

Vidya Vikas Mandal's
Shree Damodar College of Commerce & Economics, Margao-Goa
F.Y.B.C.A, Semester - I, End Semester Examination, October 2015

BASIC MATHEMATICS (BCA 104)

Duration: 2 hours

Marks: 50

Instruction: 1) All questions are compulsory
2) Figures to the right indicate full marks
3) Start each new question on fresh page
4) Logarithmic tables will be provided if required.

Q1.A) Answer the following:

(5X1=5Marks)

- a) Evaluate $(\tan 65^\circ / \cot 25^\circ) =$
- b) Evaluate $\sin \theta \cot \theta =$
- c) Find modulus of z , $z = 3 - i$
- d) Write the conjugate of $3i$ ($2 + 3i$)
- e) Find perimeter of square each side is of length 6 cm

Q1.B) Answer the following:

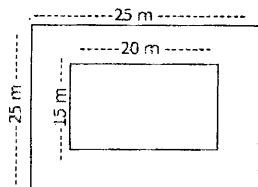
(5X1=5Marks)

- a) Find determinant of $A = \begin{vmatrix} 1 & 3 \\ 3 & -1 \end{vmatrix}$
- b) Find 5th term in an A.P. series with 1st term = 3 and common difference = 2
- c) Find 6th term in an G.P. series with 1st term = 4 and common ratio = 3
- d) Using log, find x where $3^x = 27$
- e) Multiply $3xy$ and $6xy^3$

Q2.) Answer any 2:

(5X2=10 Marks)

- a) If $A = \begin{bmatrix} 2 & 3 \\ 1 & 1 \end{bmatrix}$, find $A^2 - 3A - 2I$
- b) Using determinant solve the system of equations: $5x + 7y = -2$ and $4x + 6y = 4$.
- c) Mrs. Naik has a square plot with measurement as shown in the fig. She wants to construct a house in middle of the plot. A garden is developed around the house. Find the total cost of developing a garden around the house at rate of Rs 60 per metre .



Q3.) Answer **any 2**:

(5X2=10 Marks)

- a) Find $\lim_{x \rightarrow 0} \frac{4^x - 3^x}{x}$
- b) Examine the continuity of f at $x = 2$ for $f(x) = 2x$; if $x < 2$
 $= 2$; if $x = 2$
 $= x^2$; if $x > 2$

If f is discontinuous, redefine the function.

- c) Find domain and range for the function, $y = \sqrt{4 - x^2}$

Q4.) Answer **any 2**:

(5X2=10 Marks)

- a) Integrate y w.r.t x where $y = x^3 e^{2x}$
- b) Integrate y w.r.t x where $y = x \sec^2 x$
- c) Find the equation of line passing through the point $(7, -3)$ and perpendicular to the line passing through points $(-1, 2)$ and $(5, 11)$

Q5.) Answer **any 2**:

(5X2=10 Marks)

- a) Using De Moivre's Theorem, find $(1 + \sqrt{3}i)^6$
- b) If $x + iy = \frac{a+ib}{a-ib}$, prove that $x^2 + y^2 = 1$
- c) Differentiate y w.r.t x such that $y = (2x^3 + \log x)(\cos x + \sin x)$