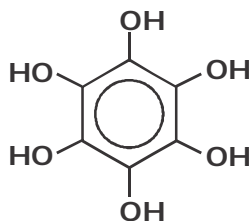## Class : XI — Mathematics

1 The positive integer n for which $2 \times 2^2 + 3 \times 2^3 + 4 \times 2^4 + \ldots + n \times 2^n = 2^{n+10}$ is

(A) 510   (B) 511   (C) 512   (D) 513

2 Find the distance of the point (2, 3) from the line $2x - 3y + 9 = 0$ measured along a line $x - y + 1 = 0$.

(A) $\sqrt{2}$ (B) 2   (C) $2\sqrt{2}$ (D) $4\sqrt{2}$

3 A line makes intercepts whose sum is 9 and product is 20. If the x-intercept is greater, what is the equation of the line ?

(A) $4x + 5y = 20$ (B) $5x + 4y = 20$

(C) $5x - 4y = 20$ (D) $5x + 4y = -20$

4 If α, β are the roots of the equation $ax^2 + bx + c = 0$ then find the quadratic equation whose roots are $\alpha + \beta$, $\alpha\beta$.

(A) $a^2x^2 + a(b - c)x + bc = 0$

(B) $a^2x^2 + a(b - c)x - bc = 0$

(C) $ax^2 + (b + c)x + bc = 0$

(D) $ax^2 - (b + c)x - bc = 0$

5 If $t_n = \dfrac{1}{4}(n + 2)(n + 3)$ for $n = 1, 2, 3, \ldots$ then find $\dfrac{1}{t_1} + \dfrac{1}{t_2} + \dfrac{1}{t_3} + \ldots + \dfrac{1}{t_{2003}}$.

(A) $\dfrac{4006}{3006}$ (B) $\dfrac{4003}{3007}$ (C) $\dfrac{4006}{3008}$ (D) $\dfrac{4006}{3009}$

Class : XI **Physics**

6 The angular speed of a motor increases from 600 rpm to 1200 rpm in 10 s. What is the angular acceleration of the motor ?

(A) 600 rad s^{-2} (B) 60 π rad s^{-2}

(C) 60 rad s^{-2} (D) 2 π rad s^{-2}

7 There is a mine of depth about 2.0 km. In this mine the conditions as compared to those at the surface are

(A) lower air pressure, higher acceleration due to gravity.

(B) higher air pressure, lower acceleration due to gravity.

(C) higher air pressure, higher acceleration due to gravity.

(D) lower air pressure, lower acceleration due to gravity.

8 An object of mass 5 kg falls from rest through a vertical distance of 20 m and attaches a velocity of 10 m/s. How much work is done by the resistance of the air on the object ? (g = 10 m/s²)

(A) –150 J   (B) 225 J

(C) –750 J   (D) 1000 J

9 Which of the following sets have different dimensions ?

(A) Pressure, Young's modulus, Stress

(B) Emf, Potential difference, Electric Potential

(C) Heat, Work done, Energy

(D) Dipole moment, Electric flux, Electric field

10 The following four wires of length L and radius r are made of the same material. Which of these will have the largest extension when the same tension is applied ?

(A) L = 40 cm, r = 0.20 mm

(B) L = 100 cm, r = 0.5 mm

(C) L = 200 cm, r = 1 mm

(D) L = 300 cm, r = 1.5 mm

Class : XI   *Chemistry*

11 Which of the following alloys does not contain Sn and Pb ?

(A) Solder   (B) Pewter

(C) Magnalium   (D) Rose metal

12 In the conversion of $K_2Cr_2O_7$ to $K_2Cr_2O_4$, the oxidation number of chromium

(A) Remains same   (B) Increases

(C) Decreases   (D) None.

13 Which one of the following properties shows that hydrogen resembles alkali metals ?

(A) It shows metallic character like alkali metals

(B) It is diatomic like alkali metals

(C) Its ionization enthalpy is of the same order as that of alkali metals

(D) When hydrogen halides and alkali metal halides are electrolysed, hydrogen and alkali metals are liberated at the cathode.

14 The correct IUPAC name of the compound is

(A) 1,2,3,4,5,6-Hexahydroxybenzene

(B) Benzene-1,2,3,4,5 6-hexol

(C) Benzene-1, 2, 3, 4,5, 6-hexanol

(D) None of these

15 A sodium vapour street lamp emits radiation of wave length 589 nm. The frequency of this radiation would be

(A) 5.1×10^{14} Hz (B) 42×10^{14} Hz

(C) 3×10^{17} Hz (D) 5×10^{9} Hz

Class : XI	General Awareness

16 Which car manufacturer makes the 'Beetle' ?

(A) Ford (B) Honda

(C) Volkswagen (D) Toyota

17 Which country's president wrote the article on PM Narendra Modi in Time Magazine and called him 'India's Reformer-in-Chief' ?

(A) Germany (B) France

(C) Canada (D) United States

18 Where is the head quarters of World Bank situated ?

(A) Washington D.C. (B) Geneva

(C) Manila (D) New York

19 If BE QUICK is coded as ZC OSGAI, what is the code of the last letter of the third word in the sentence I LOVE MY COUNTRY ?

(A) A (B) T

(C) Z (D) W

20 Which group of militants has recently destroyed the most famous temple in Syria's Palmyra ?

(A) Al Qaeda (B) ISIS

(C) Jamate-Islamia (D) Mujaheddin