VIVEKANANDA COLLEGE, ALIPURDUAR

SEMESTER- 2ND

SUB- MATHEMATICS

SESSION-2024-2025

COURSE-MINOR

PROJECT

MARKS-30

ANSWER FOLLOWING QUESTIONS

1. **State and proof De Moivre's theorem.**

2. **Apply Descartes rule of signs to show that the equation $x^4 + 12x - 5 = 0$ has two real roots and two non real roots.**

3. **If z and z_1 are two complex numbers such that $|z_1|$=1. If z =$\frac{1+z_1}{1-z_1}$ then show that z lies on the imaginary axis.**

VIVEKANANDA COLLEGE, ALIPURDUAR

SEMESTER- 6th

SUB- MATHEMATICS

COURSE-SEC

PROJECT

MARKS-30

ANSWER FOLLOWING QUESTIONS $3 \times 10 = 30$

1. **Define and give an example of co-planar forces.**
2. **Prove that total energy of a particle falling free under gravity is constant.**
3. **Show that change in K.E. of a particle is equal to its work done.**
4. **The path of a particle is circle. Find its radial acceleration.**
5. **Define Virtual work.**
6. **Prove that the rate of change of K.E. of a moving particle is equal to power of impressed force.**
7. **The path of a particle is circle. Find its radial and transverse acceleration**
8. **Prove that a planet has only radial acceleration.**
9. **Prove that the usual notation h=vp.**
10. **The speed v of a particle along x axis is given by $v2 = 16 - x2$. Prove that the motion is simple harmonic motion and find its amplitude.**

VIVEKANANDA COLLEGE, ALIPURDUAR

PROJECT

SEMESTER- 6TH

SUB- MATHEMATICS

COURSE-DSE

MARKS-30

ANSWER THE FOLLOWING QUESTIONS 32

1. Find all the basic

VIVEKANANDA COLLEGE, ALIPURDUAR

PROJECT

SEMESTER- 2ND

SUB- MATHEMATICS

PAPER-IDC

MARKS-30

ANSWER THE FOLLOWING QUESTIONS

1. Define Equivalence relation and give an example.

2. How many relations can be defined on a ser with n elements.

3. State and proof De Morgan's law.

4. Find all the basic solutions of the system

$$2x + y + 4z = 11$$
$$3x + y + 5z = 14$$

5. Define Basic feasible solutions . Find the basic feasible solutions of the following set of equations

$$2x + 3y - z + 4w = 8$$
$$x - 2y + 6z - 7w = -3$$

Where $x, y, z, w \geq 0$