

KHATRA ADIBASI MAHAVIDYALAYA
INTERNAL ASSESSMENT 2nd SEM 2020
SUB: MATH (HONS)

PAPER: SH/MTH/202/C-4

FM-20 10

1. Answer any two question.

$2 \times 2 = 4$

- (a) Find the Lipschitz constant, if the given function satisfies Lipschitz condition, $f(t, x) = tx^2$, on region $|t| \leq 1, |x| \leq 1$
- (b) Find the Wronskian of the set $[1-x, 1+x, 1-3x]$
- (c) Solve, $-x^2 \frac{d^2y}{dx^2} - 2 \frac{dy}{dx} = 0$
- (d) write down complementary function of $(D^2+4)(D-2)y = e^{3x}$

2. Answer any two question

$2 \times 3 = 6$

- (a) Solve, $x^2 \frac{d^2y}{dx^2} + x \frac{dy}{dx} - y = x^2 e^{2x}$
- (b) Solve, $(1+x)^2 \frac{d^2y}{dx^2} + (1+x) \frac{dy}{dx} + y = 4 \cos \log(1+x)$
- (c) Solve this equation $x^2 \frac{d^2y}{dx^2} + x \frac{dy}{dx} - y = 0$, in terms of known integral, given that $(x + \frac{1}{x})$ is one integral.
- (d) Solve $(1-x^2) \frac{d^2y}{dx^2} + x \frac{dy}{dx} - y = x(1-x^2)^{\frac{3}{2}}$, in terms of known integral.