S3-203

B.Sc. HONS. (2nd SEMESTER) EXAMINATION, 2021

MATHEMATICS

PAPER: S-II

DIFFERENTIAL EQUATION, VECTOR CALCULUS AND ANALYSIS AND ELEMENTARY

MAX MARKS: 150

Note: Attempt all the questions.

Q.1. Solve differential equation

$$\left(1+x^2\right)\frac{dy}{dx}+2xy=\cos x$$

Q.2. Solve

$$\frac{d^2y}{dx^2}+4\frac{dy}{dx}+3y=e^{-3x}$$

Q.3. State and prove langrange's theorem.

Q.4. If $r^2=x^2+y^2+z^2$ find $grad\ r^n$

Q.5. A homomorphism $f=G\to G'$ is an isomorphism if and only if $\ker f=\{e\}$