QP CODE: 21102420

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B.Sc DEGREE (CBCS) EXAMINATIONS, OCTOBER 2021

First Semester

Complementary Course - MM1CMT01 - MATHEMATICS - PARTIAL DIFFERENTIATION, MATRICES, TRIGONOMETRY AND NUMERICAL METHODS

(Common to B.Sc Chemistry Model I, B.Sc Chemistry Model II Industrial Chemistry, B.Sc Chemistry Model III Petrochemicals, B.Sc Electronics and Computer Maintenance Model III, B.Sc Food Science & Quality Control Model III , B.Sc Geology and Water Management Model III, B.Sc Geology Model I, B.Sc Physics Model I, B.Sc Physics Model II Applied Electronics, B.Sc Physics Model II Computer Applications & B.Sc Physics Model III Electronic Equipment Maintenance)

2017 Admission Onwards

71746F8A

Time: 3 Hours Max. Marks : 80

Part A

Answer any **ten** *questions.*

Each question carries **2** *marks.*

1. Find an equation for the level curve of the function $f(x, y) = \sqrt{x^2 - 1}$ that passes through the point $(1, 0)$.
2. The plane $x = 1$ intersects the paraboloid $z = x^2 + y^2$ in a parabola. Find the slope of the tangent to the parabola at $(1, 2, 5)$.
3. Write a chain rule formula for the derivative $\frac{dz}{dt}$ if $z = f(x, y)$, $x = g(t)$, $y = h(t)$.
4. Reduce the matrix $A = \begin{bmatrix} 3 & 6 \\ 4 & 3 \end{bmatrix}$ into its normal form.
5. Write the matrix equation of the system of linear equations
   $2x + 3y + 4z = 0, 4x + 3y + 4z = 0, 5x - 2y + 4z = 0$
6. Define characteristic root of a square matrix. Give examples.
7. Express $\cos 3\theta$ in terms of $\cos \theta$.
8. Expand $\sin^4 \theta$ in a series of cosines of multiples of θ.
9. Prove that $\cosh(x - y) = \cosh x \cosh y - \sinh x \sinh y$.
10. Write the binomial expansions of $(1 + x)^n$ and $(1 - x)^{-n}$ when n is a rational number.
11. Find a real root of the equation $x = (5 - x)^{1/3}$ using the iteration method, by taking the first approximation as $x_0 = 1.5$.
12. Give the first and second approximations to the root of an equation $f(x) = 0$, using the Newton - Raphson method.

(10×2=20)

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SA Dillow

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Polytechnic 2013 First Sem Maths Question Paper Book Review: Unveiling the Power of Words

In a world driven by information and connectivity, the ability of words has be more evident than ever. They have the ability to inspire, provoke, and ignite change. Such is the essence of the book **Polytechnic 2013 First Sem Maths Question Paper**, a literary masterpiece that delves deep in to the significance of words and their impact on our lives. Published by a renowned author, this captivating work takes readers on a transformative journey, unraveling the secrets and potential behind every word. In this review, we shall explore the book is key themes, examine its writing style, and analyze its overall affect readers.

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