

**BHARTIYA VIDYA MANDIR (BVM) COLLEGE OF MGMT. EDUCATION**

**QUESTION BANK**

**BCA- II SEM (JU)**

**201 –ADVANCED CALCULUS**

**Note : All questions carry 2.5 marks.**

- Q.1 Find the envelope of the family of straight line  
 $Y=mx+\sqrt{(a^2m^2+b^2)}$
- Q.2 Given that  $x^{2/3} + y^{2/3} = c^{2/3}$  is the envelope of  $x/a + y/b = 1$ . Find the necessary relation between a & b
- Q.3 Find the envelope of the family of curve  $x^2/a^2 + y^2/K^2 - \alpha^2 = 1$ , Where  $\alpha$  is the parameter.
- Q.4 Find the evolute of the hyperbola  $2xy = a^2$
- Q.5 Discuss the maximum and minimum of  $x^3 + y^3 - 3xy$
- Q.6 Discuss the maxima and minima of :  
 $u(x,y) = \cos x \cos y \cos (x+y)$ .
- Q.7 To prove that  $B(m,n) = \Gamma(m) \Gamma(n) / \Gamma(m+n)$ ,  $m,n > 0$
- Q.8 Prove that  $B(m,n) = B(m+1,n) + B(m,n+1)$ , where  $m,n > 0$
- Q.9  $\int_0^{\infty} e^{-x^2} dx = \sqrt{x}/2$
- Q.10  $\int_0^2 (8-x^3)^{-1/3} dx = 2\pi/3\sqrt{3}$

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