

INTERNAL EXAMINATION-2024
SEM-VI (PCC)
MATH -G-SEC-T-4
F.M- 10 TIME- 1H

1. Answer any two questions from the following: 5x2

- a) Convert 77_{10} into binary number system.
- b) Convert 1011101_2 to its equivalent octal form.
- c) Define Header file and Control string with example.
- d) Write on Array in c programming.

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INTERNAL EXAMINATION-2024

SEM-VI

MATH -H-CC-T-13

F.M- 10 TIME- 1H

1. Answer any two questions from the following:

a) Using Cauchy's integral formula solve

$$\oint \frac{dz}{z-2} \text{ over } |z|=3.$$

b) State and prove Cauchy-Riemann partial differential equation.

c) Prove that the space of $C[0, 1]$ of all continuous real valued function on $[0, 1]$ on $[0, 1]$ with metric d defined by $d(f, g) = \sup |f(x)-g(x)|: x \in [0,1]$ is a complete metric space.

b) Show that every open sphere is an open set but the converse is not true.

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SRIPAT SINGH COLLEGE
DEPARTMENT OF MATHEMATICS
INTERNAL EXAMINATION, 2024
SEMESTER –VI(HONOURS) ,PAPER: MATH-H-DSE-T-4A(Mechanics)
FULL MARKS: 15 , TIME : 1 HOUR

Answer any two : $7.5 \times 2 = 15$

1. Show that the three coplanar forces P, Q, R acting at the points A, B, C are in astatic equilibrium if they meet at a point on the circumcircle of the triangle ABC and if $P:Q:R=a:b:c$, where a, b, c are the sides of the triangle ABC.
2. A sphere of weight W and radius r lies within a fixed spherical shell of radius R, and a particle of weight w is attached to its highest point, show that the equilibrium is stable if $W > \frac{R-2r}{r} w$.
3. Prove that the depth of centre of pressure of a plane area immersed in a fluid under the action of gravity below the centre of gravity of the area is $\frac{K^2}{\bar{h}}$. [Notations are usual]
4. A liquid of given volume V is at rest under the forces $X = \frac{-\rho g x}{a^2}$, $Y = \frac{-\rho g y}{b^2}$, $Z = \frac{-\rho g z}{c^2}$. Find the pressure at any point of the liquid and the surfaces of equal pressure.

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SRIPAT SINGH COLLEGE
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INTERNAL EXAMINATION, 2024
SEMESTER –VI(GENERAL) ,PAPER: MATH-G-DSE-T-02(Numerical Methods)
FULL MARKS: 15 , TIME : 1 HOUR

Answer any two : $7.5 \times 2 = 15$

1. Derive Newton's forward interpolation formula.
2. Derive Simpson's one –third rule for numerical integration.
3. Derive the iteration formula for Newton –Raphson method to solve an equation $f(x)=0$.

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