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## Code No: 53014

## JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD B.Tech II Year I Semester Examinations, February/March - 2016

## PROBABILITY AND STATISTICS (Common to ME, CSE, AME, MIE, MSNT)

Time: 3 hours

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Max. Marks: 75

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## Answer any five questions All questions carry equal marks

- 1.a) The Probabilities that students A,B,C and D solve a problem are  $\frac{1}{3}$ ,  $\frac{2}{5}$ ,  $\frac{1}{5}$  and  $\frac{1}{4}$  respectively. If all of them try to solve the problem, What is the probability that the problem is solved.
  - b) If  $f(x)=Ke^{-|x|}$  is p. d.f in  $-\infty \le x \le \infty$ , find: i) K ii) the mean iii) Variance.

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[8+7]

- 2.a) Suppose 300 misprints are distributed randomly throughout a book of 500 pages. find the probability that a given page contains:
  - i) Exactly 2 misprints
  - ii) 2 or more misprints.
  - b) The marks obtained by 1000 students are normally distributed with mean 78 % and Standard deviation 11%. Determine:
    - i) How many get more than 90%,
    - ii) How many students get between 75% and 95%.

[8+7]

- 3.a) A sample of size 64 and mean 60 was taken from a population whose standard deviation is 10. Construct 95% confidence interval for the mean.
  - b) A sample of 121 students is found to have a mean weight of 68 kgs. Can this be regarded as a sample from a population with mean weight 75 kgs. and standard deviation 31 kgs? [7+8]
- 4.a) In a random sample of 400 industrial accidents, it was found that 231 were due to unsafe working conditions Find:
  - i) The maximum error
  - ii) Construct 95% confidence interval for the proportion.
- b) 400 articles from a factory are examined and 3% are found to be defective. 600 similar articles from a second factory are found to be 2% defective. Test the significance between the difference of two proportions at 5% level. [7+8]
- 5. A survey of 320 families with 5 children each revealed the following distribution. Is this, result with the hypothesis that male births are equally probable? [15]

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No. of families	12	40	88	110	56	14

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	6.a)	From the following	lowing data	Calculate	:					
		i) Coefficient ii) Standard of $b_{xy} = \frac{9}{20}, b_{yx}$	deviation of	f y		TOST .		145 milli 120 m	42 kd3 22 kd2 22 kd E	
	• .	$o_{xy} = \frac{1}{20}, o_{yx}$ Calculate the			orrelation			. !	[8+7]	
	b)	x 68 6	54 75 50 58 68 45	64 80	75   40   68   48	55 64 50 70	認識		BiC.	925722 Vijet 9.
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	<b>b)</b>	Weavers in needed for k average arri Determine:	a textile mi	ill arrive a	t a departr	nental store	anned by o		TITC. TITC	20 m/s
		i) Average ii) Average	length of w time a mac	aiting line chine spen	ds in the s	ystem.	AND THE STATE OF T		[8+7]	68 1115 1727 2 461 4
	8.a)	Define: i) essential s	etate i	ii) Periodio	e state	iii) ergod	ic state		A COMP	
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		initial proba	/ J / `~	0.2 and 0.8					[8+7]	
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