

**UNIVERSITY OF SWAZILAND
FINAL EXAMINATION, DECEMBER, 2015 (SEM-I)**

Title of Paper : INTRODUCTION TO COMPUTER SCIENCE

Course Code : CSC 111

Time allowed : Three (3) hours.

Instructions : 1. Read all the questions from Page 1 to page 4.
Answer all questions in SECTION-A choosing options as written within the questions.

2. Answer any two questions in SECTION-B.

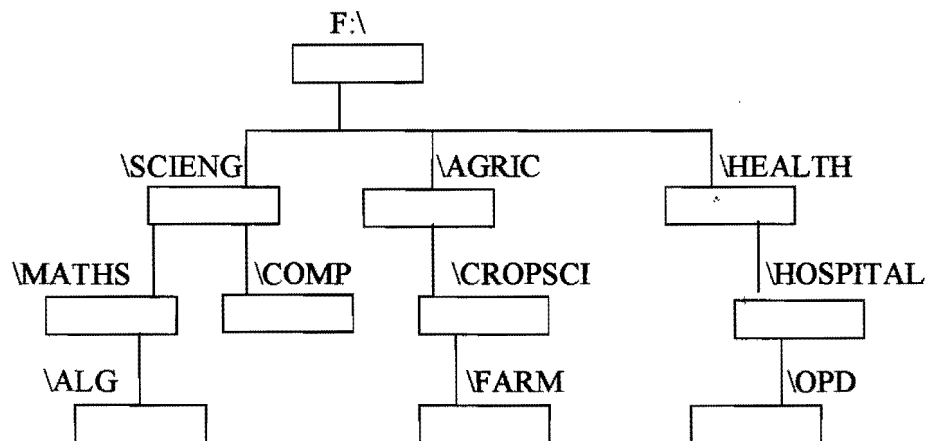
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SECTION – A

Answer all questions in this section.

Q1(a). (5 marks). Give examples and Explain clearly, the star (*) and question mark (?) Wild file specifications. Why are these specifications useful ? How can we work without using these specifications?

Q1(b). (5 marks). Starting from the system prompt F:\> , write a sequence of MSDOS commands and correct system prompts to create the following directory tree structure in the root of F: . Assume that the root of F: is empty at the start.



Q1(c). (10 marks). Write a **single** MSDOS command along with the correct system prompt to perform each of the following tasks independently. Assume that at the start of each task, the system prompt is F:\>. The context is the directory structure in question 1(b). Answer **any five** of the following. Assume that the display is always on the screen.

- (i). Display the contents of NOTES.TXT which is in the \COMP.
- (ii). Display the contents of \OPD.
- (iii). Display the directory information in \HOSPITAL starting with the letter H.
- (iv). Copy the file EXAM.DOC in \OPD to the file OLDEXAM.DOC in \HEALTH .
- (v). Change the name of the file NEWPRAC.CPP in \MATHS to OLDPRAC.CPP .
- (vi). Remove all the files with .PIC extension from \AGRIC

Q2 (a). (6 marks). The context is MS Word as implemented in the Computer Centre Lab. Write the sequence of actions as numbered lists to do the following -

(i). Assume three paragraphs – para1, para2 and para3 have already been typed. Now

- right align para1 and change style to underlined,
- left align para2 and change text color to red,
- center para3 and change text so that capital letters change to small, and small letters change to capital.

(ii). Write actions, so that each paragraph, para1, para2 and para3, starts on the first line of a new page without using enter or cut-and-paste. Now include page numbers at the top center of each page.

Q2(b). (4 marks). Write sequence of actions as bulleted lists of doing the following. Answer any two of the following –

(i). Changing one paragraph so that each sentence appears as an item of a numbered list.

(ii). Adding an equation $(x - a)^2 + (y - b)^2 = r^2$ after the current paragraph.

(iii). Add the expression with Greek characters as $\alpha \geq \beta \geq \lambda$ at the start of the current document.

Q3(a). (3 marks). Following formulas are copied from one cell to another. Write the copied formula in the destination cell. Answer any three of the following.

- (i). =A1*C2 (is copied from B1 to D3, What is copied in D3 ?).
- (ii). =B2*C2 (is copied from A2 to B3, What is copied in B3 ?).
- (iii). =A\$3+\$C3 (is copied from D1 to D3, What is copied in D3 ?).
- (iv). =A4*C4 (is copied from D1 to E4, What is copied in E4 ?).

Q3(b). (3 marks). Write the rules of copying of your answers to Q3(a). Also include the type of each cell address appearing in your answers to Q3(a)

Q3(c). (4 marks). Draw a spreadsheet having data as follows –

1. A1:A5 has data 80, 30, 60, 40, 20 respectively,
2. B1:B5 has data 20, 40, 30, 10, 00 respectively,
3. Contents of C1 are = A1+4*B1 and D1 are = B1+2*C1

The contents of C1..D1 are copied at C2..D5. Write the contents and display in C2..D5.

Q4. (20 marks). Write the analysis, IPO and the corresponding Pseudo code to solve the following problem. Write exact output displayed by your Pseudo code actions when a suitable data of your choice is entered.

It is required to find out the distance between the points of intersections, P and Q. Assume P is the intersection point of line1 and line2 and Q is the intersection point of line3 and line4. Assume a line is represented as its slope (m) and y-axis intercept (c) as in line, $y = m x + c$. All the four lines are to be given interactively and output should be on the screen and should include all the lines, both points of intersections P and Q, and the distance between P and Q.

SECTION – B

Answer any two questions in this section

Q5(1). (8 marks). Write the memory dump from memory address $(1008)_{16}$ where your surname in capital letters is stored. The ASCII code of $A = (65)_{10} = (0100\ 0001)_2 = (41)_{16}$.

Q5(b). (12 marks). Using unsigned integer in a single byte, convert $P = (147)_{10}$ and $Q = (102)_{10}$ to their binary equivalent numbers and $R = (1000\ 1100)_2$ and $S = (0111\ 0101)_2$ to their decimal equivalent numbers. Compute $(R + S)$, verify and comment on your result.

Q6(a). (8 marks). Find the binary equivalent of $(47)_{10}$, $(-47)_{10}$, $(100)_{10}$ and $(-100)_{10}$ in signed magnitude and Two's complement notations.

Q6(b). (12 marks). Interpret the following as one byte integers in Two's complement notation.

$$A = (0010\ 0111)_2, B = (1100\ 0100)_2 \text{ and } C = (1000\ 0111)_2.$$

Write the decimal equivalents of A, B and C and find binary equivalents of -A, -B, -C, $(2*A)$, $(A + B)$ and $(B - C)$ showing all your computations. Discuss and verify your results and overflow conditions, if any.

Q7(a). (6 marks). Evaluate the following expressions as truth tables for all logical values of p and q.

- (i) $p \text{ AND } (p \text{ OR } q)$
- (ii) $\text{NOT } p \text{ OR } q$
- (iii) $(p \text{ OR } q) \text{ OR } (\text{NOT } p \text{ AND } \text{NOT } q)$

Q7(b). (14 marks). Describe the structure of a one bit carry adder $(d\ z)_2 = (x + y + c)$, where d and z represent the carry bit and sum bit (of $x + y$) respectively. Write the truth table of the results and corresponding logical expressions. How can it be used to find the sum of two bytes ?

(End of Examination Paper)