination for Multi- [1]  
National Companies?  
a) It had abundance of raw material.  
(b) China was highly industrialized.  
c) Because wages were low in China.  
d) It had vast and thinly populated land suitable for setting up  
production units, etc.
- 114 From the mid-19th century, faster industrial growth in Britain [1]  
led to:  
(a) Higher income.  
(b) Unemployment in rural Britain.  
(c) Migration of people to Britain.  
(d) The arrival of women industrial workers.

- 115 Who issues the currency notes in India? [1]  
a) The Finance Commission.  
b) All the nationalized banks  
c) Reserve Bank of India.  
d) Any individual or organization
- 116 An agreement in which the lender supplies the borrower with money, goods or services in return for the promise of future payment refers to [1]  
a) Debt      b) Deposit      c) Credit      d) Collateral
- 117 Which among the following options will be the cheapest source of credit in rural areas? [1]  
a) Friends and Relatives      b) Cooperative Society  
c) Money-lender      d) Finance Company
- 118 Which Indian industries have been hit by Globalisation? [1]  
a) Cement      b) Jute  
c) Toy making      d) Information technology (IT)
- 119 Tax on imports is considered as an example of [1]  
a) Collateral      b) Trade barriers  
c) Foreign trade      d) Terms of trade
- 120 Which of the following is the main reason behind the investments of MNCs? [1]  
a) To benefit foreign countries  
b) To provide financial support to the country's government  
c) For the welfare of underprivileged people  
d) To increase the assets and earn profits