MATHS

BOOKS - VGS PUBLICATION-BRILLIANT

MATHEMATICS - II (B) MODEL PAPER 10

Section A I Very Short Answer Type Questions

1. Find the value of aif $2x^2 + ay^2 - 3x + 2y - 1 = 0$ represents a circle and also find its radius

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2. If the length of the tangent from $(5, 4)$ to the circle $x^2 + y^2 + 2ky = 0$ is 1 the n find k.

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3. The length of the common chord of the two circles $(x-a)^2 + (y-b)^2 = c^2, (x-b)^2 + (y-a)^2 = c^2$ is

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4. Find the coordinates of the points on the parabola $y^2 = 2x$ whose focal distance is $\frac{5}{2}$.

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5. Define rectangular hyperbola and find its eccentricity.

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6. $\int_1^2 \frac{e^x(1 + x \log x)}{x} dx =$

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7. $\int \frac{\sin\left(\tan^{-1} x\right)}{1+x^2} dx, x \in R.$

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8. Evaluate $\int_0^{\pi/2} \sin^5 x \cos^4 x dx$

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9. Evaluate the following integrals

(ii) $\int_0^2 |1-x|dx$

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10. Form the differential equation corresponding to $y = A\cos 3x + B\sin 3x$, where A and B are parameters.

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Section B Ii Short Answer Type Questions

1. Find the equation of the circle whose centre lies on the X- axis and passing through $(-2, 3)$ and $(4, 5)$

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2. If x + y = 3 is the equation of the chord AB of circle $x^2 + y^2 - 2x + 4y - 8 = 0$, find the equation of the circle having $\overline{AB}$ as diameter.

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3. Find the equation of the tangent and normal to the ellipse $9x^2 + 16y^2 = 144$ at the end of the latus rectum in the first quadrant.

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4. (i) Find the equations of the tangents to $9x^2 + 16y^2 = 144$, which makes equal intercepts on the coordinate axes.

(ii) Find the value of k if 4x + y + k = 0 is a tangent to the ellipse $x^2 + 3y^2 = 3$

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5. Find the equations of the tangents to the hyperbola $3x^2 - 4y^2 = 12$ which are (i) parallel and (ii) perpendicular to the line y = x - 7

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6. Find the equation of the tangents to the hyperbola $3x^2 - 4y^2 = 12$ which are

Perpendicular to the line $y = x - 7$

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7. Evaluate the following integrals

(iii) $\int_0^{\frac{\pi}{2}} \frac{1}{4+5\cos x}dx$

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8. The solution of $(xy^2+x)dx+(yx^2+y)dy=0$ is

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Section C Iii Long Answer Type Questions

1. If (2,0),(0,1),(4,5) and (0,c) are concyclic then find c.

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2. Find the transberes common tangents of the circles $x^2 + y^2 - 4x - 10y + 28 = 0$ and $x^2 + y^2$

$+4x - 6y + 40.$

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3. Evaluate the integerals.

$$\int \frac{2\cos x + 3\sin x}{4\cos x + 5\sin x} dx$$

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4. Evaluate $\int \tan^6 x dx$

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5. Derive the standard form of the parabola.

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6. Evaluate

(i) $\int_0^{\pi} \frac{x \sin x}{1+\sin x} dx$

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7. The solution of $\left(1+y^2\right) dx = \left(\tan^{-1} y - x\right) dy$ is

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