

# CITY COLLEGE

Internal Assessment - 2021-22

F.M = 10

B.Sc, Mathematics (GEN), Sem - I

MTMG, Paper - GE1

Subject: Mathematics - GE1

[Answer all the following Questions]

1. The conjugate of the complex number  $\frac{2i}{1+\sqrt{3}i}$  is

- (a)  $\frac{2}{1-\sqrt{3}i}$       (b)  $\frac{1+\sqrt{3}i}{2i}$       (c)  $\frac{-2}{\sqrt{3}+i}$       (d)  $\frac{1-\sqrt{3}i}{2i}$       (1)

2. The number of real roots of  $x^5 + 3x^3 + x^2 + 3 = 0$  is

- (a) 0      (b) 5      (c) 3      (d) 1      (2)

3. The function  $f(x) = \begin{cases} x \sin \frac{1}{x} & , x \neq 0 \\ 0 & , x = 0 \end{cases}$  is

- (a) continuous everywhere      (b) continuous only at  $x=0$   
(c) not continuous at  $x=0$       (d) nowhere continuous      (2)

4.  $\lim_{x \rightarrow 0^+} \frac{1}{x} \sin \frac{1}{x}$

- (a) is  $\infty$       (b) is 1  
(c) is 0      (d) does not exist      (1)

5. The solution of the differential equation

$$x^2 \frac{dy}{dx} - 3x \frac{dy}{dx} + 4y = 0 \text{ is}$$

- (a)  $y = (c_1 + c_2 x) e^{2x}$       (b)  $y = (c_1 + c_2 x) e^x$   
(c)  $y = (c_1 + c_2 x) \log x$       (d)  $y = (c_1 + c_2 \log x) x^2$       (2)

6. The values of  $k$  so that the equation

$x^2 - kxy + 2y^2 + 3x - 5y + 2 = 0$  represents pair of straight lines are

- (a)  $\frac{3}{2}, 9$       (b)  $\frac{3}{2}, -3$   
(c)  $\frac{9}{2}, 3$       (d)  $\frac{9}{2}, -3$       (2)