

# K.K.Wagh Institute Of Engg. Education & Research, Nashik-3

## UNIT-III: STATISTICS AND PROBABILITY

### IIIa] Measures of central tendency and dispersion, moments, skewness, kurtosis [2 Marks]

Sr.No	Question												
1	Standard deviation of three numbers 9, 10, 11 is (a) (b) (c) (d)												
2	Standard deviation of four numbers 9, 11, 13, 15 is (a) 2 (b) 4 (c) (d)												
3	From the given information $\sum x = 235$ , $\sum x^2 = 6750$ , $n = 10$ . Standard deviation of x is (a) 11.08 (b) 13.08 (c) 8.08 (d) 7.6												
4	Coefficient of variation of the data 1, 3, 5, 7, 9 is (a) 54.23 (b) 56.57 (c) 55.41 (d) 60.19												
5	The standard deviation and arithmetic mean of the distribution are 12 and 45.5 resp. Coefficient of variation of the distribution is (a) 26.37 (b) 32.43 (c) 12.11 (d) 22.15												
6	<div>The standard deviation and arithmetic mean of three distribution x, y, z are as follows:<table><tr><td></td><td>Arithmetic Mean</td><td>Standard Deviation</td></tr><tr><td>x</td><td>18.0</td><td>5.4</td></tr><tr><td>y</td><td>22.5</td><td>4.5</td></tr><tr><td>z</td><td>24.0</td><td>6.0</td></tr></table><div>The more stable distribution is (a) x (b) y (c) z (d) x and z</div></div>		Arithmetic Mean	Standard Deviation	x	18.0	5.4	y	22.5	4.5	z	24.0	6.0
	Arithmetic Mean	Standard Deviation											
x	18.0	5.4											
y	22.5	4.5											
z	24.0	6.0											
7	<div>The standard deviation and arithmetic mean of scores of three batsman x, y, z in ten inning during a certain season are<table><tr><td></td><td>Arithmetic Mean</td><td>Standard Deviation</td></tr><tr><td>x</td><td>50</td><td>24.43</td></tr><tr><td>y</td><td>46</td><td>25.495</td></tr><tr><td>z</td><td>40</td><td>27</td></tr></table><div>The more stable distribution is (a) y and z (b) y (c) z (d) x</div></div>		Arithmetic Mean	Standard Deviation	x	50	24.43	y	46	25.495	z	40	27
	Arithmetic Mean	Standard Deviation											
x	50	24.43											
y	46	25.495											
z	40	27											
8	The standard deviation and arithmetic mean of aggregate marks obtained three group of students x, y, z are as follows												

	<p>Arithmetic Mean      Standard Deviation</p> <p>x                      532                      11</p> <p>y                      831                      9</p> <p>z                      650                      10</p> <p>The more variable group is</p> <p>(a) y and z                      (b) z                      (c) y                      (d) x</p>
9	<p>Arithmetic mean of four numbers is 16, one item 20 is replaced by 24, what is the new arithmetic mean</p> <p>(a) 15                      (b) 17                      (c) 18                      (d) 16</p>
10	<p>The first moment of the distribution about the value 5 is 2. Arithmetic mean of the distribution is</p> <p>(a) 5                      (b) 2                      (c) 4                      (d) 7</p>
11	<p>The first and second moments of the distribution about the value 3 are 2 and 20. Second moment about the mean is</p> <p>(a) 12                      (b) 14                      (c) 16                      (d) 20</p>
12	<p>The first three moments of the distribution about the value 5 are 2, 20 and 40. Third moment about the mean is</p> <p>(a) -64                      (b) 64                      (c) 32                      (d) -32</p>
13	<p>The first four moments of the distribution about the value 5 are 2, 20, 40 and 50. Fourth moment about the mean is</p> <p>(a) 160                      (b) 162                      (c) 210                      (d) 180</p>
14	<p>The first moments of a distribution about the value 2 are -2, 12, -20 and 100. Fourth moment about the mean is</p> <p>(a) 200                      (b) 190                      (c) 170                      (d) 180</p>
15	<p>The first three moments of the distribution about the value 2 are -2, 12 and -20. Third moment about the mean is</p> <p>(a) 36                      (b) 30                      (c) 22                      (d) 8</p>
16	<p>The first and second moments of the distribution about the value 2 are 1 and 16. Variance of the distribution is</p> <p>(a) 12                      (b) 3                      (c) 15                      (d) 17</p>
17	<p>The second and three moments of a distribution about the arithmetic mean are 16 and -64 resp. Coefficient of kurtosis is given by</p> <p>(a) -0.25                      (b) 1                      (c) 4                      (d) -1</p>
18	<p>The second and fourth moments of a distribution about the arithmetic mean are 16 and 162 resp. Coefficient of kurtosis is given by</p>

	(a) 1	(b) 1.51	(c) 0.63	(d) 1.69
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**Answers: IIIa]**

1	c	5	a	9	b	13	b	17	b
2	d	6	b	10	d	14	d	18	c
3	a	7	d	11	c	15	a		
4	b	8	d	12	a	16	c		

**IIIb] Correlation and Regression [2 Marks]**

1	If $\sum x = 1242$ , $\sum y = -5.1$ , $\sum xy = -10$ , $n = 10$ , then $\text{cov}(x, y)$ is (a) 67.4 (b) 83.9 (c) 58.5 (d) 73.2
2	If $\sum x = 2291$ , $\sum y = 3056$ , $\sum xy = 10623$ , $\sum x^2 = 14.7$ , $\sum y^2 = 17$ , $n = 10$ , then $\text{cov}(x, y)$ is (a) 1.39 (b) 13.9 (c) 139 (d) -13.9
3	If the two regression coefficient are 0.16 and 4 then the correlation coefficient is (a) 0.08 (b) -0.8 (c) 0.8 (d) 0.64
4	If the two regression coefficient are $b_{yx}$ and $b_{xy}$ then the correlation coefficient is (a) -0.667 (b) 0.5 (c) -1.5 (d) 0.537
5	If covariance between x and y is 10 and the variance of x and y are 16 and 9 resp. then coefficient of correlation $r(x, y)$ is (a) 0.833 (b) 0.633 (c) 0.527 (d) 0.745
6	If $\sum x = 25.8$ , $\sum y = 6$ , $\sum xy = 5$ then correlation coefficient $r(x, y)$ is equal to (a) 0.5 (b) 0.75 (c) 0.91 (d) 0.86
7	$\sum x = 90$ , $\sum y = 4$ , $\sum xy = 4$ , $n = 10$ , $\sum x^2 = 1.732$ , $\sum y^2 = 2$ then correlation coefficient $r(x, y)$ is equal to (a) 0.8342 (b) 0.91287 (c) 0.7548 (d) 0.5324
8	$\sum x = 2800$ , $\sum y = 16$ , $\sum xy = 16$ , $n = 10$ , variance of x is 36 and variance of y is 25 then correlation coefficient $r(x, y)$ is equal to (a) 0.95 (b) 0.73 (c) 0.8 (d) 0.65
9	The correlation coefficient for the following data $n = 10$ , $\sum x = 140$ , $\sum y = 150$ , $\sum xy = 1980$ , $\sum x^2 = 2465$ , $\sum y^2 = 2160$ is (a) 0.753 (b) 0.4325 (c) 0.556 (d) 0.9013
10	You are given the following information related to a distribution comprising 10 observations $\sum x = 5.5$ , $\sum y = 4$ , $\sum xy = 385$ , $\sum x^2 = 192$ , $\sum y^2 = 947$ . The correlation coefficient $r(x, y)$ is (a) -0.924 (b) -0.681 (c) -0.542 (d) -0.813

11	Given the following data $r=0.022$ , $\sum x=33799$ , $\sum y=4.5$ , $\sum xy=64.605$ , $\sum x^2=68$ , $\sum y^2=62.125$ . The value of n (number of observations) is (a) 5 (b) 7 (c) 8 (d) 10
12	Given the following data $r=0.5$ , $\sum x=350$ , $\sum y=1$ , $\sum xy=4$ , $\sum x^2=3$ , $\sum y^2=4$ . The value of n (number of observations) is (a) 25 (b) 5 (c) 20 (d) 15
13	Coefficient of correlation between the variables x and y is 0.8 and their covariance is 20, the variance of x is 16. Standard deviation of y is (a) 6.75 (b) 6.25 (c) 7.5 (d) 8.25
14	Line of regression y on x is $8x-10y+66=0$ , Line of regression x on y is $40x-18y-214=0$ . Mean values of x and y are (a) $\bar{x}=12$ , $\bar{y}=15$ (b) $\bar{x}=10$ , $\bar{y}=11$ (c) $\bar{x}=13$ , $\bar{y}=17$ (d) $\bar{x}=9$ , $\bar{y}=8$
15	If the two lines of regression of $9x+y-\lambda=0$ and $4x+y=\mu$ and the mean of x and y are 2 and -3 resp. then the values of $\lambda$ and $\mu$ are (a) $\lambda=15$ and $\mu=5$ (b) $\lambda=-15$ and $\mu=-5$ (c) $\lambda=5$ and $\mu=15$ (d) $\lambda=15$ and $\mu=-5$
16	Line of regression y on x is $8x-10y+66=0$ . Line of regression x on y is $40x-18y-214=0$ . Correlation coefficient $r(x,y)$ is given by (a) 0.6 (b) 0.5 (c) 0.75 (d) 0.45
17	The regression lines are $9x+y=15$ and $4x+y=5$ . Correlation $r(x,y)$ is given by (a) 0.444 (b) -0.11 (c) 0.663 (d) 0.7
18	Line of regression y on x is $8x-10y+66=0$ . Line of regression x on y is $40x-18y-214=0$ . The value of variance of x is 9. The standard deviation of y is equal to (a) 2 (b) 5 (c) 6 (d) 4
19	Line of regression y on x is $8x-10y+66=0$ . Line of regression x on y is $40x-18y-214=0$ . The value of variance of y is 16. The standard deviation of x is equal to (a) 3 (b) 2 (c) 6 (d) 7
20	Line of regression y on x is $3x+2y=26$ , line of regression x on y is $6x+y=31$ . The value of variance of x is 25. The standard deviation of y is (a) -15 (b) 15 (c) 1.5 (d) -1.5
21	The correlation coefficient between two variables x and y is 0.6. If

	$\sigma_x = 1.5, \sigma_y = 2.00, \sigma_x = 10, \sigma_y = 20$ then the lines of regression are (a) $x = 0.45y + 12$ and $y = 0.8x + 1$ (b) $x = 0.65y + 10$ and $y = 0.4x + 12$ (b) $x = 0.45y + 1$ and $y = 0.8x + 12$ (d) $x = 0.8y + 1$ and $y = 0.45x + 12$									
22	The correlation coefficient between two variables x and y is 0.711. If $\bar{x} = 4, \bar{y} = 1.8, \sigma_x = 5, \sigma_y = 4$ then the lines of regression are (a) $x - 5 = 1.58(y - 4)$ and $y - 4 = 0.32(x - 5)$ (b) $x + 5 = 1.58(y + 4)$ and $y + 4 = 0.32(x + 5)$ (c) $x - 5 = 0.32(y - 4)$ and $y - 4 = 1.58(x - 5)$ (d) $x - 4 = 1.58(y - 5)$ and $y - 5 = 0.32(x - 4)$									
23	<p>You are given below the following information about advertisement expenditure and sales</p> <table><tr><td></td><td><b>Adv. Expenditure (X) Rs. (Crore)</b></td><td><b>Sales (Y) Rs.(Crore)</b></td></tr><tr><td><b>Mean</b></td><td>10</td><td>90</td></tr><tr><td><b>Standard Deviation</b></td><td>3</td><td>12</td></tr></table> <p>Correlation coefficient = 0.8 The two lines of regression are (a) <math>x = 58 + 3.2y</math> and <math>y = -8 + 0.2x</math> (b) <math>x = -8 + 3.2y</math> and <math>y = 58 + 0.2x</math> (b) <math>x = -8 + 2.2y</math> and <math>y = 8 + 1.2x</math> (d) <math>x = -8 + 0.2y</math> and <math>y = 58 + 3.2x</math></p>		<b>Adv. Expenditure (X) Rs. (Crore)</b>	<b>Sales (Y) Rs.(Crore)</b>	<b>Mean</b>	10	90	<b>Standard Deviation</b>	3	12
	<b>Adv. Expenditure (X) Rs. (Crore)</b>	<b>Sales (Y) Rs.(Crore)</b>								
<b>Mean</b>	10	90								
<b>Standard Deviation</b>	3	12								
24	<p>You are given below the following information about rainfall and production of rice</p> <table><tr><td></td><td><b>Rainfall (X) in inches</b></td><td><b>Production of Rice (Y) in Kg.</b></td></tr><tr><td><b>Mean</b></td><td>30</td><td>500</td></tr><tr><td><b>Standard Deviation</b></td><td>5</td><td>100</td></tr></table> <p>Correlation coefficient = 0.8, The two lines of regression are (a) <math>x + 30 = 0.04(y + 500)</math> and <math>y + 500 = 6(x + 30)</math> (b) <math>x - 30 = 0.4(y - 500)</math> and <math>y - 500 = 1.6(x - 30)</math> (c) <math>x - 30 = 0.04(y - 500)</math> and <math>y - 500 = 16(x - 30)</math> (d) <math>x - 30 = 16(y - 500)</math> and <math>y - 500 = 0.04(x - 30)</math></p>		<b>Rainfall (X) in inches</b>	<b>Production of Rice (Y) in Kg.</b>	<b>Mean</b>	30	500	<b>Standard Deviation</b>	5	100
	<b>Rainfall (X) in inches</b>	<b>Production of Rice (Y) in Kg.</b>								
<b>Mean</b>	30	500								
<b>Standard Deviation</b>	5	100								
25	Given $r = 0.85, \sigma_x = 0.89$ and the standard deviation of x is 6 then the value of correlation coefficient $r(x, y)$ and standard deviation of y is (a) $r = 0.87$ and $\sigma_y = 6.14$ (b) $r = 0.75$ and $\sigma_y = 6.14$ (b) $r = -0.87$ and $\sigma_y = 0.614$ (d) $r = 0.89$ and $\sigma_y = 4.64$									
26	Given $r = 0.8411, \sigma_x = 0.4821$ and the standard deviation of y is 1.7916 then the value of									

	correlation coefficient $r(x,y)$ and standard deviation of $x$ is (a) $r=-0.6368$ and $=-2.366$ (b) $r=-0.6368$ and $=2.366$ (c) $r=0.40549$ and $=2.366$ (d) $r=0.63678$ and $=5.6$
27	For a given set of Bivariate data $=53.2, =27.9$ . Regression coefficient of $y$ on $x=-1.5$ . By using line of regression $y$ on $x$ the most probable value of $y$ when $x$ is 60 is (a) 157.7 (b) 137.7 (c) 197.7 (d) 217.7
28	Given the following data $=36, =85, =11, =8, r=0.66$ . By using line of regression $x$ on $y$ , the most probable value of $x$ when $y=75$ is (a) 29.143 (b) 24.325 (c) 31.453 (d) 26.925
29	For a given set of Bivariate data $=2, =-3$ Regression coefficient of $x$ on $y=-0.11$ . By using line of regression $x$ on $y$ the most probable value of $x$ when $y$ is 10 is (a) 0.77 (b) 0.57 (c) 1.77 (d) 0.87 (b)

### **Answers: IIIb]**

1	d	7	b	13	b	19	a	25	a
2	b	8	c	14	c	20	b	26	b
3	c	9	d	15	a	21	b	27	c
4	a	10	b	16	a	22	a	28	d
5	a	11	c	17	c	23	d	29	b
6	d	12	a	18	d	24	c		

### **IIIc] Probability and probability distribution [2 Marks]**

1	Probability that a leap year selected at random will contain 53 Sunday is (a) (b) (c) (d) (b)
2	Two cards are drawn from a well shuffled pack of 52 cards. If the first card drawn is replaced, the probability that they are both kings is (a) (b) (c) (d) (b)
3	Two cards are drawn from a well shuffled pack of 52 cards. If the first card drawn is not replaced, the probability that they are both kings is (c) (b) (c) (d)
4	An envelope six tickets with numbers 1, 2, 3, 5, 6, 7. Another envelope contains four tickets with numbers 1, 3, 5, 7. An envelope is chosen at random and ticket is drawn from it, Probability that the ticket bears the numbers 2 or 7 is (a) (b) (c) (d)

5	Three coins are tossed simultaneously. The probability of getting at least two head is (a) (b) (c) (d)
6	Three are six married couples in a room. If two persons are chosen at random, the probability that they are of different sex is (a) (b) (c) (d)
7	A ball is drawn from a box containing 6 red balls, 4 white balls and 5 black balls. Determine the probability that it is not red is (a) (b) (c) (d)
8	A problem in statistics is given to three students A, B, C whose chance of solving it are , , resp. The probability that all of them can solved the problems is (a) (b) (c) (d)
9	The probability that A can solve a problem is and B can solve it is problem is. If both attempt the problem, then the problem get solved is (a) (b) (c) (d)
10	An unbiased coin is thrown five times. Probability of getting three heads is (a) (b) (c) (d)
11	20% of bolts produced by machine are defective. The probability that out of three bolts chosen at random 1 is defective is (a) 0.384 (b) 0.9728 (c) 0.5069 (d) 0.6325
12	Probability of man now aged 60 years will live upto 70 years of age is 0.65. The probability that out of 10 men 60 years old 2 men will live upto 70 is (a)0.5 (b) 0.002281 (c) 0.003281 (d) 0.004281
13	The probability that a person hit a target in shooting practice is 0.3. If the shoots 10 times, the probability that he hits the target is (a) 1 (b) 1- (c) (d)
14	An unbiased coin is tossed five times. The probability of getting at least one head is (a) (b) (c) (d)
15	A box contains 100 bulbs out of which 10 are defective. A sample of 5 bulbs is drawn. The probability that none is defective is (a) (b) (c) (d)
16	On an average a packet containing 10 blades is likely to have two defective blades. In a box containing 100 packets, number of packets expected to contain less than two

	defective blades is (a) 38 (b) 52 (c) 26 (d) 47
17	Out of 2000 families with 4 children each, the number of families you would expect to have no girls is $p$ =probability of having a boy=, $q$ = probability of having a girl= $1-p$ (a) 300 (b) 150 (c) 200 (d) 125
18	In 100 set of 10 tosses of a coin, the number of cases you expect 7 head and 3 tail is (a) 8 (b) 12 (c) 15 (d) 17
19	20% of bolts produced by machine are defective. The mean and standard deviation of defective bolts in total of 900 bolts are resp. (a) 180 and 12 (b) 12 and 180 (c) 90 and 12 (d) 9 and 81
20	The mean and variance of binomial probability distribution are and resp. Probability of success in a single trial $p$ is equal to (a) (b) (c) (d)
21	The mean and variance of binomial probability distribution are 6 and resp. Number of trials $n$ is given by (a) 14 (b) 10 (c) 12 (d) 18
22	The mean and variance of binomial probability distribution are 36 and 3 resp. Number of trials $n$ is given by (a) 42 (b) 36 (c) 48 (d) 24
23	The mean and variance of binomial probability distribution are 6 and 2 resp. $p(r \geq 2)$ is (a) 0.66 (b) 0.88 (c) 0.77 (d) 0.99
24	If $X$ follows the binomial distribution with parameter $n=6$ and $p$ and $9P(X=4)=P(X=2)$ , then $p$ is equal to (a) (b) (c) (d)
25	If $X$ follows the binomial distribution with parameter $n$ and $p=$ and $P(X=6)=P(X=8)$ , then $n$ is equal to (a) 10 (b) 14 (c) 12 (d) 7
26	If $X$ follows the binomial distribution with parameter $n$ and $p=$ and $P(X=4)=P(X=5)$ , then $P(X=2)$ is equal to (a) (b) (c) (d)
27	In a Poisson's probability distribution if $n=100$ , $p=0.01$ , $p(r=0)$ is given by



	(a)	(b)	(c)	(d)										
28	In a Poisson's probability distribution if $n=100$ , $p=0.02$ , $p(r=1)$ is given by (a) (b) (c) (d)													
29	For a tabular data <table border="1" data-bbox="272 306 1109 394"> <tr> <td>x</td><td>0</td><td>1</td><td>2</td><td>3</td></tr> <tr> <td>F</td><td>2</td><td>4</td><td>6</td><td>8</td></tr> </table> Poisson's fit $p(r)$ is given by (a) (b) (c) (d)				x	0	1	2	3	F	2	4	6	8
x	0	1	2	3										
F	2	4	6	8										
30	For a tabular data <table border="1" data-bbox="272 567 1109 655"> <tr> <td>x</td><td>0</td><td>1</td><td>2</td><td>3</td></tr> <tr> <td>f</td><td>1</td><td>4</td><td>15</td><td>24</td></tr> </table> Poisson's fit $p(r)$ is given by (a) (b) (c) (d)				x	0	1	2	3	f	1	4	15	24
x	0	1	2	3										
f	1	4	15	24										
31	In a Poisson's probability distribution if $p(r=1)=2p(r=2)$ and $p(r=3)$ is given by (a) (b) (c) (d)													
32	In a Poisson's probability distribution if $3p(r=4)=p(r=5)$ and $p(r=6)$ is given by (a) (b) (c) (d)													
33	In a Poisson's probability distribution if $p(r=2)=9p(r=4)+90p(r=6)$ then mean of the distribution is (a) 1 (b) (c) 3 (d) 4													
34	Number of road accidents on a highway during a month follows a Poisson distribution with mean 2. Probability that in a certain month number of accidents on the highway will be equal to 2 is (a) 0.354 (b) 0.2707 (c) 0.435 (d) 0.521													
35	Between 2 P.M. and 3 P.M. the average number of phone calls per minute coming into company is 2. Using Poisson's probability distribution, the probability that during one particular minute there will be no phase call at all, is given by (a) 0.354 (b) 0.356 (c) 0.135 (d) 0.457													
36	Average numbers of phone calls per minute coming into company are 3, during certain period. These calls follow Poisson's distribution. Probability that during one particular minute there will be less than two calls, is given by (a) 0.299 (b) 0.333 (c) 0.444 (d) 0.199													
37	In a certain factory turning out razor blades, there is a small chance of for any blade to be defective. The blades are supplied in a packet of 10. Using Poisson's distribution, the probability that a packet contain one defective blade is													

	(a) 0.0196	(b) 0.0396	(c) 0.0596	(d) 0.0496
38	The average number of misprints per page of a book is 1.5. Assuming the distribution of number of misprints to be Poisson. The probability that a particular book is free from misprints, is (a) 0.329                      (b) 0.435                      (c) 0.549                      (d) 0.2231			
39	X is normally distributed. The mean of x is 15 and standard deviation 3. Given that for $z=1$ , $A=0.3413$ , $p(X \geq 18)$ is given by (a) 0.1587                      (b) 0.4231                      (c) 0.2231                      (d) 0.3413			
40	X is normally distributed. The mean of x is 15 and standard deviation 3. Given that for $z=1$ , $A=0.3413$ , $p(X \geq 12)$ is given by (a) 0.6587                      (b) 0.8413                      (c) 0.9413                      (d) 0.7083			
41	X is normally distributed. The mean of x is 15 and standard deviation 3. Given that for $z=1.666$ , $A=0.4515$ , $p(0 \leq x \leq 10)$ is given by (a) 0.0585                      (b) 0.0673                      (c) 0.0485                      (d) 0.1235			
42	X is normally distributed. The mean of x is 30 and variance 25. The probability $p(26 \leq x \leq 40)$ is (Given : Area corresponding to $z=0.8$ is 0.2881 and Area corresponding to $z = 2$ is 0.4772). (a) 0.8562                      (b) 0.6574                      (c) 0.3745                      (d) 0.7653			
43	In a sample of 1000 candidates, the mean of certain test is 14 and standard deviation is 2.5. Assuming Normal distribution, the probability of candidates getting less than eight marks i.e. $p(x \leq 8)$ is (Given: Area corresponding to $z=2.4$ is 0.4918). (a) 0.0054                      (b) 0.0075                      (c) 0.0082                      (d) 0.0035			
44	In a Normally distributed group of 450 students with mean 42 standard deviation 8, the number of students scoring less than 48 marks is (Given: Area corresponding to $z=0.75$ is 0.2734). (a) 348                      (b) 102                      (c) 127                      (d) 250			
45	In a certain examination test 10000 students appeared in a subject of mathematics. Average marks obtained were 50% with standard deviation 5%. Marks are normally distributed. Number of students expected to get more than 60% marks is equal to ( $z=2$ , $A=0.4772$ ). (a) 200                      (b) 300                      (c) 325                      (d) 228			

**Answers: IIIc]**

1	d	10	c	19	a	28	b	37	a
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2	c	11	a	20	c	29	b	38	d
3	c	12	d	21	d	30	d	39	a
4	b	13	b	22	c	31	a	40	b
5	a	14	b	23	d	32	c	41	c
6	d	15	c	24	a	33	a	42	d
7	d	16	a	25	b	34	b	43	c
8	b	17	d	26	d	35	c	44	a
9	a	18	b	27	a	36	d	45	d

### IIIId] Statistics [1 Marks]

1	If the data is presented in the forms of frequency distribution then arithmetic mean is given by (N= ) (a) (b) (c) (d)
2	For the data is presented in the form of frequency distribution, mean deviation (M.D.) from the average A is given by (N= ) (a) (b) (c) (d)
3	If the data is presented in the form of frequency distribution then standard deviation $\sigma$ is given by ( is arithmetic mean and N= ) (b) (c) (d)
4	If the data is presented in the form of frequency distribution then variance V is given by ( is arithmetic mean and N= ) (a) (b) (c) (d)
5	To compare the variability of two or more than two series, coefficient of variation (C.V.) is obtained using (is arithmetic mean and $\sigma$ is standard deviation). (a) (b) (c) $\sigma \times 100$ (d)
6	If the data is presented in the form of frequency distribution then moment $\mu$ , about the arithmetic mean of distribution is given by (N= ) (a) (b) $N \times$ (c) (d)
7	If the data is presented in the form of frequency distribution then moment , about the arithmetic mean of distribution is given by (N= ) (a) 1 (b) (c) 0 (d)
8	If and are the first two moments of the distribution about certain number then second moment of the distribution about the arithmetic mean is given by (a) (b) 2 (c) (d)
9	If , , are the first three moments of the distribution about certain number then third moment of the distribution about the arithmetic mean is given by (a) (b) (d)
10	If , , , are the first four moments of the distribution about certain number then fourth moment of the distribution about the arithmetic mean is given by (a)

	(b) (c) (d)
11	If be the first moment of the distribution about any number A then arithmetic mean is given by (a) (b) (c) (d)
12	Second moment about mean is (a) Mean (b) Standard Deviation (c) Variance (d) Mean Deviation
13	Coefficient of skewness is given by (a) (b) (c) (d)
14	Coefficient of kurtosis is given by (a) (b) (c) (d)
15	For a distribution coefficient of =2.5, this distribution is (a) Leptokurtic (b) Mesokurtic (c) Platykurtic (d) of these
16	For a distribution coefficient of =3.9, this distribution is (a) Leptokurtic (b) Mesokurtic (c) Platykurtic (d) of these
17	The first four moments of a distribution about mean are 0, 16, -64 and 162. Standard deviation of a distribution is (a) 21 (b) 12 (c) 16 (d) 4
18	Covariance between two variables x and y is given by (a) (b) n (d)
19	Correlation coefficient r between two variables x and y is given by (a) (b) (c) (d)
20	Range of coefficient of correlation r is (a) (b) (c) $-1 \leq r \leq 1$ (d) $0 \leq r \leq 1$
21	Probable error of coefficient of correlation r is (a) 0.6745 (b) 0.6745 (c) 0.6745 (d) 0.6547
22	Line of regression y on x (a) $y = r$ (b) $x = r$ (b) $y = r$ (d) $y = r$
23	Line of regression y on x (a) $y = r$ (b) $x = r$ (b) $x = r$ (d) $x = r$
24	Slope of regression line of y on x is (a) (b) r (c) r (d)
25	Slope of regression line of x on y is (a) r (b) (c) (d) r
26	In regression line y on x, is given by

	(a)	(b)	(c)	(d)
27	In regression line x on y, is given by (a) (b) (c) (d)			
28	If and are the regression coefficient x on y and y on x resp. then the coefficient of correlation is given by (a) (b) (c) (d)			
29	If $\theta$ is the acute angle between the regression line of y on x and the regression line of x on y, then is (a) (b) (c) (d)			
30	If $\sum x = 2638$ , $\sum y = 14$ , $\sum xy = 17$ , $n=10$ then is (a) 24.2 (b) 25.8 (c) 23.9 (d) 20.5			

**Answers: III d]**

1	a	7	c	13	d	19	d	25	a
2	c	8	a	14	b	20	c	26	c
3	b	9	a	15	d	21	b	27	d
4	d	10	b	16	a	22	c	28	d
5	b	11	a	17	d	23	d	29	a
6	d	12	c	18	a	24	b	30	b

### IIIe] Probability [1 Marks]

1	A throw is made with two dice. The probability of getting a sources of 10 points is (a) (b) (c) (d)
2	A throw is made with two dice. The probability of getting a sources of at least 10 points is (a) (b) (c) (d)
3	In a binomial probability distribution, probability of r successes in n trails is (where p probability of successes and q probability of failure in a single trail) (a) (b) (c) (d)
4	Mean of binomial probability distribution is (a) nq (b) (c) npq (d) np
5	Variance of binomial probability distribution is (a) npq (b) np (c) n (d) n
6	Standard deviation of binomial probability distribution is (a) (b) (c) (d) np
7	If $z=np$ where n the number of trails is very large and p the probability of success at each trail, then in Poisson's probability distribution $p(r)$ the probability of r successes is given by

	(a)	(b)	(c)	(d)
8	Normal distribution curve is given by the equation $y = \frac{1}{\sigma\sqrt{2\pi}} e^{-\frac{x^2}{2\sigma^2}}$ . Integral has the value			
	(a) 0.025	(b) 1	(c) 0.5	(d) 0.75
9	Normal distribution curve is given by the equation $y = \frac{1}{\sigma\sqrt{2\pi}} e^{-\frac{x^2}{2\sigma^2}}$ . Integral has the value			
	(a) 0.025	(b) 1	(c) 0.5	(d) 0.75

**Answers: IIIe]**

1	a	3	c	5	a	7	c	9	b
2	b	4	d	6	b	8	c		