C 26072

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Name.....

Reg. No.....

FOURTH SEMESTER B.Sc. DEGREE EXAMINATION, MAY 2012

(CCSS)

Microbiology (Complementary)

MB 4C 15—BIOSTATISTICS II

(As per 2009 Admission Syllabus)

Time : Three Hours

Maximum : 30 Weightage

Part A

Answer **all** *questions.*
Each carries **a** *weight of* 1/4.

1. Significance level of a test stands for :

(a) P [Reject H_o I H_o is False].
(b) P [Reject H_o | H_o is True].
(c) P [Accept H_o | H_o is True].
(d) P [Accept H_o | H_o is False].

2. The performance of a test is judged by considering :

(a) Only significance level.
(b) Only power.
(c) Both significance level and power.
(d) None of these.

3. The square of the correlation coefficient is called :

(a) Coefficient of determination.
(b) Coefficient of association.
(c) Yule's coefficient.
(d) Spearman's coefficient.

4. For the Chi-square test to be valid we should have :

(a) Sample size small and expected frequency of every cell > 5.
(b) Sample size large and expected frequency of every cell < 5.
(c) Sample size small and expected frequency of every cell < 5.
(d) Sample size large and expected frequency of every cell > 5.

5. The value of correlation coefficient r satisfies

(a) $1 \; r \; < 1$.
(b) $0 < r < 1$.
(c) $0 \; r \; 1$.
(d) $-1 \; r \; 1$.

1. Rank correlation coefficient equals Then it implies :

(a) Rankings are not similar.
(b) Ranking is not proper.
(c) Some ranks are given to both scores.
(d) None of these.

Turn over

7. The variable affected by treatment is called _____ variable.
8. If there are 5 treatments in an RBD design then the degrees of freedom for treatment sum of squares in the ANOVA table will be
9. To test the significance of a correlation coefficient we use _____ test.
10. If the correlation coefficient $r = +1$ then the regression lines will be
11. In the Chi-square test for testing association of attributes the null hypothesis states that the two attributes are
12. The principle of least squares minimizes _____ sum of squares.

(12 x 1/4 = 3 weightage)

Part .B

Answer **all** *questions.*
Each one carries a weight of 1.

13. Define power of a test.
14. What is the difference between type I and type **II** errors ?
15. Give n example of a 3 x 2 contingency table.
16. Define analysis of variance.
17. Explain the term local control.
18. Give the meanings of experimental unit and block.
19. Explain why there are .two regression lines.
20. State the 95% confidence interval for the parameter β in the model $y = a + \beta x + u$.
21. What is meant by partial correlation ?

(9 x 1 = 9 weightage)

Part C

Answer any **five** *questions.*
Each carries a weight of 2.

22. Find the rank correlation coefficient :

:	1	2	3	4	5
y:	2	1	3	5	4

23. Bring out the basic principles of experimentation.
24. Give the layout of an CRD design •and indicate a real life situation where such a design is appropriate.
25. In the case of 3 variables X_1, X_2, X_3 based on 20 observations we have the following correlations — $r_{12} = 0.7$, $r_{13} = 0.5$, $r_{23} = 0.6$. Find $r_{12.3}$ and $R_{1.23}$.
26. Describe a statistical test for testing the significance of a regression coefficient.

27. Find out the Karl Pearson's correlation coefficient from the following information

$n = 10, \Sigma x = 120, \Sigma y = 90$

$\Sigma x^2 = 1580, \Sigma y^2 = 1400, \Sigma xy = 1380$

28. Complete the ANOVA table and state which design was used and how many treatments were compared.

Source	S.S.	df	M.S.	F
Treatment	154.9	4		
Error				
Total	200.5	39		

(5 x 2 = 10 weightage)

Part D

Answer any two questions.
Each one carries a weight of 4.

29. The strength of cotton in a CRD experiment is given below. Analyse the data and give your comments.

Treatment	Observations
A	7.62, 8.0, 7.93
B	8.14, 8.15, 7.87
C	7.76, 7.73, 7.74
D	7.17,7.57,7.80

30. Calculate the correlation coefficient and the two regression lines from the following data :

Glucose level	88	90	96	118	124	130	140
Blood pressure	134	140	141	146	148	168	145

31. In a sample of size 160 the observed distribution of offsprings in the 4 phenotype classes are as follows :

Class	AB	Ab	aB	ab
Frequency	100	25	28	7

Test whether the frequencies are in the ratio 9 : 3 : 3 : 1.

(2 x 4 = 8 weightage)