

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

MCA DEGREE EXAMINATION DECEMBER 2024
(First Semester)

Branch – COMPUTER APPLICATIONS

STATISTICAL METHODS

Time: Three Hours

Maximum: 75 Marks

SECTION-A (10 Marks)

Answer ALL questions

ALL questions carry EQUAL marks

(10 × 1 = 10)

Question No.	Question	K Level	CO
1	The relationship between AM, GM and HM is (a) $AM = GM = HM$ (b) $AM > GM > HM$ (c) $AM < GM < HM$ (d) $AM \geq GM \geq HM$	K1	CO1
2	Quartile deviation is equal to (a) interquartile range (b) double the interquartile range (c) half the interquartile range (d) none of the above	K1	CO1
3	If $r = 1$, then the two regression lines are (a) coincident (b) parallel (c) perpendicular to each other (d) zero	K2	CO2
4	The regression coefficient is unaffected by taken of (a) origin (b) scale (c) both (a) and (b) (d) none	K2	CO2
5	If $P(A) = 0.4$ and $P(B) = 0.3$, what is the probability of either event A or event B occurring (assuming they are independent)? (a) 0.7 (b) 0.1 (c) 0.12 (d) 0.72	K3	CO3
6	In a Normal distribution, the value of mean, median and mode are: (a) equal (b) not equal (c) cannot define (d) none of the above	K3	CO3
7	A test based on the test statistic is called (a) randomised test (b) non- randomised test (c) Sequential test (d) none	K4	CO4
8	Student t- test is applicable in the case of (a) large sample test (b) small sample test (c) both (a) and (b) (d) none	K4	CO4
9	Analysis of variance utilizes: (a) t- test (b) chi- square test (c) both (a) and (b) (d) F - test	K5	CO5
10	The non – parametric test is (a) F - test (b) ANOVA (c) t - test (d) Run test	K5	CO5

SECTION - B (35 Marks)

Answer ALL questions

ALL questions carry EQUAL Marks

(5 × 7 = 35)

Question No.	Question	K Level	CO
11.a.	Find mean, median and mode for the data given below: 29, 35, 54, 38, 54	K1	CO1
	(OR)		
11.b.	Write a short note on standard deviation	K2	CO2
12.a.	State the properties of correlation coefficient.		
	(OR)		
12.b.	State the properties of regression coefficient. Also write the uses of regression equations.		

Cont...

13.a.	Find the probability of a leap year contains 53 Sundays.	K3	CO3														
(OR)																	
13.b.	Define normal distribution. Also write its properties.																
14.a.	10 objects are chosen at random from a large population and their weights are found to be in grams: 63, 63, 66, 67, 68, 69, 70, 70, 71 and 71. In the light of the above data discuss the suggestion that the mean weight in the universe is 66 grams.	K4	CO4														
(OR)																	
14.b.	In a laboratory experiment, two samples gave the following results: <table><tr><th>Sample</th><th>Size</th><th>Sample mean</th><th>Sum of the square of the deviations from the mean</th></tr><tr><td>1</td><td>10</td><td>15</td><td>90</td></tr><tr><td>2</td><td>12</td><td>14</td><td>108</td></tr></table> Test the equality of sample means at 5% level of significance.			Sample	Size	Sample mean	Sum of the square of the deviations from the mean	1	10	15	90	2	12	14	108		
Sample	Size			Sample mean	Sum of the square of the deviations from the mean												
1	10	15	90														
2	12	14	108														
15.a.	The following table gives the number of aircraft accidents that occurred during the various days of the week: <table><tr><th>Days</th><th>1</th><th>2</th><th>3</th><th>4</th><th>5</th><th>6</th><th>7</th></tr><tr><td>No. of accidents</td><td>14</td><td>16</td><td>8</td><td>20</td><td>11</td><td>9</td><td>14</td></tr></table> Find whether the accidents are uniformly distributed over the week.	Days	1	2	3	4	5	6	7	No. of accidents	14	16	8	20	11	9	14
Days	1	2	3	4	5	6	7										
No. of accidents	14	16	8	20	11	9	14										
(OR)		K5	CO5														
15.b.	Write the test procedure of Mann – Whitney U test.																

SECTION -C (30 Marks)

Answer ANY THREE questions

ALL questions carry EQUAL Marks

(3 × 10 = 30)

Ques tion No.	Question										K Level	CO	
16	Calculate the standard deviation and its coefficient for the following data :										K1	CO1	
	Height	15-20	20-25	25-30	30-35	35-40	40-45	45-50	50-55	55-60			
	No.of boys	20	26	44	60	101	109	84	66	10			
17	Find Karl Pearson's coefficient of correlation.										K2	CO2	
	X	10	25	13	25	22	11	12	25	21			20
	Y	12	22	16	15	18	18	17	23	24			17
18	The king , queen and jack of clubs are removed from a deck of 52 playing cards and well shuffled. One card is selected from the remaining cards. Find the probability of getting (i) a heart (ii) a queen (iii) clubs.										K3	CO3	
19	A random sample of 100 persons from town A, 40 are found to be consumers of wheat. In a sample of 80 from town B, 40 are found to be consumers of wheat. Do these data reveal a significant difference between town A and town B so far as the proportion of wheat consumers is concerned?										K4	CO4	
20	A sample analysis of examination results of 500 students was made. It was found that 220 students had failed,170 had secured a third class, 90 were placed in second class and 20 got a first class. Do these figures commensurate with the general examination result which is in the ratio of 4:3:2:1 for the various categories respectively.										K5	CO5	

Z-Z-Z

END