GIET Main Campus (Autonomous)
Gunupur-765 022

Reg.No.: | | | | | | | | | | | | |

B.TECH. DEGREE EXAMINATION-NOV-DEC-2018
End Semester Examination
BBSBS3040-Engineering Mathematics-III
(Regulations 2017)

Time : 3 Hours **Maximum : 100 Marks** **Question Code:10812**
Answer ALL Questions

PART A - (10 X 2 = 20 Marks)

1 a) The modulus and argument of $z = \sqrt{3}$ is _____. [CO1][PO1]

a) $\sqrt{3}$

b) $-\sqrt{3}$

c) 3

d) -3

b) An Analytic function with constant modulus is _____. [CO1][PO1]

a) real

b) imaginary

c) constant

d) none of the these

c) The order of zero of the function $f(z) = (z-2)^3$ is _____. [CO2][PO1]

a) 2

b) 3

c) 0

d) 4

d) The negative powers of the Laurent series is called _____ (CO2][PO1)

a) Analytic part

b) principal part

c) Taylor's part

d) none of these

e) The Residue of $\frac{e^{2z}}{z^2}$ is_____. [CO2][PO1]

a) 3

b) 0

c) -1

d) 2

f) Newtn's forward interpolation is used for _____. [CO3][PO1]

a) equal interval

b) unequal interval

c) both the intervals

d) none of these

g) The order of error of simpson's one third rule is _____. [CO3][PO1]

a)) order h4

b) order h3

c) order h2

d) none of these

h) Two events are Mutually Exclusive if they have _____. [CO4/PO1]

a) independent

b) dis joint

c) common element

d) non of these

i) The value of correlation coefficient lies between _____. [CO4/PO1]

a) O to 1

b) b) -1 to 0

c) c) -1 to 1

d) d) none of these

j) The mean and variance of _____ distribution are equal. [CO4/PO1]

a) Bionomial

b) poision

c) Normal

d) uniform

PART B - (10 X 2 = 20 Marks)

2	a)	Solve z $=\sqrt[4]{-i}$	[CO1][PO2]
	b)	Verify whether the function is Analytic or not. F(z) $=z^3$	[CO1][PO1]
	c)	Define Laurent series of a function f(z).	[CO2][PO1]
	d)	Find the Residue at the singular point $f(z) = \frac{z}{z^2+9}$	[CO2][PO1]
	e)	Discuss the nature of singularity of $\frac{1}{cosz-sinz}$	[CO2][PO1]
	f)	What is rounding off error? Explain with an example	[CO3][PO1]
	g)	Define Newton's forward difference interpolation formula.	[CO3][PO1]
	h)	Prove that P(A U B) = P(A) +P(B) –P(AB)	[CO4][PO2]
	i)	Define conditional probability	[CO4][PO1]
	j)	Find the mean of the random variable x, its probability function is f(x) = $\binom{3}{x}$, x=0,1,2,3	[CO4/PO2]

PART C - (4 X 15 = 60 Marks)

3 a i) Verify whether the function satisfies harmonic . if yes find its conjugate harmonic v=$tan^{-1}\frac{y}{x}$. [CO1][PO2] [7]

ii) Evaluate $\oint_c \frac{z^2dz}{z^4-1}$, $c: |z+1|=1$ [CO1][PO2] [8]

(OR)

b i) Find the line integral over the curve $\oint_c z\,dz$; c : $x^2 = y$ from 0 to 1+i [CO1][PO2] [8]

ii) Evaluate I =$\int Rez^2$dz, where 'c' is the boundary of square with vertices 0, 1,1+i,i .in clockwise. . [CO1][PO2] [7]

4 a i) Find the Laurent series of $\frac{z^2}{(z-1)(z-2)}$, *valid in the region* $1 \le |z| \le 2$. [CO2][PO2] [8]

ii) Evaluate $\oint \frac{e^z+z}{z^3-z}dz$ c : $|z| = \frac{\pi}{2}$ by residue theorem. [CO2][PO2] [7]

(OR)

b i) Evaluate $\oint \frac{z+1}{(z^2+4)^2}dz$, c : $|z| = \frac{2\pi}{3}$ by residue theorem. [CO2][PO2] [8]

ii) Solve the integral $\int_{-\infty}^{\infty} \frac{1}{(z^2+2)^2}dz$. [CO2][PO2] [7]

5 a i) Evaluate $\int_0^1 \frac{dx}{1+x^2}$ using Trapezodial Rule with h=0.2. [CO3][PO2] [7]

ii) Find y(1.2) by modified Euler's method given $\frac{dy}{dx} = \frac{2y}{x} + x^3$,y(1)=0.5 [CO3][PO2] [8]

(OR)

b i) Calculate y(0.1),y(0.2) using RK method given that

$$\frac{dy}{dx} = \frac{2xy}{1+x^2} + 1\ , y(0) = 0$$ [CO3/PO2] [8]

ii) Find the real roots of $x^3 + x - 5 = 0$, upto four significant figure by iteration method. [CO3][PO2] [7]

6 a i) A random variable X has the following probability function [CO4/PO2][8]

Values of X :	1	2	3	4	5
P(x) :	k	k	k	$3k^2$	k^2

a) Find k b) Compute P(x <4) c) Compute p (x > 3) d) Find p(1 < x < 4)

ii) Find the regression line X on Y in the points(1,-3), (2,-11), (3,1), (4, 18), (5,61),(6,11)

[CO4/PO2][7]

(OR)

b i) Find the regression line X on Y in the points(1,-3), (2,-11), (3,1), (4, 18), (5,61),(6,11)

[CO4][PO2][8]

ii) Apply the maximum likelihood method to the Normal distribution with $\mu=0$.

[CO4][PO2][7]