## EASTERN UNIVERSITY, SRI LANKA

## FACÚLTY OF COMMERCE AND MANAGEMENT

FIRST YEAR - FIRST SEMESTER EXAMINATION IN
BACHELOR OF BUSINESS ADMINISTRATION / BACHELOR OF COMMERCE - 2015/2016 (July 2017)
(PROPER/REPEAT/RE-REPEAT)
COM 1012 - FINITE MATHEMATICS
ar all Questions
Time Allowed: $\mathbf{0 2}$ Hours

Write the letter of the best choice for each question in the given answer script:
$8^{\frac{-2}{3}}+(-32)^{\frac{-2}{5}}=$
a) 8
b) $\frac{1}{2}$
c) 0
ii) If $a=-2$, then $|2-a|-|3 a|=$
a) 10
b) - 6
c) -2
iii) $(2 x-3 y)^{2}=$
a) $4 x^{2}-9 y^{2}$
b) $2 x^{2}-6 x y+3 y^{2}$
c) $4 x^{2}-12 x y+9 y^{2}$
iv) $x^{2}(x+y)^{2}=$
a) $x^{4}+y^{4}$
b) $x^{4}+2 x^{3} y+x^{2} y^{2}$
c) $\quad x^{4}-2 x^{3} y+x^{2} y$
$\left(12 x^{6} y^{2}\right)\left(2 y^{3} x^{2}\right)\left(3 x^{3} y^{4}\right)=$
a) $72 x^{11} y^{8}$
b) $72 x^{11} y^{9}$
c) $\quad 72 x^{12} y^{8}$
vi) $\left(\frac{-4 x^{2} y^{-3}}{x^{-1} y^{2}}\right)^{-2}=$
a) $\frac{-y^{10}}{1.6 x^{6}}$
b) $\frac{y^{10}}{16 x^{6}}$
c) $-16 x^{-6} y^{10}$
vii) $\sqrt{25 x^{2}+25 y^{2}}=$
a) $5 \sqrt{x^{2}+y^{2}}$
b) $5 x+5 y$
c) $5 x y$
viii) $\frac{x^{2}-y^{2}}{\frac{1}{x}+\frac{1}{y}}=$
a) $\quad x y(x-y)$
b) $x y(x+y)$
c) $-x y(x+y)$
ix) $5 x-3[4(x-y)+6 x]=$
a) $\quad-5 x+4 y \quad$ -
b) $-25 x+12 y$
c) $-10 x-12 y$
x) $\frac{x^{2}-25}{5(x+5)} \times \frac{x}{(x-5)}=$
a) $\frac{x}{5}$
b) $\frac{x}{x+5}$
c) $\frac{x(x-5)}{5(x+5)}$
xi) If $3^{x-1}+3^{x-1}+3^{x-1}=(81)^{y}$, then $\frac{x}{y}=$
a) 4
b) 2
c) 3
xii) If $\sqrt{5 x-4}=4$, then $x=$
a) $\frac{2 \sqrt{2}}{5}$
b) $\frac{8}{5}$
c) 4
02. i) Simplify the following expressions:
a) $\left(\frac{a^{2} b^{-3}}{x^{-1} y^{2}}\right)^{3}\left(\frac{x^{-2} b^{-1}}{a^{3 / 2} y^{1 / 3}}\right)$.
b) $\frac{3 x}{2-3 x+x^{2}}+\frac{4}{1-x}+\frac{6}{2-x}$

Factor the following expressions completely:
a) $128 x^{2}-98 y^{2}$
b) $\quad 2(x+y)^{2}-3(x+y)-27$

Solve the following equations:
a) $\quad 9(x-2)^{2}=121$
b) $\quad \frac{2 x-5}{x+1}-\frac{3}{x^{2}+x}=0$
iv) Solve the following simultaneous equation:
a) $20 x+4 y=280$
$10 y-9 x=110$
b) $\quad 2 x-3 y=1$
$2 x^{2}+3 x-3 y^{2}=38$
(Total Marks 25)

If $\left(\begin{array}{cc}1 & x+y \\ -4 & x-y\end{array}\right)=\left(\begin{array}{cc}1 & 6 \\ -4 & 2\end{array}\right)$, then find the values of $x$ and $y$.

If $A=\left(\begin{array}{ccc}1 & 2 & 1 \\ 1 & -1 & 1 \\ 2 & 3 & -1\end{array}\right)$, and $B=\left(\begin{array}{ccc}1 & 4 & 0 \\ -1 & -2 & 2 \\ 0 & 0 & 2\end{array}\right)$, then find $A B+2 B^{T}$.

If $\left(A+3\left(\begin{array}{ccc}1 & -1 & 0 \\ 1 & 2 & 4\end{array}\right)\right)^{T}=\left(\begin{array}{ll}2 & 1 \\ 0 & 5 \\ 3 & 8\end{array}\right)$, then find $A$.
iv) Using matrix inverse, solve the following system of linear equations.
$10 x+3 y+6 z=76$
$4 x+5 z=41$
$5 x+2 y+2 z=34$
04. i) A market researcher asked a consumer to rank her preferences of energy drinks among Monster, Red Bull, and Rockstar.
a) Write the sample space of this experiment.
b) What is the probability that the consumer will rank Red Bull first?
c) What is the probability that two consumers will both rank Red Bull first?
ii) A survey of 100 recent college graduates found that 50 owned only mutual funds, 35 stocks, and 15 owned both.
a) What is the probability that an individual owns a stock?
b) What is the probability that an individual owns a mutual fund?
c) What is the probability that an individual owns neither stocks nor mutual funds?
d) What is the probability that an individual owns either a stock or a mutual fund?
iii) A department store manager has monitored the number of complaints received per poor service. The probabilities for number of complaints in a week, established by this shown below.

| Number of complaints | 0 | 1 | 2 | 3 | 4 | 5 |
| ---: | ---: | ---: | ---: | ---: | ---: | ---: |
| Probability | 0.14 | 0.39 | 0.23 | 0.15 | 0.06 | 0.03 |

Let A be the event "There will be at least one complaint in a week" and B the event"T most 3 complaints in a week"
a) Find the probability of event A .
b) Find the probability of event $B$.
c) Describe the event that is the complement of A and find its probability.
d) Describe the event that is the union of $A$ and $B$ and find its probability.
e) Describe the event that is the intersection of $A$ and $B$ and find its probability.
f) Are $A$ and $B$ mutually exclusive?
g) Are $A$ and $B$ collectively exhaustive?
h) Are $A$ and $B$ independent? *

