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GOPAL GOVIND POY RAITURCAR COLLEGE OF COMMERCE AND ECONOMICS
PONDA-GOIA

B.C.A. (SEMESTER-I) EXAMINATION, OCTOBER 2014
BASIC MATHEMATICS

Duration: 2 hrs.

Marks: 50

Q.1] Answer the following questions.

- 1) Find the distance between the two points (-2,5) and (3,-7). (1)
- 2) Find the slope of the line joining the two points (1,2) and (3,4). (2)
- 3) Write the equation of x-axis. (1)
- 4) If $f(x) = x^2 - 5x + 2$ then find $f(1)$. (1)
- 5) $\lim_{x \rightarrow a} \frac{x^n - a^n}{x - a} = ?$ ($a > 0$) (1)
- 6) Define transpose of a matrix. (1)
- 7) If $z = x + iy$ is a complex number then its complex conjugate is _____ (1)
- 8) A complex number is a number of the form $x + iy$ where x and y are _____ and $i =$ _____ (2)

Q.2.A] Show that (12,8), (-2,6) and (6,0) are the vertices of a right angled triangle. (5)

B] Find the equation of a line passing through the point (1,2) and perpendicular to the line $2x + y = 3$ (5)

OR

Q.2.X] Find the equation of a line passing through the point (4,1) and having slope 3. (5)

Y] Find the domain of the following function. $\frac{x}{x^2 - 6x + 9}$ (5)

Q.3.A] Evaluate the following limits. $\lim_{x \rightarrow 3} \left[\frac{1}{x-3} - \frac{3}{x^2 - 3x} \right]$ (5)

B] If the function $f(x) = \frac{x^2 - 25}{x - 5}$ if $x \neq 5$
 $= C$ if $x = 5$, is continuous what is the value of C? (5)

OR

Q.3.X] Locate the points of discontinuity of the following function. (5)

$$f(x) = \frac{x^2 - 4}{x - 5} \text{ if } x \neq 2$$

$$= 10 \text{ if } x = 2$$

Y] Evaluate the following limits. $\lim_{x \rightarrow 1} \left[\frac{x-1}{2x^2 - 7x + 5} \right]$ (5)

Q.4.A] Find the Adjoint of the matrix $A = \begin{bmatrix} 1 & 2 & 3 \\ -1 & 4 & -3 \\ 5 & 1 & 6 \end{bmatrix}$ (5)

contd...2/-

B] Solve the following equations by using Cramer's rule (5)
 $5x + 2y = 7, 6x - 5y = 38$

OR

Q.4.X] Simplify the following. (5)
 $\frac{4+3i}{3-4i} + \frac{3-4i}{4+3i}$

Y] Use matrix method to solve the system of equations $4x - 3y = 11, 3x + 7y = -1$ (5)

Q.5.A] Differentiate the following function with respect to x (5)
 $y = \frac{2x+5}{3x-2}$

B] Find the inverse of the matrix $A = \begin{bmatrix} 4 & 1 & 2 \\ 0 & 1 & 0 \\ 8 & 4 & 5 \end{bmatrix}$ (5)

OR

Q.5.X] Simplify the following. (5)
 $(3+i) - [(1+i)(4+2i)]$

Y] Differentiate the following function with respect to x (5)
 $y = (2\cos x + x^2 + 5(x^4 - x))$

.....ALL THE BEST.....