

SAMPLE PAPER (CPA)
For Xth Moving

Duration : 2 Hours

Total Marks : 100

Instructions :

- There will be two sections:
Section A (Science) and Section B (Mathematics).
- Each section will have two parts :
Part 1: 20 Concept based MCQs (1 mark each)
Part 2 : 10 Critical thinking questions (3 marks each)
- Negative marking :
For Part 1 of each section there is a negative marking of 0.25 marks for every incorrect answer. For Part 2 of each section there is a negative marking of 1 mark for every incorrect answer.
- Total marks : 100
- Time duration: 120 minutes for 60 questions.
- Use **black ball point pen** only.

SECTION A: SCIENCE (TOTAL MARKS: 50)

**PART 1: CONCEPT-BASED QUESTIONS
(20 QUESTIONS- 1 MARK EACH)**

- Q.1)** The process of conversion of a solid directly into a gas without passing through the liquid state is called:
(a) Evaporation (b) Condensation
(c) Sublimation (d) Melting
- Q.2)** Which of the following has the highest intermolecular forces of attraction?
(a) Solid (b) Liquid
(c) Gas (d) Semi solid
- Q.3)** Which of the following substances shows sublimation at room temperature and pressure?
(a) Water (b) Sugar
(c) Dry ice (d) Salt
- Q.4)** A solution is a homogeneous mixture of:
(a) Two or more pure substances
(b) Two or more impure substances
(c) One pure substance
(d) One impure substance
- Q.5)** Which method is suitable for the separation of components of a mixture of two immiscible liquids?
(a) Decantation (b) Filtration
(c) Distillation (d) Chromatography
- Q.6)** What is the process of separating components based on their tendency to be attracted to a solid surface called?
(a) Filtration (b) Decantation
(c) Distillation (d) Chromatography
- Q.7)** Which of the following is an example of circular motion?
(a) A car moving on a straight road
(b) A cyclist pedaling in a straight line
(c) A car moving around a roundabout
(d) A bird flying in a straight line
- Q.8)** If an object is in free fall near the surface of the Earth, its acceleration due to gravity is approximately:
(a) 9.8 m/s^2 (b) 1 m/s^2
(c) 20 m/s^2 (d) 5 m/s^2
- Q.9)** Which of the following statements about acceleration is true?
(a) It is a vector quantity
(b) It is measured in meters per second (m/s)
(c) It is always positive
(d) It is the same as velocity
- Q.10)** If the net force acting on an object is zero, its motion will be:
(a) At constant velocity (b) Accelerating
(c) Decelerating (d) Resting
- Q.11)** The SI unit of gravitational force is the:
(a) Newton (N) (b) Joule (J)
(c) Watt (W) (d) Kilogram (kg)
- Q.12)** The gravitational force between two objects depends on their:
(a) Color
(b) Temperature
(c) Masses and the distance between them
(d) Shape
- Q.13)** Work is done when:
(a) An object is at rest
(b) An object is in motion
(c) A force is applied to an object and it moves in the direction of the force
(d) A force is applied to an object and it remains stationary
- Q.14)** When you lift a book from the ground and hold it steady above your head, you are doing work against:
(a) Gravity (b) Friction
(c) Air resistance (d) Magnetic force

- Q.15)** The energy stored in a stretched rubber band is an example of:
 (a) Gravitational potential energy
 (b) Elastic potential energy
 (c) Chemical energy
 (d) Nuclear energy
- Q.16)** Sound is a form of:
 (a) Electrical energy (b) Mechanical energy
 (c) Chemical energy (d) Magnetic energy
- Q.17)** The speed of sound in air is approximately:
 (a) 340 m/s (b) 1,000 m/s
 (c) 3,000 m/s (d) 10,000 m/s
- Q.18)** The phenomenon of reflection of sound is used in:
 (a) Sonar (b) Solar panels
 (c) Telescopes (d) Microphones
- Q.19)** Which of the following materials is a good conductor of sound?
 (a) Wood (b) Rubber
 (c) Metal (d) Plastic
- Q.20)** Isotopes of an element have the same number of:
 (a) Electrons (b) Protons
 (c) Neutrons (d) Both b and c

**PART 2: CRITICAL THINKING QUESTIONS
 (10 QUESTIONS - 3 MARKS EACH)**

- Q.21)** Which type of tissue covers and protects the body's surface and lines internal organs?
 (a) Epithelial tissue (b) Connective tissue
 (c) Muscle tissue (d) Nervous tissue
- Q.22)** Consider two containers, one filled with a gas and the other with a liquid, both at the same temperature. How does the kinetic energy of the particles in the gas compare to the kinetic energy of the particles in the liquid?
 (a) Gas particles have higher kinetic energy
 (b) Liquid particles have higher kinetic energy.
 (c) Both have the same kinetic energy
 (d) It depends on the specific gas and liquid
- Q.23)** Why does water evaporate more quickly on a hot summer day compared to a cold winter day, considering the behavior of water molecules?
 (a) Water molecules move slower in hot weather
 (b) Water molecules have lower kinetic energy in hot weather.
 (c) Water molecules escape from the liquid phase more readily in hot weather due to higher kinetic energy.
 (d) Water molecules become more tightly packed in hot weather.

- Q.24)** In the separation of components in crude oil by fractional distillation, which component has the highest boiling point?
 (a) Gasoline (b) Diesel
 (c) Kerosene (d) Petroleum gas
- Q.25)** If an object moves with a constant velocity, what can you conclude about the net force acting on it?
 (a) There is no net force.
 (b) There is a balanced net force
 (c) There is an unbalanced net force.
 (d) The force is acting in the opposite direction of motion.
- Q.26)** When you push an object on a frictionless surface, what happens to its acceleration as the force applied increases?
 (a) Acceleration remains constant
 (b) Acceleration increases linearly.
 (c) Acceleration increases exponentially
 (d) Acceleration decreases
- Q.27)** If you were on the Moon, which of the following would be different compared to Earth: your weight or your mass?
 (a) Weight
 (b) Mass
 (c) Both weight and mass
 (d) Neither weight nor mass
- Q.28)** What is the relationship between work done on an object and the resulting change in its kinetic energy?
 (a) They are not related.
 (b) Work done equals the change in kinetic energy
 (c) Work done is half of the change in kinetic energy
 (d) Work done is twice the change in kinetic energy
- Q.29)** What happens to the pitch of a sound when the frequency of the sound wave increases?
 (a) The pitch becomes lower
 (b) The pitch becomes higher.
 (c) The pitch remains the same
 (d) The pitch becomes inaudible
- Q.30)** What is a chemical bond, and how does it differ from a physical bond?
 (a) A chemical bond involves sharing or transferring electrons between atoms to form molecules, while a physical bond is the attraction between molecules
 (b) A chemical bond involves the attraction between molecules, while a physical bond is the sharing of electrons.
 (c) A chemical bond is a weak force, while a physical bond is a strong force
 (d) A chemical bond is unrelated to atoms and molecules.

SECTION B: MATHEMATICS (MARKS: 50)**PART 1: CONCEPT-BASED QUESTIONS
(20 QUESTIONS- 1 MARK EACH)**

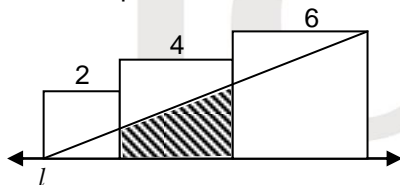
- Q.31)** In probability, what does the term "mutually exclusive" mean?
(a) Events that cannot occur together
(b) Events that are likely to occur together
(c) Events that always occur together
(d) Events that have no impact on each other
- Q.32)** Which term describes a data point that is significantly different from the rest of the data set?
(a) Median (b) Mode
(c) Outlier (d) Range
- Q.33)** What is the term for a circle with all points on its circumference equidistant from its center?
(a) Ellipse (b) Parabola
(c) Concentric circle (d) Equilateral circle
- Q.34)** What term is used for a number that is divisible by only 1 and itself?
(a) Prime number (b) Composite number
(c) Rational number (d) Irrational number
- Q.35)** What term is used for a polynomial with the highest degree of 2?
(a) Linear (b) Quadratic
(c) Cubic (d) Quartic
- Q.36)** What is the term for a straight line that divides an angle into two equal angles?
(a) Perpendicular bisector
(b) Angle bisector
(c) Hypotenuse
(d) Median
- Q.37)** In geometry, what is the term for a straight line that touches a curve at a single point without crossing it?
(a) Tangent (b) Secant
(c) Chord (d) Arc
- Q.38)** What is the term for a number that cannot be expressed as a ratio of two integers?
(a) Whole number (b) Rational number
(c) Irrational number (d) Prime number
- Q.39)** When solving linear equations, what is the goal of the elimination method?
(a) To substitute values into an equation
(b) To find a common denominator
(c) To eliminate one variable by adding or subtracting equations
(d) To solve for the square root of a variable
- Q.40)** What term is used for a set of ordered pairs of numbers representing the positions of points in a plane?
(a) Algebraic expression
(b) Cartesian coordinates
(c) Exponential function
(d) Linear equation

- Q.41)** Select fractions yielding non terminating decimals from given options.
(i) $\frac{1}{3}$ (ii) $\frac{5}{6}$
(iii) $\frac{1}{5}$ (iv) $\frac{2}{8}$
(a) (i) (b) (ii)
(c) (i) & (ii) (d) All of these
- Q.42)** Solve for x if we have two equations :
 $x + y = 4$
 $x - y = 6$
(a) 5 (b) 2
(c) 3 (d) 4
- Q.43)** To construct a perpendicular bisector of line segment xy , taken centres as x and y the radius of compass is taken
(a) equal to $\frac{xy}{3}$ (b) less than $\frac{xy}{2}$
(c) equal to $\frac{1}{2}xy$ (d) more than $\frac{xy}{2}$
- Q.44)** Assertion (A): 0 and -1 are the zeroes of polynomial $p(x) = x^2 - x + 2$.
Reason (R) : 'a' is called zero of polynomial $p(x)$, if the value of $p(x)$ at $x = a$ is zero i.e. $p(a) = 0$. Choose correct option
(i) Both (A) and (R) are true and (R) is correct reason for assertion (A)
(ii) Both (A) and (R) are true and (R) is not correct reason for assertion (A)
(iii) Assertion (A) is true but Reason (R) is false.
(iv) Assertion (A) is false but Reason (R) is true.
(a) (i) (b) (ii)
(c) (iii) (d) (iv)
- Q.45)** The distance formula is used for calculating the distance between:
(a) Two lines
(b) Two points
(c) The origin and a point
(d) Two angles
- Q.46)** Which trigonometric ratio represents the ratio of the length of the side opposite an angle to the length of the hypotenuse in a right triangle?
(a) Sine (sin) (b) Cosine (cos)
(c) Tangent (tan) (d) Cosecant (csc)
- Q.47)** What's the angle formed by a tangent and a chord drawn from the point of contact called?
(a) Central angle (b) Inscribed angle
(c) Exterior angle (d) Right angle

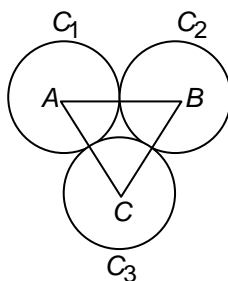
- Q.48)** You have a right triangle where the lengths of two sides are given as 3 units and 4 units. What is the length of the hypotenuse?
 (a) 7 units (b) 5 units
 (c) 6 units (d) 8 units
- Q.49)** If the product of two positive numbers is 16, and their sum is as small as possible, what are the two numbers?
 (a) 2 and 14 (b) 4 and 4
 (c) 8 and 2 (d) 1 and 16
- Q.50)** When constructing a triangle given its three sides, under what condition is it not possible to construct a triangle?
 (a) When the sum of two sides is equal to the third side
 (b) When the sum of two sides is less than the third side.
 (c) When the sum of two sides is greater than the third side.
 (d) When all sides are equal

PART 2: CRITICAL THINKING QUESTIONS (10 QUESTIONS - 3 MARKS EACH)

- Q.51)** Three squares with length of sides 2, 4 and 6 units are arranged side by side such that one side of each square lies on line l . Find the area of shaded quadrilateral.



- (a) 1 (b) 8
 (c) 9 (d) 12
- Q.52)** If C_1, C_2 and C_3 are circles with centres A, B, C having equal radius of 9 cm each. Find the perimeter of $\triangle ABC$.



- (a) 18 (b) 36
 (c) 54 (d) None of these
- Q.53)** A sphere touches all faces of a cube of side 7 cm initially. Find the volume of sphere.
 (a) 179.6 (b) 197.6
 (c) 1437 (d) None of these

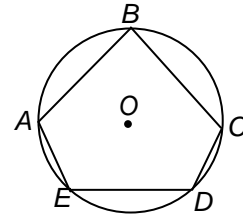
- Q.54)** The width of four continuous classes in a frequency distribution is 8 and the higher class limit of the lowest class is 12. Find the lower class limit of the highest class
 (a) 20 (b) 28
 (c) 30 (d) 36

- Q.55)** Find the value of

$$\frac{1}{3+\sqrt{7}} + \frac{1}{\sqrt{7}+\sqrt{5}} + \frac{1}{\sqrt{5}+\sqrt{3}} + \frac{1}{\sqrt{3}+1}$$

(a) 1 (b) 2
 (c) $\sqrt{3} + \sqrt{5} + \sqrt{7}$ (d) None of these

- Q.56)** In the adjoining figure $ABCD$ is an inscribed pentagon in a circle with centre O .



If arc $DE = 70^\circ$, find $m\angle A + m\angle C$

- (a) 430 (b) 215
 (c) 285 (d) None of these

- Q.57)** In a chemistry experiment a chemical is kept in a cubical container of length 10 cm, width 5 cm and height 11 cm. If this chemical is poured in a cylindrical tube of radius 5 cm, find the height of chemical in cylindrical container.

- (a) 5 (b) 6
 (c) 7 (d) none of these

- Q.58)** Ria desires to construct a wall of bricks in her backyard. If the total length, width & height of the wall desired is 10 meter, 20 cm, 0.4 m and the size of each brick is 10 cm \times 5 cm \times 4 cm. Find the total number of bricks she should order.

- (a) 1400 (b) 2600
 (c) 3800 (d) 4000

- Q.59)** A spiral staircase turns 270° as it rises 10 m. The radius of the staircase is 3 meter. Find the length of hand rail of stair case.

- (a) 12 (b) 16
 (c) 17 (d) 20

- Q.60)** Ria serves soup in a hemispherical bowl of diameter 7 cm, if the bowl is filled with soup to a height of 35 cm, find the number of bowls which can be served with 4.5 litres of soup $\left(\pi = \frac{22}{7}\right)$.

- (a) 50 (b) 60
 (c) 25 (d) 100

