

C 21834

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Name.....

Reg. No.....

SECOND SEMESTER (CUCBCSS—UG) DEGREE EXAMINATION, APRIL 2022

Microbiology

MBG 2C 04—BIOSTATISTICS—II

(2018 Admissions)

Time : Three Hours

Maximum : 80 Marks

Part A*Answer all questions.**Each question carries ½ mark.*

1. The hypothesis $H_0 : \theta = \theta_0$ is a _____ hypothesis.
2. Critical region is also known as _____.
3. Degrees of freedom of Chi-square in case of contingency table of order (6×3) are _____.
4. Abbreviated form of analysis of variance is _____.
5. If the two lines of regression are coincident, the relation between the two regression coefficients is _____.
6. The functional relationship between a dependent variable with an independent variable is called _____.
7. ANOVA technique is used to test the equality of _____.
8. Correlation coefficient is _____ of change of origin and scale.
9. If the regression coefficient, $b_{YX} > 1$, then b_{YX} is _____.
10. In a regression line of Y on X, the variable X is known as _____.
11. The correlation coefficient $r = -1$ indicates _____ correlation.
12. If both the regression coefficients are negative, the correlation coefficient would be _____.

(12 × ½ = 6 marks)

Turn over

Part B

Answer all questions.

Each question carries 2 marks.

13. Define composite hypothesis with an example.
14. What is a contingency table ? Give the χ^2 statistic for a 2×2 contingency table.
15. Discuss power of test and level of significance.
16. Name the test statistic used in ANOVA. Explain its calculation.
17. Write down the ANOVA table for testing the significance of regression model in simple linear regression model.
18. Briefly explain regression lines.
19. Define positive and negative correlation with examples.
20. What are the merits and demerits of rank correlation ?
21. Consider three variables X_1 , X_2 and X_3 , following correlation coefficients were obtained $r_{12} = 0.77$, $r_{13} = 0.72$ and $r_{23} = 0.52$. Find multiple correlation coefficient $R_{1.23}$.
22. Define partial correlation with an example.

(10 × 2 = 20 marks)

Part C

Answer any six questions.

Each question carries 5 marks.

23. Explain Chi-square test for goodness of fit.
24. Discuss about simple regression analysis.
25. Find Karl Pearson's coefficient of correlation for the following data and also interpret the result.

X ... 6 8 12 15 18 20 24 28 31

Y ... 10 12 15 15 18 25 22 26 28

26. Fit a simple regression model for the following data and interpret the result

X ... 1 2 3 4 5 6 7 8

Y ... 1 1.2 1.8 2.5 3.6 4.7 6.6 9.1

27. Eucidate the concept of multiple correlation. State the properties of multiple correlation coefficient.
28. Discuss in detail one-way ANOVA.
29. Briefly explain the steps in solving testing of hypothesis problem.
30. Use χ^2 test to determine if any distinction is made in employment on the basis of sex. χ^2 value at 5% level for 1 df is 3.84.

		<i>Employed</i>	<i>Not employed</i>
Male	...	1480	5720
Female	...	120	680

(6 × 5 = 30 marks)

Part D

Answer any two questions.
Each question carries 12 marks.

31. (i) Explain different types of correlation with examples.
- (ii) Find the rank correlation coefficient for the following data.

X	...	68	64	75	50	64	80	75	40	55	64
Y	...	62	58	68	45	81	60	68	48	50	70

32. Discuss in detail two way ANOVA. Explain a real life application of two way ANOVA.
33. Briefly explain regression lines. Given that the means of X and Y are 65 and 67, their standard deviations are 2.5 and 3.5 respectively and the co-efficient of correlation between them is 0.8.
- (i) Write down the two regression lines.
- (ii) Obtain the best estimate of X when Y = 70.
- (iii) Using the estimated value of X as the given value of X, estimate the corresponding value of Y.

(2 × 12 = 24 marks)