GRADE 9-10/O-LEVEL

Q.1: The function $y = x^3 - 3x^2 - 9x = 5$ has a critical point at:

A	(1, -6)
B	(2, -7)
C	(3, -8)
D	(4, -9)

Q.2: A recipe requires baking a cake at 180°C for 40 minutes. If the oven temperature is changed to 200°C, how long should the cake be baked to achieve the same result?

A	30 minutes
B	32 minutes
C	35 minutes
D	36 minutes

Q.3: The trigonometric identity "$sin^2x + cos^2x = 1$" is known as:

A	Pythagorean identity
B	Double-angle identity
C	Half-angle identity
D	Co-function identity

Q.4: For a quadratic equation, if the discriminant is negative, how many real solutions does it have?

A	0
B	1
C	2
D	None of these

Q.5: Find the area of a trapezium with the lengths of its parallel sides as 6 cm and 10 cm, and the distance between them is 8 cm?

A	$64cm^2$
B	$56cm^2$
C	$48cm^2$
D	$72cm^2$

Q.6: The German mathematician Emmy Noether is famous for her groundbreaking work in which area of mathematics?

A	Algebra
B	Trigonometry
C	Geometry
D	Calculus

Q.7: In the geometric sequence: 3, 6, 12, 24, ... What is the common ratio?

A	2
B	3
C	4
D	6

Q.8: Which branch of mathematics is used in coding and decoding information in computer science?

A	Number theory
B	Trigonometry
C	Geometry
D	Calculus

Q.9: What is the negation of the statement: "All cats can fly" by using logic and truth tables concept?

A	No cats can fly
B	All cats cannot fly
C	Cats cannot fly
D	Some cats can fly

Q.10: The derivative of the constant function f(x) = 7 is

A	7
B	0
C	1
D	-7

Q.11: 8.2 × 0.41 =?

A	336.2
B	33.62
C	3.362
D	3.28

Q.12: Find the value of 'a' in the function f(x) = ax^2 - 2x + 5, given that the function has a minimum point at (1, 3)?

A	1
B	3
C	-1
D	-3

Q.13: Find the quotient of 5.092 ÷ 3.01?

A	1.692
B	1.691
C	1.690
D	1.606

Q.14: The highest point of a slope on a graph is technically termed as a?

A	Vertex
B	peak
C	crest
D	All of these

Q.15: Find the missing number in the sequence: 5, 25, 125, __, 625.

A	325
B	225
C	425
D	525

Q.16: Two complementary angles add up to ---- degrees?

A	90
B	180
C	45
D	360

Q.17: Which of the following shapes has no parallel sides?

A	parallelogram
B	rectangle
C	rhombus
D	trapezium

Q.18: The process of finding the greatest common divisor of two or more numbers is known as?

A	division
B	addition
C	factorization
D	subtraction

Q.19: Which of the following number is rational?

A	9.545454…
B	9.54542…
C	$\sqrt{3}$
D	None of these

Q.20: The shape of the Earth is?

A	square
B	spheroid
C	Oblate spheroid
D	square spheroid

Q.21: The rules of the Mathematics in the space___?

A	Remain same
B	changed
C	Partially changed
D	Cannot determined

Q.22: How many Nobel prizes are there in the field of Mathematics?

A	10
B	7
C	5
D	0

Q.23: If the measure of an angle is 102 degrees, what is its complement?

A	168 degree
B	180 degree
C	120 degree
D	-12 degree

Q.24: A point (3, 5) is translated 4 units to the right and 2 units up. What are its new coordinates?

A	(7, 3)
B	(7, 7)
C	(5, 7)
D	(1, 3)

Q.25: If 81 is the discriminant of $2x^2 + 5x - k = 0$ then the value of k is ____?

A	5
B	7
C	-7
D	2

Q.26: If the determinant of a square matrix A is zero, then the matrix is:

A	invertible
B	singular
C	transpose
D	symmetric

Q.27: What math skill is essential for architects to design and draw blueprints accurately?

A	Algebra
B	Trigonometry
C	Geometry
D	Calculus

Q.28: Identify the type of number sequence: 4, 16, 36, 64, ...?

A	Arithmetic sequence
B	Geometric sequence
C	Square number sequence
D	Fibonacci sequence

Q.29: In which century was the concept of imaginary numbers introduced by mathematicians like Gerolamo Cardano and Rafael Bombelli?

A	15th century
B	16th century
C	17th century
D	18th century

Q.30: Which type of graph represents data that change over time?

A	Bar graph
B	Pie graph
C	Line graph
D	Scatter graph

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