

# IV SEMESTER B.TECH. (Industrial & Production) END SEMESTER EXAMINATIONS, APRIL 2018

## SUBJECT: ENGINEERING MATHEMATICS IV [MAT-2209]

### **REVISED CREDIT SYSTEM**

#### (19/04/2018)

Time: 3 Hours

MAX. MARKS: 50

#### Instructions to Candidates:

- ✤ Answer ALL the questions.
- Missing data may be suitable assumed.

1A.	The scores of two players A and B in 12 rounds are given below. Calculating mean standard deviation and coefficient of variation for each player, determine who is the better player and who is the more consistent playe.r										mean is the	04							
	А	74	75	78	7	2 7	78	77	7	79	81		79	76	72		71		
	В	87	84	80	8	8 8	89	85	8	86	82		82	79	86		80		
	Find the mean deviation from the median for the following data																		
1B.	Class 0.			)	10 - 20			20- 3	0	30 -		) 40 -		50 50		0 - 60		03	
	f		3		7	<u>10-20</u> 7		15	0	12			8		5				
	Find th	ne star	ndard (	leviati	$\frac{i}{2n f}$	or the	fo	llowin	o dat	- <u>1</u> -	-		0		5				
	1 ma u	ie stai	luaru (		511 1	or the	10	110 w 111	5 000	u									
1C.	<b>1C.</b> Class		- 19	20-	3	30-39		-0-	50-59		60-69		70-	80	-89	90	)-99	03	
				29				9					79						
	f	1		0	4	ŀ	6	<b>5</b>	7		12		16	10		4			
	If a two dimensional random variable $(X, Y)$ is uniformly distributed over $R =$														04				
2A.	$\{(x, y), 0 < x < y < 1\}$ , then find correlation coefficient between <i>X</i> & <i>Y</i> .																		
	Find t	he Pe	orson'	s co-ef	ficie	ent of	sk	ewness	s for	the	follov	win	g data	L					
2B.															03				
	Class	0	-10	10-2	0	20-30		30-4	0	40-	50 50		)-60	60-7	0-70		-80		
	f	1	0	40		20		0		10		40	)	16		14			
	Fit a st	raight	t line t	o the fo	ollo	wing c	dat	a										00	
2C.	<b>v</b> 1		2		3			4		5		6		8				03	
		2	Δ	3		36		4		5		5		6					
2 1	J JEV 1	If V has $\operatorname{pdf} f(x) = \frac{1}{2} - \frac{\lambda(x-a)}{x} + \frac{1}{x} + \frac{1}{x} + \frac{1}{x}$ find MCE and hence find variance													04				
3A.	If $\lambda$ has put $f(x) = \lambda e^{-\lambda (x - \omega)}, x > a, t < \lambda$ , find MiGF and hence find variance.										04								
3B.	Find the mean and variance of Binomial distribution.										03								

3C.	A set of examination marks is normally distributed with mean 75 and standard deviation 5. Top 5% get grad A, bottom 25% get grad C. What mark is the lowest marks for grade A and what mark is the highest for grade C.	03				
4A.	Given the joint density function of <i>X</i> & <i>Y</i> as $f(x, y) = \begin{cases} \frac{1}{2}xe^{-y}, 0 < x < 2 \ y > 0 \\ 0, otherwise \end{cases}$ . Find pdf of <i>X</i> + <i>Y</i> . Using the transformation $z = x + y, w = y$ .					
4B.	A coin is known to come up heads 3 times as often as tails. This coin is tossed 3 times. If X represents number of heads got, find the probability distribution of X and hence find mean and variance of X.	03				
4C.	If X & Y are two discrete random variable having joint pdf $f(x, y) = k(2x + y)$ where $x = 0, 1, 2$ & $y = 0, 1, 2, 3$ . Find I) k ii) $E(Y/X = 2)$ .	03				
5A.	Suppose that $X_j$ where $j = 1, 2,, 50$ are independent random variable each having poisson distribution with $\lambda = 0.03 \& S = X_1 + X_2 + X_3, X_{50}$ . Evaluate $P(S \ge 3)$ .	04				
5B.	Bus will arrive at a station has uniform distribution between 10 am to 10.15 am. Bus has not come for 8 min, what is the probability that it will come after 2 or more minutes completely?	03				
5C.	Random variable <i>X</i> has uniform distribution over the interval $\left(-\frac{\pi}{2}, \frac{\pi}{2}\right)$ . Find pdf of $Y = \tan X$	03				