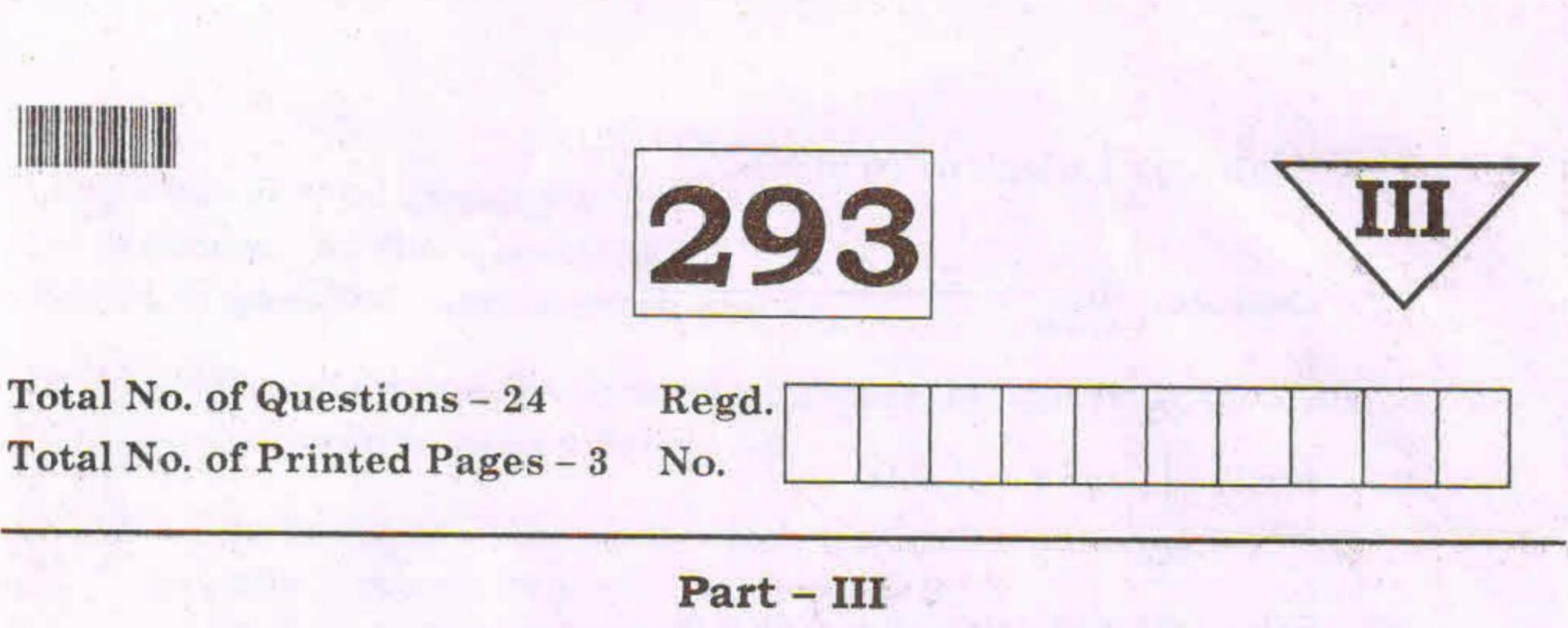
Andhra Pradesh Board Class 12 Mathematics-IIB Question Paper 2020 (March 13)



MATHEMATICS, Paper-II(B)

(English Version)

Time : 3 Hours]

[Max. Marks: 75

Note : This question paper consists of three sections A, B and C.

SECTION - A

Set the distance of the set of the set of the set

 $10 \times 2 = 20$

- I. Very short answer type questions :
 - (i) Attempt all questions.
 - (ii) Each question carries two marks.
 - 1. Find the other end of the diameter of the circle $x^2 + y^2 8x 8y + 27$ = 0 if one end of it is (2, 3).
 - 2. Define chord of contact and find the chord of contact of (1, 1) to the circle $x^2 + y^2 = 9$.
 - 3. Find k if the circles $x^2 + y^2 5x 14y 34 = 0$ and $x^2 + y^2 + 2x + 4y + k = 0$ are orthogonal.
 - 4. Find the equation of the parabola whose vertex is (3, -2) and focus is (3, 1).
 - 5. If 3x 4y + k = 0 is a tangent to the hyperbola $x^2 4y^2 = 5$, find the value of k.

6. Evaluate :
$$\int \frac{\cos x}{(1+\sin x)^2} \, \mathrm{d}x.$$

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7. Evaluate : $\int x \log x \, dx \, \text{on} \, (0, \infty)$.

Evaluate: $\lim_{n \to \infty} \frac{1 + 2^4 + 3^4 + \dots + n^4}{n^5}$ 8.

9. Find : $\int \sin^2 x \cos^4 x \, dx$.

 $\pi/2$

 $-\pi/2$

10. Solve : y(1 + x) dx + x (1 + y) dy = 0.

SECTION - B

 $5 \times 4 = 20$

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Generation of Languer Market and the loss of the last

- Short answer type questions : II.
 - Attempt any five questions. (i)
 - (ii) Each question carries four marks.
 - Find the area of the triangle formed by the tangent at $P(x_1, y_1)$ to 11. the circle $x^2 + y^2 = a^2$ with the co-ordinate axes where x, y, $\neq 0$.
 - If the two circles $x^2 + y^2 + 2gx + 2fy = 0$ and $x^2 + y^2 + 2g'x + 2f'y = 0$ 12. touch each other then show that f'g = fg'.
 - 13. S and T are the foci of an ellipse and B is one end of the minor axis. If STB is an equilateral triangle, then find the eccentricity of the ellipse.
- Find the condition for the line 14.

 $x \cos \alpha + y \sin \alpha = P$ to be a tangent to the ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$.

- Find the centre, foci, eccentricity, equation of the directrices of the 15. hyperbola $x^2 - 4y^2 = 4$.
- Find the area of the region bounded by the parabolas $y^2 = 4x$ and 16. $x^2 = 4y$.

17. Solve :
$$(x^2 + y^2)dx = 2xy dy$$
.
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SECTION – C $5 \times 7 = 35$

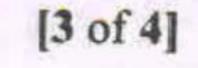
- III. Long answer type questions :
 - (i) Attempt any five questions.
 - (ii) Each question carries seven marks.
 - 18. Find the equation of the circle which passes through (4, 1), (6, 5) and having the centre on 4x + 3y 24 = 0.
 - 19. Find the equation of the circle which touches the circle $x^2 + y^2 2x$ - 4y - 20 = 0 externally at (5, 5) with radius 5.
 - 20. From an external point P tangents are drawn to the parabola $y^2 = 4ax$ and these tangents make angles θ_1 , θ_2 with its axis, such that $\tan \theta_1 + \tan \theta_2$ is a constant b. Then show that P lies on the line y = bx.

21. Evaluate :
$$\int \frac{1}{1 + \sin x + \cos x} dx$$
.

22. If $I_n = \int \cos^n x \, dx$, then show that $I_n = \frac{1}{n} \cos^{n-1} x \sin x + \frac{n-1}{n} I_{n-2}$. (where $n \ge 2$)

23. Show that :
$$\int \frac{x}{\sin x + \cos x} \, dx = \frac{\pi}{2\sqrt{2}} \log (\sqrt{2} + 1).$$

24. Solve : $x \log x \frac{dy}{dx} + y = 2 \log x$.



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