

**B.B.M. COLLEGE BALIAPUR  
DHANBAD**

Internal Exam – 2022

SEMESTER – VI

Class – B.Sc. (Hons) Time – 1hr

Sub. – MATH (Core-13) F.M. – 20

Answer any three questions.

- 1 Define metric space with example.
- 2 State and prove Banach fixed theorem.
- 3 Define complete metric space.
- 4 Define analytic function.
- 5 State and prove Cauchy-Riemann equations.

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Sub. – Math (DSE- 3) F.M. – 20

Answer any three questions.

- 1 Solve the equation  $x^3 - 30x - 133 = 0$  by Cardon's method. Or/  
Solve:  $X^3 + 6X^2 + 9X + 4 = 0$ . By Cardon's method.
- 2 State and prove Descartes's rule of signs.
- 3 Calculate the values of the following symmetric functions for the cubic equation  $x^3 + px^2 + qx + r = 0$  whose roots are  $\alpha, \beta, \gamma$   
(i)  $\sum \alpha^3$  (ii)  $\sum \alpha^2 \beta^2$
- 4 Solve the equation  $4X^4 - 28X^3 + 51X^2 - 7X - 20 = 0$  whose roots are in A.P
- 5 Find Cardon's method of solving the cubic equation.

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Sub. – Math (Core-14) F.M. – 20

Answer any three questions.

- 1 Define principal ideal.
- 2 Define integral domain
- 3 State and prove Cayley Hamilton Theorem..
- 4 Define inner product spaces.
- 5 Explain dual space and dual basis.

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SEMESTER – VI

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Sub. – Math (DSE- 4) F.M. – 20

Answer any three questions:-

- 1 State and prove general condition of equilibrium of coplanar forces.
- 2 State and prove principle of virtual work done by a system of coplanar forces. acting on a particle.
- 3 Derive Cartesian equation of common catenary.
- 4 Find the equation of path, also find the radial and transverse acceleration.
- 5 Find the equation of central axes of any given system of forces.

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**SEMESTER – VI**

**Class – B.Sc. (GEN)**

**Time – 1hr**

**Sub. – Math**

**F.M. – 10**