EASTERN UNIVERSITY, SRI LANKA

FACULTY OF COMMERCE AND MANAGEMENT

FIRST YEAR - FIRST SEMESTER EXAMINATION IN

BACHELOR OF BUSINESS ADMINISTRATION / BACHELOR OF COMMERCE – 2014/2015 (July/ August 2016)

(PROPER/REPEAT/RE-REPEAT)

COM 1012 – FINITE MATHEMATICS

wer all Questions   Time Allowed: 02 Hours

i) Find the value of $\dfrac{7^0 \times 3^{-3}}{2^{-1}}$.

ii) Simplify $3^{1/4} \times 6^{3/4} \times 2^{5/4}$.

iii) If $x = 5$, $y = 3$, find the value of $(x+y)^{x/y}$.

iv) Rationalize the denominator of $\dfrac{1+\sqrt{2}}{3-2\sqrt{2}}$.

v) Simplify to the lowest term: $\dfrac{2^{n+1}}{(2^n)^{n-1}} \div \dfrac{(2^{n-1})^{n+1}}{4^{n+1}}$

vi) If $a - b = \dfrac{a^2 - b^2}{b^2 - a^2}$, find the value of $b - a$.

vii) Simplify: $\dfrac{x+y}{x-y} - \dfrac{x-y}{x+y} + \dfrac{4x^2}{x^2 - y^2}$

viii) Simplify $(a+b)(a-b)(a^2+b^2)(a^4+b^4)$ using the knowledge of factors.

ix) If $2^x \times 8^{x+1} = \dfrac{1}{4^3}$, find the value of x.

x) If $x + y = 2$, and $x^2 - xy - 2y^2 - 10 = 0$, find the value of $x - 2y$.

xi) Let E and F be two events such that $P(E) = 0.40, P(F) = 0.35$ and $P(E \cup F) = 0.55$. Find $P(E \cap F)$.

xii) Of the 10 computer chips, 4 are defective. What is the probability of selecting 3 w
replacement, only one of which is defective?

xiii) If the matrices A and B given below are equal, find the values of x and y.

$$A = \begin{pmatrix} 3 & 2x \\ -y & 7 \end{pmatrix} \qquad B = \begin{pmatrix} 3 & 8 \\ 9 & 7 \end{pmatrix}$$

xiv) If $A = \begin{pmatrix} -5 & 2 \end{pmatrix}$ and $B = \begin{pmatrix} 1 & 0 \end{pmatrix}$, then find $2A^T + 3B^T$ and AB^T.

xv) If A is a 2 x 3 matrix, and B is a 4 x 3 matrix, what is the dimension of matrix BA^T ?

(2 X 15 = 30 N

02. i) Let $D = -50p + 250$ and $S = 25p + 25$ are the demand and supply functions of a certain produ

  a) Compare the quantity demanded and quantity supplied when price is Rs. 4
  b) Will there be a surplus or shortage at this price?
  c) Find the market equilibrium price and quantity.

(05 N

ii) Factor the following expressions completely:

  a) $x^6 + x^3 - y^6 - y^3$
  b) $18x^2 + 33x - 216$
  c) $a^2(x - 2y)^2 - b^2(2y - x)^2$

(09 N

iii) Solve the following equations:

  a) $x^4 - 12x^2 + 27 = 0$
  b) $2^{2x} + 2^{x+1} - 8 = 0$

(06 N

iv) Solve the simultaneous equations: $2x^2 - 3xy + 5y^2 = 1$; $3x - 2y = 2$

(05 N

(Total Ma

03. i) If $M = \begin{pmatrix} x & x-2 \\ 3x-6 & 4x-11 \end{pmatrix}$ and $|M| = 0$, find the possible values of x.

(04 N

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ii) Given $A = \begin{pmatrix} 6 & -2 \\ -4 & 1 \end{pmatrix}$ and I is the 2×2 identity matrix, prove the following:

a) $A^2 = 7A + 2I$

b) $A^{-1} = \dfrac{1}{2}(A - 7I)$.

(08 Marks)

iii) A retailer orders 100 jerseys. The large size costs her Rs. 560 each, medium Rs. 500 each, and small Rs. 440 each. She spends a total of Rs. 49700. She makes a profit of Rs. 80 on the large and medium size jerseys and Rs. 60 on small. Her total profit is Rs. 7400. Suppose she purchased x number of large size jerseys, y number of medium size jerseys, and z number of small size of jerseys

a) Develop a system of three linear equations which can be used to find out the number jerseys x, y, and z she purchased.

b) Represents the system of linear equations developed in part (a) as matrix equation.

c) Find the values for x, y, and z by solving the matrix equation using inverse matrix.

(10 Marks)

(Total Marks 22)

i) a) Specify the sample space S for the following random experiment by listing the simple events in S.

"After 20 shoppers are asked if they are satisfied with parking accessibility, the number of positive responses is recorded."

b) A sample of 40 oil industry executives was selected to test a questionnaire. One question about environmental issues required a yes or no answer.

    I)   What is the experiment?

    II)   Write one possible event.

    III)   Ten of the 40 executives responded yes. What is the probability that an oil industry executive will respond yes?

    IV)   Which approach did you use in part (III) to find probability?

    V)   Is each of the possible outcomes equally likely and mutually exclusive?

(07 Marks)

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ii) An aerospace company has submitted bids on separate contracts A and B. The company fee
it has a 60% chance of winning contract A and a 30% chance of winning contract B.

    a) If the company believes that winning contract A is independent of winning contract B

        I)   What is the probability that the company will win both contracts?

        II) What is the probability that the company will win at least one of the two contract

    b) Given that it wins contract B, the company believes it has an 80% chance of winning cont
       If the company wins contract B, what is the probability that it will not win contract A?

                                                              (07

iii) A manufacturer of DVD players purchases a particular microchip from three suppliers A, B
30% of the microchips are purchased from the supplier A, 20% from the supplier B and 50%
the supplier C. 3% of the microchips from A, 5% from B and 4% from C are defective.

    a) Construct a tree diagram showing all the probabilities, conditional probabilities and
       probabilities.

    b) The manufacture of DVD players selects a microchip purchased from the three suppli
       random.

        I)   What is the probability a microchip selected at random is defective?

        II) What is the probability the selected defective microchip which was purchased fro

           supplier B?

                                                               (09

                                                               (Total Mar

Eastern University, Sri Lanka

Faculty of Commerce and Management

First Year First Semester Examination in Bachelor of Business Administration /

Bachelor of Commerce 2014/ 2015 (Aug 2016)

COM 1021 Basic Science for Non Science Students (Repeat/ Re-repeat)

Answer All Questions.   Time: 1 Hour

(Illustrate your answer wherever necessary)

01) a) What is Food Web?
   b) Define the term Ecosystem.
   c) What is Herbivores?
   d) What is Population?
   e) What is Species?
   f) State the basic element of Protein ?
   g) What is Molecule?
   h) What is Phospholipid?
   i) State the term Sexually Transmitting Diseases   **(40 Marks)**

02) a) Define the term pollution?
   b) States the types of the pollution.
   c) Write briefly on the terrestrial/ land pollution in your village or home town.

                                                                        (30 Marks)

03) Write Short notes on **any three** of the following:
   a) Values of the Biodiversity
   b) Global warming
   c) Acid rain
   d) Eutrophication
   e) Ozone depletion   **(30 Marks)**