 Mahatma Gandhi Mission's College of Engineering & Technology

Kamothe , Navi Mumbai

Class: S.E.CHEMICAL/IT /COMPUTERS Subject: AM IV

Assignment No. : 3 (Complex Integration): Descriptive Questions:

Qn. No.	Questions	Module	C.O	Level
1	Using Cauchy's Residue theorem evaluate $\int_{-\infty}^{\infty} \frac{x^2}{x^6+1} dx$	6.3	6	5
2	Use Taylor's or Laurent's series to expand f(z) = $\frac{z-1}{z^2+2z-3}$dz indicating the regions of convergence	6.2	6	4
3	Evaluate $\int_0^{2\pi} \frac{d\theta}{5+3\,Cos\,\theta}$	6.4	6	5
4	Determine the residue of f(z) = $\frac{z^3}{(z-1)^4(z-2)(z-3)}$ at its simple poles	6.3	6	4
5	Evaluate the following integral using Residue theorem $\int_c \frac{4-3z}{z(z-1)(z-2)}$ dz	6.3	6	5
6	Evaluate $\int_c \frac{z^2}{(z-1)^2(z+1)}$dz where c is I zI =2 using Residue theorem	6.3	6	4
7	Find Laurent's series of f(z) = $\frac{2}{(z-2)(z-1)}$, indicating the regions of convergence	6.2	6	4
8	Expand f(z)= $\frac{z^2-1}{z^2+5z+6}$ along z = 1	6.2	6	4
9	Expand Cos z as Taylor's series at z = $\boldsymbol{\pi}/2$	6.2	6	3

10	Determine the nature of poles and find the residue at each pole (i) $\frac{ze^z}{(z-a)^3}$ (ii) $\frac{1-e^{2z}}{z^3}$	6.3	6	3