COIT11224 – Computer Systems – Sample Examination

Part A

Question 1  What is the h.c.f. (highest common factor) of 35, 38 and 42?

Question 2  What is the l.c.m. (lowest common multiple) of 5, 6 and 8?

Question 3  Find $\frac{4}{9} - \frac{1}{2} + \frac{5}{6}$

Question 4  Express $\frac{5}{8}$ as a decimal

Question 5  Express 0.00652 in scientific notation

Question 6  If $X = \{4, 7, 12, 17\}$ and $Y = \{19, 22, 25, 28, 77\}$, what is $X \cap Y$?

Question 7  A bank deposit of $380 earns $32.30 interest for the year. What is the percentage rate of interest?

Question 8  Evaluate $4^{\frac{1}{5}} \times 27^{\frac{1}{3}}$

Question 9  Simplify $(4a^2)^{\frac{1}{2}}$

Question 10  Convert ABC to decimal

Question 11  If the $4^{th}$ term of a geometric progression is 26, and the first term 5, what is the ratio?

Question 12  Simplify $x + 8(y - x)$

Question 13  Simplify $e^{4t} / e^{3t}$

Question 14  Solve the following equation: $\log(10 + 10^x) = 2$

Question 15  What is the arithmetic mean of the numbers 33, 17, 19, 21, 17, 5, 7?

Question 16  What is the median of the numbers 33, 17, 19, 21, 17, 5, 7?

Question 17  What is the mode of the numbers 33, 17, 19, 21, 17, 5, 7?

Question 18  What is the range of the numbers 33, 17, 19, 21, 17, 5, 7?
Question 19  Find the number of permutations of 4 objects selected from a set of 12 distinct objects.

Question 20  If a bag of coins contains 24 coins dated 2000, 14 coins dated 1999, and 10 coins dated 2001. What is the probability that if one coin is selected at random, it will have a date greater than 1999?

Part B

Question 1  Microsoft Windows is a well known and popular operating system. Another operating system that is popular and currently being installed as standard on a number of personal computers is Linux. Briefly discuss the advantages and disadvantages of each operating system (100 to 300 words).

Question 2  What are the advantages and disadvantages of using a WLAN (Wireless LAN) over a conventional cable LAN? (100 to 300 words)

Question 3  Briefly describe the function of a mail server (100 to 300 words).

Question 4  Eight student’s assignments were chosen at random and the assignment marks given were 8, 11, 7, 13, 10, 11, 7, and 9. Calculate the standard deviation using the formula

\[ s = \sqrt{\frac{\sum S_{xx}}{n-1}} \]

where \( S_{xx} = \sum x^2 - \left(\frac{\sum x)^2}{n}\right) \)

Question 5  If we randomly choose a card from a well shuffled standard deck of cards (52 cards in a deck), what is the probability that the card will be a red 5 or a black 6?

Question 6  Find the inverse of the matrix A = \[
\begin{pmatrix}
6 & 5 \\
2 & 2
\end{pmatrix}
\]

Question 7  Simplify the following expressions to a single log term:

(a) \( \log 2 + \log 3x - \log 2x \)  
(b) \( \log 5y^2 + \log 4y - \log 10y^2 \)

Question 8  

(2 marks)
Given $10^{0.6990} = 5$, evaluate $\log 500$

**Question 9**

(2 marks)

Simplify $\sqrt{(e^2 + e + \frac{1}{4})}$

**Question 10**

(2 marks)

Simplify $\frac{(4e)^2}{(2e)^3}$

**Question 11**

(3 marks)

Find the equation of the straight line that has a gradient of 3 and cuts the x-axis at -2

**Question 12**

(2 marks)

Solve the following quadratic equation $4x^2 + x - 1 = 0$

**Question 13**

(2 marks)

What are the solutions for $x$ that solve the equation $2x^2 - x - 15 = 0$

**Question 14**

(3 marks)

Find the inverse of the function $f(x) = 6 - 2x$

**Question 15**

(3 marks)

Find the sum of the first five terms of the geometric series with first term 2 and the common ratio 3.