

(4)

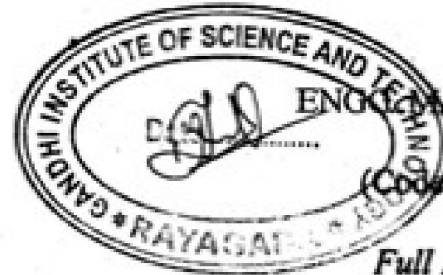
(c) Find the term independent of x in the expansion of $\left(x^2 + \frac{1}{x}\right)^9$. 7

7. (a) If $1, w, w^2$ are three cube roots of unity, then find the value of $(1-w)(1-w^2)(1-w^4)(1-w^5)$. 2

(b) Obtain the equation of a circle passing through the points $(0, 0), (6, 0), (0, 8)$. 5

(c) If $(a^2 + b^2) \sin(A - B) = (a^2 - b^2) \sin(A + B)$, then prove that the triangle is either isosceles or right angled. 7

Total Pages - 4 I - Sem / COMMON / 2014 (W) (New)



ENGINEERING MATHEMATICS-I

(Code - BST-103)

Full Marks : 70

Time : 3 hours

Answer any five questions

Figures in the right-hand margin indicate marks

1. (a) Find the conjugate of $\frac{1-i}{3+i}$. 2

(b) Find the maximum and minimum value of $2 + 3\sin x + 4\cos x$. 5

(c) Find the inverse of the matrix

$$\begin{bmatrix} 1 & 2 & 3 \\ 2 & 1 & 4 \\ 1 & 0 & 2 \end{bmatrix} \quad 7$$