MATHEMATICS CLASS TEST # 03

TIME: 1 HR **MM: 100**

This paper contains 25 multiple choice questions. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct. **MARKING: (+4, –1, 0)**

Q.1 The area (in sq. units) of the bounded by the curve $x^2 = 4y$ and the straight line $x = 4y - 2$ is :

(A) 5/4 (B) 9/8 (C) 7/8 (D) ¾

Q.2 The area of the region bounded by the curves y = |x – 1| and y = 3 – |x| is-

(A) 6 sq. units (B) 2 sq. units

(C) 3 sq. units (D) 4 sq. units

Q.3 The area of the region bounded by the curves y = |x – 2|, x = 1, x = 3 and the x- axis is-

(A) 1 (B) 2 (C) 3 (D) 4

Q.4 Area of the greatest rectangle that can be inscribed in the ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$ is-

(A) 2ab (B) ab

(C) $\sqrt{ab}$ (D) $\frac{a}{b}$

Q.5 The area enclosed between the curve $y = \log_e (x + e)$ and the coordinate axes is-

(A) 1 (B) 2 (C) 3 (D) 4

Q.6 The parabolas $y^2 = 4x$ and $x^2 = 4y$ divide the square region bounded by the lines x = 4, y = 4 and the coordinate axes. If S_1, S_2, S_3 are respectively the areas of these parts numbered from top to bottom; then $S_1 : S_2 : S_3$ is-

(A) 1 : 2 : 1 (B) 1 : 2 : 3

(C) 2 : 1 : 2 (D) 1 : 1 : 1

Q.7 Let f(x) be a non-negative continuous function such that the area bounded by the curve y = f(x), x-axis and the ordinates $x = \frac{\pi}{4}$ and $x = \beta > \frac{\pi}{4}$ is $\left(\beta \sin\beta + \frac{\pi}{4}\cos\beta + \sqrt{2}\beta\right)$. Then $f\left(\frac{\pi}{2}\right)$ is-

(A) $\left(\frac{\pi}{4} + \sqrt{2} - 1\right)$ (B) $\left(\frac{\pi}{4} - \sqrt{2} + 1\right)$

(C) $\left(1 - \frac{\pi}{4} - \sqrt{2}\right)$ (D) $\left(1 - \frac{\pi}{4} + \sqrt{2}\right)$

Q.8 The area enclosed between the curves $y^2 = x$ and $y = |x|$ is:

(A) $\frac{2}{3}$ (B) 1

(C) $\frac{1}{6}$ (D) $\frac{1}{3}$

Q.9 The area of the plane region bounded by the curves $x + 2y^2 = 0$ and $x + 3y^2 = 1$ is equal to-

(A) $\frac{1}{3}$ (B) $\frac{2}{3}$

(C) $\frac{4}{3}$ (D) $\frac{5}{3}$

Q.10 The area of the region bounded by the parabola $(y - 2)^2 = x - 1$, the tangent to the parabola at the point (2, 3) and the x - axis is

(A) 3 (B) 6

(C) 9 (D) 12

Q.11 The area bounded by the curves y = cos x and y = sin x between the ordinates x = 0 and $x = \frac{3\pi}{2}$ is-

(A) $4\sqrt{2} - 2$ (B) $4\sqrt{2} + 2$

(C) $4\sqrt{2} - 1$ (D) $4\sqrt{2} + 1$

Q.12 The area of the region enclosed by the curves y = x, x = e, y = 1/x and the positive x-axis is:

(A) 1/2 square units (B) 1 square units

(C) 3/2 square units (D) 5/2 square units

Q.13 The area bounded by the curves $y^2 = 4x$ and $x^2 = 4y$ is –

(A) $\frac{32}{3}$ (B) $\frac{16}{3}$

(C) $\frac{8}{3}$ (D) 0

Q.14 The area of the region bounded by y = |x –1| and y =1 is

(A) 1 (B) 2

(C) 1/2 (D) None of these

Q.15 The area (in sq. units) of the bounded by the curve $y = x^2$ and the straight line $y = x + 2$ is :

(A) 31/6 (B) 13/6 (C) 9/2 (D) 10/3

Q.16 The area bounded by the curves y = |x| – 1 and y = – |x| + 1 is-

(A) 1 (B) 2

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

Q.17 Area of the region bounded by $y = \sqrt{x}$, x = 2y + 3 & x-axis lying in 1st quadrant is-

(A) $2\sqrt{3}$ (B) 18

(C) 9 (D) 34/3

Q.18 If area bounded by the curves $x = ay^2$ and $y = ax^2$ is 1, then a equals-

(A) $\frac{1}{\sqrt{3}}$ (B) $\frac{1}{3}$

(C) $\frac{1}{2}$ (D) 3

Q.19 Find the area between the curves $y = (x - 1)^2$, $y = (x + 1)^2$ and $y = \frac{1}{4}$

(A) $\frac{1}{3}$ (B) $\frac{2}{3}$

(C) $\frac{4}{3}$ (D) $\frac{1}{6}$

Q.20 The area (in sq. units) of the bounded by the curve $y^2 = 2x$ and the straight line $y = 4x - 1$ is :

(A) 7/32 (B) 5/64 (C) 15/64 (D) 9/32

Q.21 The area (in sq. units) of the bounded by the curve $y^2 = 2x$ and the straight line $y = x - 4$ is :

(A) 53/3 (B) 18 (C) 30 (D) 16

Q.22 The area (in sq. units) of the bounded by the curve $y = x^2 + 2$ and the straight line $y = x + 1$, $x = 0$ and $x = 3$ is :

(A) 15/4 (B) 21/2 (C) 17/4 (D) 15/2

Q.23 Area in 1st quadrant bounded by $y = 4x^2$, x = 0, y = 1 and y = 4 is-

(A) $\frac{3}{7}$ (B) $\frac{5}{7}$

(C) $\frac{7}{3}$ (D) $\frac{7}{5}$

Q.24 The area between the curves $x = 2 - y - y^2$ and y-axis, is-

(A) 9 (B) $\frac{9}{2}$ (C) $\frac{9}{4}$ (D) 3

Q.25 Area bounded by $y = x^2 + 1$ and the tangents to it drawn from the origin, is-

(A) $\frac{8}{3}$ (B) $\frac{1}{3}$ (C) $\frac{2}{3}$ (D) $\frac{10}{3}$