

EASTERN UNIVERSITY, SRI LANKA

FIRST EXAMINATION IN SCIENCE(2001/2002)

(Sep./Oct'2005)

EXTERNAL DEGREE

SECOND SEMESTER

EXCC103-BIO MATHEMATICS AND BIO STATISTICS

Answer all questions

Time : Two hours

1. (a) Simplify the following:

i. $\frac{a^5b^{-3}c^2}{ab^3c^{-1}}$,

ii. $(x^2y^{-3})^{-4}$,

iii. $\frac{\sqrt{16x^{-8}y^4}}{x^{-2}y + \sqrt{x^{-4}y^2}}$.

(b) Solve the following equations:

i. $3 - x - 2x^2 = 0$,

ii. $3^{2x+1} - 26 \times 3^x = 0$.

(c) Factorize the following;

i. $x^3 - 3x^2y + 3xy^2 - y^3$,

ii. $10x^2 - 17x + 3$.

(d) If $\log 3 = 0.4771$, find $\ln 3$.

(e) Find the modulus and argument of $\frac{7-i}{3-4i}$.

2. (a) Differentiate the following with respect to x and simplify:

i. $y = x^2 e^{4x}$,

ii. $y = \frac{x^2 - 3x}{2x + 3}$.

(b) Find the following indefinite integrals:

i. $\int 3x^{-4} dx$,

ii. $\int (3x - 8)^6 dx$,

iii. $\int \frac{1}{2x + 5} dx$,

iv. $\int xe^x dx$.

(c) i. Find the equations of the lines which pass through the point of intersection of the lines $x - 3y = 4$ and $3x + y = 2$ and are respectively parallel and perpendicular to the line $3x + 4y = 0$.

ii. Find the turning points of the function $(2x - 3)^2(x - 2)^3$.

3. Give precise, complete and unambiguous definitions of the following statistical term, with examples, if necessary.

(a) Random sampling

(b) Sample space

(c) Independent event

(d) Conditional event

(e) Histogram

(f) Combination

(g) Null Hypothesis

(h) Student's distribution

(i) Confident limit

(j) Central limit theorem

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YEAR EXAMINATION IN SCIENCE, 2002/2003
SECOND SEMESTER
4. (a) Briefly explain the "Measures of Central Tendency" with suitable examples.
- (b) Distinguish between the following,
- Correlation and Regression
 - Binomial distribution and Poisson distribution