GOA BOARD OF SECONDARY AND HIGHER SECONDARY EDUCATION

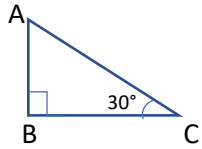
FIRST TERM EXAMINATION MODEL PAPER (2022-2023)

STD: X **MARKS: 40**

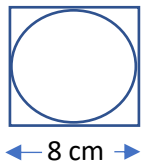
SUBJECT: MATHEMATICS-LEVEL 2 (ENGLISH) **TIME: 1 HOUR 45 MINUTES**

Instructions:

1. Each question is provided with four alternatives. Choose the correct alternative.
2. Each question carries one mark. There is no negative marking for incorrect choice.

1.	The product of zeroes of the quadratic polynomial $2x^2 - 5x + 7$ is (A) $\frac{-5}{2}$ (B) $\frac{-7}{2}$ (C) $\frac{5}{2}$ (D) $\frac{7}{2}$
2.	The prime factorisation of 504 is (A) $2^2 \times 3^3 \times 7$ (B) $2^3 \times 3^2 \times 7$ (C) $2^3 \times 3 \times 7^2$ (D) $2^2 \times 3^2 \times 7^2$
3.	If tan (A + 40)° = cot 32°, where A is an acute angle, then the value of A is (A) 18° (B) 50° (C) 58° (D) 72°
4.	The solution of the pair of linear equations $4x + y = 7$ and $x - y = 3$ is (A) $x = -2, y = -1$ (B) $x = -2, y = 1$ (C) $x = 2, y = -1$ (D) $x = 2, y = 1$
5.	From an external point Q, the length of the tangent to a circle is 15 cm. If the radius of the circle is 8 cm, then the distance of Q from the centre is (A) $\sqrt{23}$ cm (B) 7 cm (C) 17 cm (D) $\sqrt{161}$ cm
6.	The quadratic polynomial having the sum and product of its zeroes as -2 and -5 respectively is (A) $y^2 + 2y - 5$ (B) $y^2 - 2y - 5$ (C) $y^2 - 2y + 5$ (D) $y^2 + 2y + 5$
7	The distance between the points P(1, 4) and Q(4, 0) is (A) $\sqrt{41}$ units (B) 3 units (C) 5 units (D) 25 units
8	The equation which has (2, -3) as one of its solution is (A) $x - 2y = 7$ (B) $3x + 2y = 12$ (C) $5x + y = 9$ (D) $x + 2y = -4$
9	 In figure, ΔABC is right angled at B. If AB = 10 cm, then the length of BC is (A) $\frac{20\sqrt{3}}{3}$ cm (B) $\frac{10}{3}$ cm (C) $10\sqrt{3}$ cm (D) $\frac{10}{\sqrt{3}}$ cm
10	A die is thrown once. The probability of getting an odd prime number is (A) $\frac{1}{6}$ (B) $\frac{1}{3}$ (C) $\frac{1}{2}$ (D) $\frac{2}{3}$
11	The value of 'k' for which the pair of linear equations $2x + 3y = 4$ and $4x - ky = 8$ has infinitely many solutions is (A) -6 (B) $\frac{-8}{3}$ (C) $\frac{8}{3}$ (D) 6
12	The degree of the polynomial $(2p^2 - 5)(3 - 4p^3)$ is (A) 2 (B) 3 (C) 5 (D) 6
13.	 In the given figure, a circle is inscribed in a trapezium of height 14 cm. If the lengths of the parallel sides of the trapezium are 10 cm and 20 cm, then the area of the shaded region is (Take $\pi = 22/7$) (A) 56 cm² (B) 188 cm² (C) 266 cm² (D) 364 cm²
14.	If $\cos A = \frac{3}{5}$, then $\sec^2 A$ is (A) $\frac{4}{5}$ (B) $\frac{9}{25}$ (C) $\frac{5}{3}$ (D) $\frac{25}{9}$

15	The HCF of 84 and 108 is (A) 4 (B) 12 (C) 756 (D) 9072
16	The area of ΔABC with vertices A(-4, 2), B(2, 2) and C(0, -4) is (A) 6 sq. units (B) 12 sq. units (C) 18 sq. units (D) 20 sq. units
17	The polynomial which when divided by (x + 1) gives (x^2 - 2) as the quotient and 5 as the remainder is (A) $x^3 + x^2 - 2x + 3$ (B) $x^3 + 2x^2 - 3x + 5$ (C) $x^3 - x^2 - x + 2$ (D) $x^3 - x^2 - 3x + 6$
18	The simplified form of $\sqrt{1 - cos^2 A}$ is (A) sin²A (B) cos²A (C) cos A (D) sin A
19	From an external point T, TP and TQ are two tangent segments to a circle at P and Q respectively. If O is the centre of the circle and ∠POQ = 130°, then ∠PTO is (A) 25° (B) 50° (C) 65° (D) 130°
20	The pair of linear equations $4x$ – 9y = 10 and $3x$ – 6y = 5 represents (A) intersecting lines (B) parallel lines (C) coincident lines (D) skew lines
21	The probability of getting a red king from a well shuffled deck of 52 playing cards is (A) $\frac{1}{52}$ (B) $\frac{1}{26}$ (C) $\frac{3}{26}$ (D) $\frac{3}{13}$
22	If Δ ABC is right angled at C, then the value of cosec (A + B) is (A) 0 (B) 1 (C) 2 (D) not defined
23	Two concentric circles have radii 20 cm and 15 cm. Therefore, the area of the region between the outer and inner circles is (A) 175π cm² (B)625π cm² (C) 35π cm² (D) 5π cm²
24	The rational number having a terminating decimal expansion is (A) $\frac{8}{15}$ (B) $\frac{5}{7}$ (C) $\frac{23}{20}$ (D) $\frac{19}{12}$
25	If the point P(x, y) is equidistant from A(5, 1) and B(-1, 5), then (A)3x = 2y (B) x = 5y (C) 2x = 3y (D) 2x = y
26	The area covered by the minute hand of a clock of length 6 cm in 20 minutes is (A) 2π (B) 6π (C) 10π (D) 12π
27	If (-1, 3) is the solution of the equation 3x – ky = 9, then the value of k is (A) -2 (B) -4 (C) 2 (D) 4
28	The length of the longest chord of a circle of radius 5.4 cm is (A) 1.8 cm (B) 2.7 cm (C) 5.4 cm (D) 10.8 cm
29	If the product of two numbers is 756 and their HCF is 6, then their LCM is (A) 14 (B) 21 (C) 108 (D) 126
30	If a ball is drawn at random from a bag containing 7 red, 5 blue and 8 yellow balls, then the probability of getting a ball which is not yellow is (A) $\frac{2}{5}$ (B) $\frac{3}{5}$ (C) $\frac{3}{4}$ (D) $\frac{13}{20}$
31	The value of the trigonometric expression sin²20° + sin²70° - cosec²45° is (A) -1 (B) 0 (C) ½ (D) 1
32	If 5x + 7y = 15 and 7x + 5y = 21, then the value of x + y is (A) -2 (B) -3 (C) 2 (D) 3

33	The y-coordinate of the point which divides the line segment joining the points P(6, 4) and Q(2, -8) in the ratio 1 : 3 internally is (A) -5 (B) 1 (C) 3 (D) 5
34	On dividing the polynomial $(x^3 + 3x^2 - 4x - 12)$ by $(x - 2)$, the quotient is (A) $x^2 + x - 6$ (B) $x^2 + 5x - 6$ (C) $x^2 + 5x + 6$ (D) $x^2 + x + 6$
35	In a circle of radius 7 cm, if an arc subtends an angle of 90° at the centre, then the length of the arc is (Take $\pi = \frac{22}{7}$) (A) 11 cm (B) 22 cm (C) 38.5 cm (D) 77 cm
36	The pair of linear equations $kx + 6y = 7$ and $2x - 3y = 8$ has a unique solution for all the values of 'k' other than (A) k = -4 (B) k = -9 (C) k = 4 (D) k = 9
37	If A(1, 1), B(-1, 2), C(2, 5) and D(a, 4) are the vertices of a parallelogram ABCD, then the value of 'a' is (A) -4 (B) -3 (C) 3 D) 4
38	Which of the following real numbers is irrational? (A) $\sqrt{49}$ (B) $2 + \sqrt{6}$ (C) $\sqrt{3} \times 4\sqrt{3}$ (D) $(5 - \sqrt{7})(5 + \sqrt{7})$
39	If $\tan 3\theta = \sin 45° \cos 45° + \sin 30°$, then the value of θ is (A) 15° (B) 20° (C) 30° (D) 45°
40	 The area of a circle that can be inscribed in a square of side 8 cm is (A) 4π cm² (B) 8π cm² (C) 16π cm² (D) 64π cm²