CLASS - XI
SECTION – A (NON MEDICAL)

I. SUBJECT - ENGLISH

1. Describe the narrator's experience of early morning ride with his cousin Mourad.
2. Compare and contrast uncle Khosrove and cousin Mourad.
3. Did the boys returned the horse because they were conscience-stricken or because they were afraid? Explain. ?
4. What did John Byro mean when he said, "A suspicious man would believe his eyes Instead of his heart"? Explain.
5. The author's grandmother was a religious person. What are the different ways in which we come to know this?
6. Gradually the author and the grandmother saw less of each other and their friendship was broken. Was the distancing deliberate or due to the demands of the situation?Explain.
7. The grandmother herself was not formally educated but was serious about the author's education. How does the text support this?
8. Imagine that you are Khushwant Singh. Record the changes that came in your relationship with your grandmother as you grew up from kid to university student.
9. 'We're Not Afraid to Die … If We Can All Be Together' traces down the saga of hardship and bravery as portrayed in this adventure story.
10. How did the children's presence and behaviour during the crisis affect the narrator?
11. How did the narrator and his companions save the boat from sinking?
12. "Optimism and courage help to tide over difficulties". How did the narrator succeed in searching the small island?

13. "Its silence silences", writes Shirley Toulson. The loss of her mother has milenced her. Do you think that this attitude of the poet is the right attitude to live life? Why? why not?

14. Happy moments are short-lived but provides a lifetime memory. They provide a cushion to bear the difficulties which the future has a store for you. Comment in the light of the poem 'A Photograph ' by Shirley Toulson.

15. The poet has paid a tribute to her mother. Similar instances can be seen in "The Portrait of a Lady". This made you think that writing about a loved one is much better than building their statues or drawing their portraits. Comment.

16. 'Both wry with the laboured ease of loss.' and'The sea appears to have changed less' depicts the nostalgic feelings. Comment.

17. You are Harish/Harshita of 12, Seva Nagar, Pune. You want to sell your flat as you are shifting to another city for work. Draft a suitable advertisement in not more than 50 words to be published in The Pune Times under the classified columns.

18. Principal, Sunrise Global School, Agra requires a receptionist for her school. Draft a suitable advertisement in about 50 words to be published in the classified columns of a national newspaper giving all the necessary details of qualifications and experience required in the receptionist.

19. You want to let out a house. Prepare an advertisement to this effect, for publication in a newspaper giving the location of the building, nature of accommodation, rent expected, etc.

20. You have lost your briefcase containing important business documents while travelling in the Shatabdi Express from Chandigarh to New Delhi. Draft an advertisement for the Lost and Found section of the classified advertisements of a national daily. Offer suitable details/rewards. You are Vineet/Vineeta of 1164, Sector 11, Chandigarh.

II. SUBJECT: CHEMISTRY

1. What will be the molarity of a solution, which contains 5.85 g of NaCl(s) per 500 mL?

2. If 500 mL of a 5 M solution is diluted to 1500 mL, what will be the molarity of the solution obtained?

3. If the concentration of glucose ($C_6H_{12}O_6$) in blood is 0.9 g L^{-1}, what will be the molarity of glucose in blood?

4. Calculate the mass per cent of calcium, phosphorus and oxygen in calcium phosphate $Ca_3(PO_4)_2$.

5. Hydrogen gas is prepared in the laboratory by reacting dilute HC1 with granulated zinc. Following reaction takes place:
$Zn + 2HCl \rightarrow ZnCl_2 + H_2$
Calculate the volume of hydrogen gas liberated at STP when 32.65 g of zinc reacts with HCl. 1 mol of a gas occupies 22.7 L volume of STP; atomic mass of Zn = 65.3 u.

6. The reactant which is entirely consumed in reaction is known as limiting reagent. In the reaction 2A + 4B —> 3C + 4D, when 5 moles of A react with 6 moles of B, then
(i) which is the limiting reagent?
(ii) calculate the amount of C formed.

7. Calcium carbonate reacts with aqueous HCl to give $CaCl_2$ and CO_2 according to the reaction given below:
$CaCO_3(s) + 2HCl(aq) \rightarrow CaCl_2(aq) + CO_2(g) + H_2O(l)$
What mass of $CaCl_2$ will be formed when 250 mL of 0.76 M HCl reacts with 1000 g of $CaCO_3$? Name the limiting reagent. Calculate the number of moles of $CaCl_2$ formed in the reaction.

8. 45.4 L of dinitrogen reacted with 22.7 L of dioxygen and 45.4 L of nitrous oxide was formed. The reaction is given below:

$2N_2(g) + O_2(g) \rightarrow 2N_2O(g)$

Which law is being obeyed in this experiment? Write the statement of the law.
9. 100ml of 0.1M NaCl solution is mixed with 100ml of 0.2M $AgNO_3$ solution. Find out the mass of AgCl precipitate formed. Which reagent is limiting reagent?

10. An aqueous solution of NaCl is 10% (w/w) having density 1.071g/cm^3. What is molarity and molality of the solution.Also calculate mole fraction of each component in the solution.

11. How much potassium chlorate should be heated to produce 2.24 L of oxygen at NTP?

12. Calculate the weight of lime CaO obtained by heating 200kg of 95% pure limestone$CaCO_3$?

13.Vitamin C is essential for the prevention of scurvy. Combustion of 0.2000g of vitamin C gives 0.2998g of CO_2 and 0.819g of H_2O. What is the empirical formula of Vitamin C?

14. Calculate the number of molecules present in 0.5 moles of CO_2?

15. Write Postulates of Dalton's atomic theory.

16.A sample of drinking water was found to be severely contaminated with chloroform, $CHCl_3$ supposed to be carcinogenic in nature. The level of contamination was 15 ppm (by mass).
(i) Express this in percent by mass
(ii) Determine the molality of chloroform in the water sample.

17. How many significant figures are present in the following?
(i) 0.0025 (ii) 208 (iii) 5005 (iv) 126,000
(v) 500.0 (vi) 2.0034

18. How are 0.50 mol Na_2CO_3 and 0.50 M Na_2CO_3 different?

19. Which one of the following will have largest number of atoms?
(i) 1 g Au (s) (ii) 1 g Na (s) (iii) 1 g Li (s) (iv) 1 g of Cl_2(g) (Atomic masses: Au = 197, Na = 23, Li = 7, Cl = 35.5 amu)

20. A welding fuel gas contains carbon and hydrogen only. Burning a small sample of it in oxygen gives 3.38 g carbon dioxide, 0.690 g of water and no other products. A volume of 10.0 L (measured at S.T.P.) of this welding gas is found to weigh 11.6 g. Calculate (i) empirical formula, (ii) molar mass of the gas, and (iii) molecular formula.

III. SUBJECT-PHYSICS

1.The equation of state of some gases can be expressed as Vander wal equation i.e.
   $(P + a/V^2)(V - b) = RT$
Where P is the pressure, V is the volume, T is the absolute temperature and a, b, R

are constants. The dimensions of 'a' are:
  (i) $[M^1L^1T^{-1}]$ (ii) $[M^1L^{-5}T^1]$ (iii) $[M^2L^5T^{-1}]$ (iv) $[M^1L^5T^{-2}]$

2.Electron volt is a unit of
  (i) Charge   (ii) Potential difference   (iii) Energy   (iv) Magnetic Force

3 .There are 20 divisions in 4 cm of the main scale. The vernier scale has 10 divisions. The
least count of the instrument is
 (i) 0.05 cm   (ii) 0.5 cm   (iii) 5.0 cm   (iv) 0.005 cm
4.One watt hour contains how many joules?
   (i) $3.6 \times 10^8 J$ (ii) $3.6 \times 10^2 J$ (iii) $3.6 \times 10^3 J$ (iv) $10^{-3} J$

5. A body starts from rest and travels with uniform acceleration of 2 m/s². If its velocity is v
after making a displacement of 9 m, then v is
   (i) 8 m/s   (ii) 6 m/s   (iii) 10 m/s   (iv) 4 m/s

6 . A boy starts from a point A, travels to a point B at a distance of 1.5 km and returns to A. If
he takes one hour to do so, his average velocity is
   (i) 3 km/h   (ii) zero   (iii) 1.5 km/h   (iv) 2 km/h

7.If the displacement-time graph of an object is parallel to the time-axis, then it represents
   that the object is :
    (i) at rest   (ii) in uniform motion   (iii) in acceleration motion   (iv) none of the above
8. The acceleration of a moving object can be found from
    (i) area under displacement-time graph
    (ii) slope of displacement-time graph
    (iii) area under velocity-time graph
    (iv) slope of velocity-time graph
9. A body starts from rest. If it travels with an acceleration of 2 m/s², its displacement at the
end of 3 seconds is
(a) 9 m   (b) 12 m   (c) 16 m   (d) 10

10.If the time period of vibration (T) of a liquid drop depends on surface tension (S),radius (r)of

Thedrop and density of the liquid, then the expression of "T" is ?

11. If the speed of light (c), acceleration due to gravity (g) and pressure (p) are takeas the
fundamental quantities, then the dimension of gravitational constant (G) is ?

12. If velocity (v), acceleration (a) and force (f) are chosen as fundamental quantities,
then the
dimensional formula of angular momentum in terms of v, a and f would be?

13. A small steel ball of radius is allowed to fall under gravity through a column of a viscous
   liquid of coefficient of viscosity(η). After some time the velocity of the ball attains a constant
value known as terminal velocity The terminal velocity depends on (i) the mass of the ball,(ii)η,
(iii) r, and (iv) acceleration due to gravity. Find relation between them using dimension analysis.

14. If energy of photon E is proportional to $h^a\,c^b\,n^c$. Here, h = plank's constant, c = speed of
 light, l = wavelength of photon. Then find the values of a, b and c?

15. The position of an object moving along x-axis is given by $x = a + bt^2$ where a = 8.5 m,
   b=2.5 m s^{-2} and t is measured in seconds. What is its velocity at t = 0 s and t = 2.0 s.
   What is the average velocity between t = 2.0 s and t = 4.0 s?

16. A ball is thrown vertically upwards with a velocity of 20ms^{-1} from the top of a multistorey
 building. The height of the point from where the ball is thrown is 25.0 m from the ground.
   (a) How high will the ball rise ? and (b) how long will it be before the ball hits the
      ground? Take g = 10 m s^{-2}

17. A woman starts from her home at 9.00 am, walks with a speed of 5 km h^{-1} on a straight
road up to her office 2.5 km away, stays at the office up to 5.00 pm, and returns home by
an auto with a speed of 25 km h^{-1}. Choose suitable scales and plot the x-t graph of her motion.

18. A drunkard walking in a narrow lane takes 5 steps forward and 3 steps backward, followed again by 5 steps forward and 3 steps backward, and so on. Each step is 1 m long and requires 1 s. Plot the x-t graph of his motion. Determine graphically and otherwise, how long the drunkard takes to fall in a pit 13 m away from the start.

19. A car moving along a straight highway with speed of 126 km h^{-1}is brought to a stop within a distance of 200 m. What is the retardation of the car (assumed uniform), and how long does it take for the car to stop?

20.CASE BASED QUESTIONS
QUES A: System of units: A system of units is a collection of units in which certain units are chosen as fundamental and all others are derived from them. This system is also called an absolute system of units. Some common systems in use are:
- c.g.s system: The unit of length is centimetre, mass is gram, time is secong.
- m.k.s system: The unit of length is metre, mass is kilogram, time is second.
- f.p.s system: The unit of length is foot, mass is pound, time is second.
- S.I. system: In 1960, 11th General Conference of Weights and Measures introduced SI system. It has 7 fundamental units (Unit of length is metre, mass is kilogram, Time is second, Temperature is Kelvin, Electric current is Ampere, Luminous intensity is Candela, Amount of substance is mol) and two supplementary units (Unit of plane angle is radian, solid angle is steradian)

A1: Which of the following is not the name of physical quantity?
(a) Kilogram (b) Density(c) Impulse (d) Energy

A2: The weight of a body is 12g. This statement is not correct because
(a) The correct symbol for the unit of weight has not been used.
(b) The correct symbol for gram is gm.
(c) The weight should be expressed in kg.
(d) Of some reason other than those given above.

A3: If the unit of force and length are doubled, the unit of energy will be
(a) 1/2 times (b) 2 times(c) 4 times (d) 1/4 times

A4: The density of a liquid is 13.6 g cm-3. Its value ip S.I. is
(a) 13.6 kgm^{-3} (b) 136 kgm^{-3}(c) 13600 kgm^{-3}(d) 1360 kgm^{-3}

A5: 1Kg-wt in gravitational units equals to
(a) 5.4 N in SI system (b) 4.5 N in SI system
(c) 9.8 N in SI system (d)8.9 N in SI system

Ques B: Dimensions: The dimensions of a physical quantity are the powers to which the base quantities are raised to represent that quantity and expressed by putting square brackets []. The Dimensional formula tells the fundamental factors on which unit depend. The dimensionalequation have 3

important applications:

(i) To check the correctness of a physical equation.

(ii) To derive the relation between different physical quantities.

(iii) To change from one system of units to another.

Principle of homogeneity of dimensions states that dimensions of fundamental quantities on both sided of a physical relation must be same.

B1: Give that the displacement of a particle is given by $x = A^2 \sin^2 kt$, where t denotes the time. The unit of k is

(a) radian (b) metre(c) hertz (d) second

B2: The dimensional formula for angular momentum is same as that for:

(a) torque (b) Plank's constant(c) gravitational constant (d) impulse

B3: Checking the correctness of physical equations using the methods of dimensions is basedon

(a) Equality of frame of reference

(b) The type of system of units

(c) The method of measurement

(d) Principle of homogeneity of dimensions.

B4: Dimensions cannot be used to

(a) To check dimensional correctness of a formula.

(b) Convert units

(c) Find value of constant of proportionality in an equation.

(d) Deduce a relation among physical quantities.

B5: Two physical quantities whose dimensions are not same, cannot be:

(a) Multiplied with each other (b) Divided

(c) Added or subtracted in same expression (d) added

Ques C. In the absence of air resistance, all bodies falls with same same acceleration near the surfaceof the earth. This motion of a body falling towards the earth from a small height is called freefall. The acceleration with which a body falls is called acceleration due to gravity and it isdenoted by g.

(i) For a freely falling body, which of the following equation is incorrect.

(a) h-ut =(1/2) gt^2(b) v2– u2 =2gh(c) h = (1/2) ut +gt2 (d) (v-u)/g = t

(ii) The maximum height attained by a body thrown vertically upward with initial velocity

u is

(a) h=u²/2g (b) h=u/2g(c) h=u²/g (d) h= 2u²/g

(iii) The time of ascent of a body thrown vertically upward with initial velocity u is

(a) t= u/2g (b) t= u/g(c) t= u2/g (d) t= u/g2

(iv) The total time of flight to come back to the point of projection of a body thrown Verticallyupward with initial velocity u is

(a) t= 2u/3g (b) t= u/2g(c) t= 2u/g (d) t= u2/2g

(v) Velocity of fall at the point of projection of a body thrown vertically upward with Initialvelocity u is

(a) v = u (b) v = 2u(c) v = 3u (d) v = 4u

IV.SUBJECT- MATHS

Q1. Find the value of $\dfrac{\cos(90^0 + \theta)\sec(-\theta)\tan(180^0 - \theta)}{\sec(360^0 - \theta)\sin(180^0 + \theta)\cot(90^0 - \theta)}$

Q2. Evaluate $Cos\left(\dfrac{-31\pi}{6}\right)$.

Q3. If A is the set of all prime numbers and P = {0, 1, 2, 3, 4, 5, 6, 7, 8, 9} then evaluate: (A-P)∩ (P-A)

Q4. Find the value of $\sin\dfrac{\pi}{8}$

Q5. Find the radian measure corresponding to the degree measure 5^0 37'30''

Q6. Provethat: sin(-420⁰) cos(390⁰) + cos(-660⁰) sin(330⁰) = -1

Q7. Find the domain and range of the following function:

a)   f(x) = I 2x-9 I   b). $f(x) = \sqrt{16 - x^2}$ c). f(x) = $\dfrac{1}{\sqrt{1-x}}$

Q8. (a) Two finite set have m and n elements. The total number of subsets of the first set is 56 more than the total number of subsets of the second set. Find the value of m and n. Also show that

 (b) If P(A) = P(B), then A = B.

Q9. If cos α + cos β + cos Y = 0 then prove that cos 3α + cos 3β + cos 3Y = 12 cos α cos β cos Y

 b). $\dfrac{\sec 8x-1}{\sec 4x-1} = \dfrac{\tan 8x}{\tan 2x}$

Q10. Sytam who is students of class XI got a maths assignment from his class teacher. He did all the questions except a few. If the value of sin x = $\frac{3}{5}$ and cosy = $\frac{-12}{13}$, where x and y both lies in second quadrant then help sytam in solving these questions:

     1.) What will be the value of cos x ?
     2.) What will be the value of sin y ?
     3.) What will be the value of sin (x + y)
     4.) Find the value of sin 75^0

Q11. Find the domain of following: $\sqrt{4-x} + \dfrac{1}{\sqrt{x^2-1}}$

Q12. Is g = {(1, 1), (2, 3), (3, 5), (4, 7)} a function, justify? If this is described by relation $g(x) = \alpha x + \beta$, then what is the value of α and β .

Q13. Convert 6 radians into degree measure. (Use = $\frac{22}{7}$)

Q14. Prove that: cot 4x (sin 5x + sin 3x) = cot x (sin 5x – sin 3x)

Q15. If sin x = $\frac{3}{5}$, cos y = $-\frac{12}{13}$, where x and y both lie in 2nd quadrant, find the value of sin(x + y).

Q16. There are 200 individuals with a skin disorder 120 had been exposed to chemical C_1 , 50 to chemical C_2 and 30 to both chemical C_1 and C_2 . Find the number of individuals

    (i) C_1 but not C_2 (ii) C_2 but not C_1 (iii) C_1 or C_2

Q17. In a city school during the admission to class XI, 18 students took English, 23 students took Hindi and 24 students took Sanskrit. Of these, 13 took both Hindi and Sanskrit, 12 took both English and Hindi and 11 took both English and Sanskrit. Due to the request made by some students, the school authorities decided that 6 students will be offered all the three languages.

Based on the above information answer the following questions.

(i) Find the total number of students who took admission in class XI.

(ii) How many students took Sanskrit but not Hindi?

(iii) How many students took exactly one of the three subjects?

(iv) How many students took exactly two of the three subjects?

Q18. If $f(x) = \frac{x-1}{x+1}$ then prove that $f(2x) = \frac{3f(x)+1}{f(x)+3}$

Q19. In a survey of 40 students. It was found that 21 had taken mathematics, 16 had taken physics and 15 had taken chemistry, 7 had taken mathematics and chemistry, 12 had taken mathematics and physics, 5 had taken physics and chemistry and 4 had taken all the three subjects. Based on the above information answer the following questions.

        a. Find the number of students who had taken mathematics only.
        b. Find the number of students who had taken physics and chemistry but not mathematics.
        c. Find the number of students who had taken exactly all of the three subjects.
<div align="center">OR</div>

        Find the number of students who had taken at least one of the three subjects.

Q20. Prove that: $\cos^2 x + \cos^2(x + \frac{\pi}{3}) + \cos^2(x - \frac{\pi}{3}) = \frac{3}{2}$.

V. SUBJECT: COMPUTER SCIENCE

Section A: Multiple Choice Questions (MCQs)

1. Which of the following is not a component of a computer system?

   a) CPU   b) Monitor   c) Operating System   d) Keyboard

2. The brain of any computer system is:

   a) ALU   b) Memory   c) CPU   d) Control unit

3. Which of the following is used to store data permanently?

   a) RAM   b) ROM   c) Cache   d) Register

4. The ALU performs:

   a) Logical operations   b) Arithmetic operations

   c) Both a and b   d) None of the above

5. Which of the following is the fastest type of memory?

   a) Hard Disk   b) RAM   c) Cache   d) CD-ROM

Section B: Short Answer Questions

1. Define the term 'Computer System'.
2. Explain the function of the CPU in a computer system.
3. What is the role of primary memory in a computer system?
4. Differentiate between RAM and ROM.
5. Describe the function of the ALU in a computer system.

Section C: Long Answer Questions

1. Explain the various components of a computer system and their functions.
2. Discuss the importance of secondary storage in a computer system.
3. Describe the function of input and output devices with examples.
4. Explain the working of AND, OR, and XOR gates with truth tables.
5. Draw a logic circuit and truth table for the expression $(A \cdot B) + \overline{C}$
6. Construct a logic circuit and truth table for the expression $\overline{(A+B) \cdot C}$
7. Draw a logic circuit and truth table for the expression $A' \cdot B + C$.

Section D: Practical Questions

1. Draw a block diagram of a computer system and label its components.
2. Convert the following:

    a. $3674_8 = ($ $)_2$

    b. $B2F_{16} = ($ $)_{10}$

    c. $1101.101_2 = ($ $)_{10}$

    d. $38.21_{10} = ($ $)_2$

    e. $765_{8} = ($ $)_{10}$

3. Write the ASCII code for the message received in binary.

    01001000   01000101 01001100   01010000   01001101   01000101

VI. SUBJECT – PHYSICAL EDUCATION

1. Define Physical Education. How has its definition evolved over the years?

2. Explain the significance of Physical Education in the modern educational system.

3.Discuss the role of technology in enhancing physical education programs.

4.What are some contemporary issues and challenges faced by physical education today?

5.How has the curriculum of Physical Education changed in the last decade?

6.Explain the importance of inclusive physical education.

7.Discuss the impact of globalization on physical education.

8. What are the various career opportunities available in the field of Physical Education?

9. What is Olympism, and what are its fundamental principles?

10.Explain the historical background of the Olympic Games.

11.Discuss the role of Pierre de Coubertin in the modern Olympic movement.

12. How does Olympism promote international understanding and peace?

13. What values are emphasized through Olympic education?

14. Explain the concept of fair play and its importance in sports.

15. Discuss the significance of the Olympic Charter.

16. What is obesity, and what are its main causes?

17. How can physical activity and yoga help in preventing obesity?

18. Describe three asanas that are particularly effective in managing obesity.

19. Explain the benefits of Surya Namaskar in weight management.

20. Discuss the role of diet along with asanas in preventing obesity.