Repeat

Roll. No._____

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FY BCA, Semester I, Semester End Examination, October 2019

SUBJECT: Basic Mathematics

Timing: 2 Hours Marks: 50

Instructions:

1. **All questions are compulsory.**
2. **Figures to the right indicate maximum marks.**
3. **Start each question on fresh page.**

Q1. Attempt the following:

A) Answer the following: **[1x5=5 Marks]**

i) Find the GCD of 414 and 662.

ii) If $\sqrt{2n} = 64$, find n.

iii) Find the distance between (3, 1) and (7, 4).

iv) In an A.P. if a=6, d=7/19. Find t_{20}.

v) If a=2+7i and b=5-12i, find a+b.

B) Answer the following: **[1x5=5 Marks]**

i) Convert 200° into radian measure

ii) If set A= {2, 4, 6} and set B= {1, 3}, find their Cartesian product AXB.

iii) Differentiate the functions, y=cosx and y=cotx

iv) If for a G.P. a=2 and r=3/2, find t_3.

v) Find the height of right triangle whose base is 12cm, and its area is 36cm^2.

Q2. Answer any two of the following questions: [5x2=10 Marks]

A) Solve for x, $\log_x(8x - 3) - \log_x 4 = 2$

B) Find volume of hemisphere whose surface area is 50cm^2.

C) Use De Moivre's theorem to prove $\sin 2\theta = 2 \sin\theta \cos\theta$

Q3. Answer any two of the following questions: [5x2=10 Marks]

A) Find the sum to n terms of the series 4+44+444+.....

B) Show that $\frac{\sin\theta}{1-\cot\theta} + \frac{\cos\theta}{1-\tan\theta} = \sin\theta + \cos\theta.$

C) Find the domain and range of the function:

$$f(x) = \sqrt{(2x+4)}.$$

Q4. Answer any two of the following questions: [5x2=10 Marks]

A) Examine if the following function is continuous or not, at x=1. In case the function is discontinuous state whether the discontinuity is of removable, and if removable redefine the function suitably to make it continuous.

$$f(x) = \begin{cases} \dfrac{x^2-4x+3}{x^2-1} & x \neq \pm 1 \\ 2 & x = \pm 1 \end{cases}$$

B) Differentiate the following w.r.t. x:

$$y = 3x^2 logx$$

C) A wire in form of circle of radius 3.5m is bent in form of rectangle whose length and breadth are in ratio 6:5. What is the area of rectangle?

Q5. Answer any two of the following questions: [5x2=10 Marks]

A) Find the cofactor matrix of $A=\begin{bmatrix} 1 & 0 & 2 \\ 2 & 3 & 3 \\ 5 & 7 & 4 \end{bmatrix}$.

B) Evaluate the following integral:

$$\int \frac{2x^2+4x+5}{x}$$

C) Find fog and gof for the following functions:

i) $f(x) = x^2$, $g(x) = x-7$.

ii) $f(x) = 3x-9$, $g(x) = x+2$