CMR INSTITUTE OF TECHNOLOGY

USN

Internal Assesment Test - II

Sub: STATISTICS FOR MANAGERS | Code: 22MBA14

Date: 21-05-2024 | Duration: 1.30 Hrs | Max Marks: 50 | Sem: I | Branch: MBA

SET- II

		Marks	OBE CO	OBE RBT
	Part A - Answer Any Two Full Questions (2* 20 = 40 marks)			
1 (a)	Explain the Rules of Probability.	[03]	CO3	L2
(b)	Outline the case and solve by Binomial Distribution. 10 coins are thrown simultaneously. Find the probability of getting atleast 7 heads.	[07]	CO3	L4
(c)	Examine the case. An insurance company, which specializes in motor insurance, bases the premium charged partly on the region of the country in which the owner of the vehicle lives. The following table shows the number of claims from each region for a random sample of claims in the year 2010 and the percentage distribution of claims in the previous years.	[10]	CO4	L3

Region	A	B	C	D	E
Number of claims in 2010	59	119	67	161	94
% of claims before 2010	10	25	15	30	20

Test whether there is evidence of a significant change in the distribution of claims. Use Chi Square Test.

2 (a)	Calculate the probability of throwing 7 with two dice.	[03]	CO4	L3
(b)	Solve the given case. Set up ANOVA table for the following per hectare yield for three varieties of wheat, each grown in four plots:	[07]	CO4	L3

Plots of Land	Variety of Wheat		
	A_1	A_2	A_3
1	6	5	5
2	7	5	4
3	3	3	3
4	8	7	4

Also work out F-ratio and test whether there is significant difference among the

	average yields in the 3 varieties of wheat. (Use ANNOVA TEST)			
(c)	Outline the given problem and solve by Poisson Distribution. In a certain factory turning razar blades there is a small chance of 1/500 for any blade to be defective. The blades are in packets of 10. Use Poisson distribution to calculate the approximately number of packets containing (i) no defective, (ii) one defective. (iii) 2 defective blades respectively in a consignment of 10,000 packets.	[10]	CO3	L4
3 (a)	Calculate the probability. A bag contains 6 red and 7 black balls. Find the probability of drawing a red ball.	[03]	CO4	L3
(b)	Summarize and compute the value of test and write the conclusion. A random sample of 200 tins of coconut oil gave an average weight of 4.95 kgs with a standard deviation of 0.21 kg. Do we accept the hypothesis of net weight 5 kgs per tin at 5%.	[07]	CO4	L5
(c)	Judge the case as per the requirement. Compute the Probability based on Normal Distribution. The weekly wages of 1000 workmen are normally distributed around a mean of Rs. 70 with a S.D.of Rs. 5. Estimate the number of workers whose weekly wages will be i. Between Rs. 69 and Rs. 72. ii. Less than Rs. 69. iii. More than Rs. 72.	[10]	CO3	L5
	Part B - Compulsory (01*10=10 marks) – CASE STUDY			
4				
	Analyze the case given below. A computer company XYZ would like to choose the performance of programmers, scoring in 2 branches, located in different cities. The performance indices of employees:	[10]	CO4	L4

Branch A	84	68	78	49	45
Branch B	76	77	64	62	53

To find out whether there is any difference in the performance indices of employees of the two branches. {Apply U test}

	Course Outcomes (COs)	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4
CO1:	Understand how to organize, manage, and present the data.									
CO2:	Use and apply a wide variety of specific statistical tools.									
CO3:	Understand the applications of probability in business.				1a, 1b,		1a, 1b,		3c	

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SCHEME OF EVALUATION

Internal Assessment Test 2– May 2024

Sub:	STATISTICS FOR MANAGERS			Code:	22MBA14
Date:	21-05-24	Duration: 90mins	Max Marks: 50	Sem: 1	Branch: MBA

Note: Part A - Answer Any Two Full Questions (20*02=40 Marks)

Part B - Compulsory (01*10= 10marks)

Part	Question #		Description	Marks Distribution		Max Marks
A	1	a)	Rules of probability are: ✓ Addition method ✓ multiplication method.	3m ½ + ½	3	20 M
		b)	Binomial Distribution P(atleast 7) = P(7) + P(8) + P(9) + P(10) = 0.1718	5m for steps → 2m for solved	7	

		c)	Chi-Square Test H_0: There is no evidence of a change in the customer's views H_1: There is a evidence — " — — — O | 50 119 67 161 94 E | 50 125 75 150 100 χ^2 CV — Tv (5-1)(2) 5% = 4 0.463 < 9.484 H_0 is Accepted	8 M for 5 Steps 2 M for Answer	10	
2		a)	P(7 coin & 2 dice) $= \frac{6}{36} = \frac{1}{6}$	3 M for Answer	3	20 M

b) ANOVA

SST = 32 ; SSC = 8

SSE = 24

f_c = 1.49

CV = 4.26 (2,9)

1.49 < 4.26

H_0 is Accepted

6 M

7

c) Poisson Distribution

λ P(0) = 0.980

λ P(1) = 0.0196

P(2) = 0.000196

[0] = 9800

[1] = 1960

[2] = 1.96 = 2

7 M

3 M

10

		a)	$P(\text{Red Ball}) = \frac{6}{13}$.	3	3	
	3	b)	$t = 3.57$ Cv Tv $3.57 > 1.96$ Ho is Rejected	5	7	20 M

		c)	Normal Distribution a) 0.2347 = 235 b) 0.4207 = 421 c) 0.3346 = 335	7 m 3 m Answer	10	

B	4	a)	$\bar{U} = 12$ Mean $\bar{U} = 12.5$ $z = 0.104$ $12.05 \leq 0.104$ $12.39 \geq 12.604$ Accept H0 H0 is rejected		10	10 M