Shree Sathyam
College of Engineering and Technology
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai.
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Internal Assessment-I

DEGREE: BACHELOR OF ENGINEERING	**YEAR&SEMESTER: II/III**
BRANCH: EEE	**REGULATION: 2021**
SUBJECT Code and NAME: MA3303& PROBABILITY AND COMPLEX FUNCTIONS	**DATE & SESSION:**
TIME: 2Hrs15Minutes	**Max.Marks:** 60

Answer The All Questions

PART A (5x2=10 marks)

		CO	BL	PO	PI
1.	State the axioms of probability	CO1	L1	1.1	1.4.1
2.	State bays theorem	CO1	L1	1.1	1.1.2
3.	What are the limitations of poisson distribution	CO2	L1	2.3	2.3.1
4.	State central limit theorem	CO2	L4	2.3	2.3.1
5.	Define covariance of random variables x & y define their independence using covariance	CO3	L4	3.1	3.1.1

PART B (5x10=50 marks)

			CO	BL	PO	PI
6.	a)	State and prove bayes theorem	CO1	L3	1.1	1.1.2
		OR				
	b)	A discrete random variable X has the following probabilitydistribution x: 0, 1, 2, 3, 4, 5, 6, 7, 8 P(X=x): a, 3a, 5a, 7a, 9a, 11a, 13a, 15a, 17a (i)find the value of a (ii)find P(x<3), P(0<x<3), P(x≥ 3) (iii)find the distribution function of x	CO1	L1	2.3	2.3.1
7.	a)	In 256 sets of twelve tosses of a coin, how many cases may one expect eight heads and four tails	CO1	L1	2.3	2.3.1
		OR				
	b)	If x is a continuous random variable with p.d.f f(x)={kx^2 -1<x<1 0 elsewhere then find (i)The value of K (ii)The mean & variance of K (iii)P((1/3)≤ $x < 4$)	CO1	L4	3.1	3.1.1
8.	a)	Find the M.G.F of a random variable x having p.d.f f(x)={$x\|4\}e_2^{-x}$ x>0 0 elsewhere also deduce the first four moments about the origin	CO2	L1	1.1	1.1.2
		OR				
	b)	Messages arrive at a switch board in a poisson manner at an average rate of six per hour find the probability for each of the following events (i)exactly two messages arrive with in one hour (ii)no message arrives with in one hour (iii)atleast three messages arrives with one hour	CO2	L1	1.1	1.1.2
9.	a)	Find the correlation coefficient for the following data X: 10, 14, 18, 22, 26, 30 y: 18, 12, 24, 6, 30, 36	CO2	L4	2.3	2.3.1
		OR				
	b)	Obtain the equation of the lines of regression from the following data X: 1, 2, 3, 4, 5, 6, 7 Y: 9, 8, 10, 12, 11, 13, 14	CO2	L4	2.3	2.3.1

10.	a)	The joint probability mass function of (x,y) is given by p(x,y)=K(2x+3y): x=0,1,2 y=1,2,3. Find all the marginal and conditional probability distribution. Also find the probability distribution of (x+y) & p(x+y>3)	CO3	L3	1.1	1.1.2
	OR					
	b)	The joint probability density function of a two dimensional random variable (x,y) is given by $f(x,y)=xy^2+(x^2/8)$ $0\leq x \leq 2 :\ 0\leq y \leq 1$ compute (i)P(X>1) (ii)P(Y<(1/2)) (iii)P(x>1/y<(1/2)) (iv)P(X<Y)	CO3	L4	1.1	1.1.2

CO Number	Weightage (Marks)	Weightage in%
CO1	44	40
CO2	44	40
CO3	22	20

Faculty In-Charge **HoD** **Principal**

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Internal Assessment-II

DEGREE: BACHELOR OF ENGINEERING	**YEAR&SEMESTER: II/III**
BRANCH: EEE	**REGULATION: 2021**
SUBJECT Code and NAME: MA3303 & PROBABILITY AND COMPLEX FUNCTIONS	**DATE & SESSION: 11/11/2024, AN**
TIME: 2 Hrs 15 Minutes	**Max. Marks: 60 Marks**

Answer The All Questions

PART A (5 x 2 =10 Marks)

		CO	BL	PO	PI
1.	Solve $(D^2-3D+2)y=e^x$	CO5	L1	1.1	1.4.1
2.	Under the transformation $w=\frac{1}{z}$, find the image of $2x+y=2$	CO5	L1	1.1	1.1.2
3.	Expand $f(z)=e^z$ as a Taylor's series about $z=0$	CO4	L1	2.3	2.3.1
4.	What is conformal mapping?	CO3	L4	2.3	2.3.1
5.	What are the necessary conditions for a function to be analytic?	CO3	L4	3.1	3.1.1

PART B (5 x 10 = 50 Marks)

			CO	BL	PO	PI
6.	a)	If (z) is analytic function with constant modulus , show that f(z) is constant	CO3	L1	2.3	2.3.1
		OR				
	b)	If $w=\phi+i\psi$ represents the complex potential for an electric field and $\psi=x^2-y^2+\frac{x}{x^2+y^2}$ determine the function.	CO3	L4	3.1	3.1.1
7.	a)	Find the bilinear transformation which maps the points $z=1,i,-1$ onto the points $w=i,0,-i$. Hence find the image of $\|z\|<1$	CO3	L1	4.1	4.1.2
		OR				
	b)	Evaluate using Cauchy's integral formula $\int_c \frac{z+1}{z^2+2z+4}dz$. Where c is circle $\|z+1+i\|=2$	CO4	L1	1.1	1.1.2
8.	a)	Expand $f(z)=\frac{z^2-1}{(z+2)(z+3)}$ in a Laurent's series if $\|z\|<2$	CO4	L4	2.3	2.3.1
		OR				
	b)	State and prove Cauchy's integral formula	CO4	L4	2.3	2.3.1
9.	a)	Evaluate the integral $\int_c \frac{Sin\,\pi z^2+Cos\,\pi z^2}{(z-1)(z-2)}dz$ Where c is the circle $\|z\|=3$, using Cauchy's integral formula.	CO4	L3	4.1	4.1.2
		OR				
	b)	Using method of variation of parameters solve the differential equation $\frac{d^2y}{dx^2}+4y=\tan 2x$	CO5	L4	1.1	1.1.2

10.	a)	Solve $(x^2 D^2 - xD + 1)\, y = \left(\frac{\log x}{x}\right)^2$	CO5	L4	1.1	1.1.2
		OR				
	b)	Solve by the method of variation of Parameters $\frac{d^2 y}{dx^2} + a^2 y = \tan ax$	CO5	L4	1.1	1.1.2

CO Number	Weightage (Marks)	Weightage in%
CO3	34	30.90
CO4	44	40
CO5	32	29.10

Faculty In-Charge **HoD** **Principal**