



21102420

QP CODE: 21102420

Reg No : _____

Name : _____

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

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Time: 3 Hours

Max. Marks : 80

Part A*Answer any ten questions.**Each question carries 2 marks.*

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

(10×2=20)



Polytechnic 2013 First Sem Maths Question Paper

Jiyuan Zhang



Polytechnic 2013 First Sem Maths Question Paper:

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Table of Contents Polytechnic 2013 First Sem Maths Question Paper

1. Understanding the eBook Polytechnic 2013 First Sem Maths Question Paper
 - The Rise of Digital Reading Polytechnic 2013 First Sem Maths Question Paper
 - Advantages of eBooks Over Traditional Books
2. Identifying Polytechnic 2013 First Sem Maths Question Paper
 - Exploring Different Genres
 - Considering Fiction vs. Non-Fiction
 - Determining Your Reading Goals
3. Choosing the Right eBook Platform
 - Popular eBook Platforms
 - Features to Look for in an Polytechnic 2013 First Sem Maths Question Paper
 - User-Friendly Interface
4. Exploring eBook Recommendations from Polytechnic 2013 First Sem Maths Question Paper
 - Personalized Recommendations
 - Polytechnic 2013 First Sem Maths Question Paper User Reviews and Ratings
 - Polytechnic 2013 First Sem Maths Question Paper and Bestseller Lists

5. Accessing Polytechnic 2013 First Sem Maths Question Paper Free and Paid eBooks
 - Polytechnic 2013 First Sem Maths Question Paper Public Domain eBooks
 - Polytechnic 2013 First Sem Maths Question Paper eBook Subscription Services
 - Polytechnic 2013 First Sem Maths Question Paper Budget-Friendly Options
6. Navigating Polytechnic 2013 First Sem Maths Question Paper eBook Formats
 - ePub, PDF, MOBI, and More
 - Polytechnic 2013 First Sem Maths Question Paper Compatibility with Devices
 - Polytechnic 2013 First Sem Maths Question Paper Enhanced eBook Features
7. Enhancing Your Reading Experience
 - Adjustable Fonts and Text Sizes of Polytechnic 2013 First Sem Maths Question Paper
 - Highlighting and Note-Taking Polytechnic 2013 First Sem Maths Question Paper
 - Interactive Elements Polytechnic 2013 First Sem Maths Question Paper
8. Staying Engaged with Polytechnic 2013 First Sem Maths Question Paper
 - Joining Online Reading Communities
 - Participating in Virtual Book Clubs
 - Following Authors and Publishers Polytechnic 2013 First Sem Maths Question Paper
9. Balancing eBooks and Physical Books Polytechnic 2013 First Sem Maths Question Paper
 - Benefits of a Digital Library
 - Creating a Diverse Reading Collection Polytechnic 2013 First Sem Maths Question Paper
10. Overcoming Reading Challenges
 - Dealing with Digital Eye Strain
 - Minimizing Distractions
 - Managing Screen Time
11. Cultivating a Reading Routine Polytechnic 2013 First Sem Maths Question Paper
 - Setting Reading Goals Polytechnic 2013 First Sem Maths Question Paper
 - Carving Out Dedicated Reading Time
12. Sourcing Reliable Information of Polytechnic 2013 First Sem Maths Question Paper
 - Fact-Checking eBook Content of Polytechnic 2013 First Sem Maths Question Paper
 - Distinguishing Credible Sources
13. Promoting Lifelong Learning

- Utilizing eBooks for Skill Development
- Exploring Educational eBooks

14. Embracing eBook Trends

- Integration of Multimedia Elements
- Interactive and Gamified eBooks

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