University of Asia Pacific

Department of Computer Science & Engineering

Mid-Semester Examination Fall - 2021

Program: B. Sc Engineering (4th Year/ 2nd Semester)

Course Title: Business and Entrepreneurship

Course No: BUS 401   Credit: 3.00

Time: 1.00 Hours.   Full Mark: 60

There are **Four** Questions. Answer any **Three** including **Q1 & Q2**. All questions are of equal value. Figures in the right margin indicate marks.

1. a) How can organizations identify future leaders to make a successful organization? Which methods would be useful for this Theory of X or Theory of Y? [10]

    b) Critically analyze organizational behavior (OB) research methods. [10]

2. a) What are the basic functions of management? Which category or role would you consider for skilled manager under Henry Mintzberg's managerial role? [10]

    b) What kind of managerial skills and soft skills are needed for software engineers? [10]

3. a) What are the basic functions of management? Explain the requirements of efficient managerial skills for a software farm. [10]

    b) Which motivation theory have you found to be the most useful in explaining the behavior of unsatisfied employees? [10]

OR

4. a) Provide some attractive strategies to hire the most talented candidate for achieving organizational goals. [10]

    b) What are the most effective methods for internal and external recruitment? [10]

University of Asia Pacific
Department of Computer Science and Engineering
Mid-Semester Examination Fall-2021
Program: BSc in Computer Science and Engineering

Course Title: Compiler Design   **Course No.:** CSE 429   **Credit:** 3.00

Time: 1.00 Hour.   **Full Mark:** 60

Instruction(s): Answer any three questions including 1 and 2.

1. a. Describe the phases of a compiler using an appropriate figure.   **[10]**

   b. Consider the following fragment of a C code: **[10]**

   ```
   #include <stdio.h>
   int main() {
   double n1, n2, n3;

   printf("Enter three different numbers: ");
   scanf("%lf %lf %lf", &n1, &n2, &n3);

   if (n1 >= n2 && n1 >= n3)
       printf("%.2f is the largest number.", n1);

   if (n2 >= n1 && n2 >= n3)
       printf("%.2f is the largest number.", n2);

   if (n3 >= n1 && n3 >= n2)
       printf("%.2f is the largest number.", n3);
   return 0;
   }
   ```
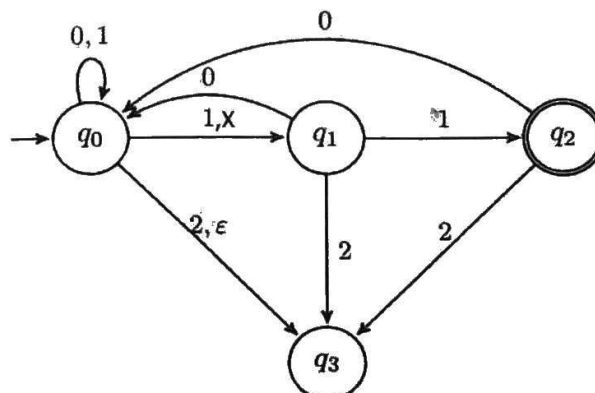
   Identify the **tokens** and **patterns** from the code.

2. a. Consider the following FA over alphabet $\Sigma = \{0, 1, 2\}$ **[4+4 =8]**

This FA also has one transition **X** from state **q0** to state **q1**.

Where,

      X= 0, if your student ID is odd

      or, X=2, if your student ID is even

Now,

i) Draw the transition table of the updated automata.

ii) Draw the updated FA diagram using the value of X.

    [12]

b. Using the **subset construction method**, convert the above NFA that you got in 2(a) into DFA.

    [5*3=15]

3. a. The following is Context-Free Grammar over symbols a and b only.

        REXPR→REXPR RTERM | RTERM

        RTERM→RTERM RFACTOR a | RTERM RFACTOR b | RTERM RFACTOR

        RFACTOR→RFACTOR*RPRIMARY | RPRIMARY

        RPRIMARY→ a | b

i) Examine if the above-stated grammar has **Left Factoring**? If yes, eliminate that.

ii) Examine if the above-stated grammar has **Left Recursion**? If yes, eliminate that.

iii) Explain how the elimination of Left Recursion makes the grammar more suitable for top-down parsing?

b. Explain how a Context Free Grammar becomes **ambiguous** with an example.

    [5]

OR,

4. a. Consider the following Context Free Grammar:

        S→ iCtSE | iCtS | a

        E→ eS | ε

        C→ b

    [5+10 =15]

i) Examine if the grammar has any **Left factoring** or not. If yes, then eliminate that.

ii) Build the **First** and **Follow** function of the grammar.

b. **"CFG's are more powerful than regular expressions"**- Do you agree with the statement? If yes, give at least one example that supports your logic.

    [5]

Mid Semester Examination	Fall 2021	4th Year 2nd Semester
Course Code: CSE 425	Course Title: Computer Graphics	Credits: 3

Full Marks: 60   Duration: 1 Hour

Instructions:
Answer all questions.

1. a) Identify if the following equations are Affine Combination or not. Justify your answer by stating the reason. $3+3+4$ $=10$

    i. $Q_1 = (1 - t^2) P_1 + 2t^2 (1 - t) P_2 + t^2 P_3$
    ii. $Q_2 = t^2 P_1 + (1-2t^2) P_2 + t^2 P_3$

    Write the above equation (/s) which is / are Affine Combination into matrix format.

    b) What will be the color of the point Q (R, G, B) inside a triangle if the color of the vertices of the triangle are   A (1, 0.5, 0.1), B (0.5, 0.8, 0.3), C (0, 0, 1) and the value of $\alpha_1 = 0.2$, $\alpha_2 = 0.4$? What will be the color of the point Q if $\alpha1 = 0$, $\alpha2 = 0$? $8+2$ $=10$

2. a) Calculate the Viewing Matrix, V if the Angle of View, $\alpha = 45^0$, near plane distance = **10**, far plane distance = **30**.   10

    b) Briefly describe the process of Camera Transformation.   10

3. a) Estimate the new position of a triangle, with vertices A (12, 9), B (15, 16), C (30, 4) after performing a **30°** rotation, about a point P (2, -7).   10

    b) Convert the HSI coordinate of a color at (**180°, 0.6, 0.1**) into RGB color space.   10

OR

    a) If we apply 1) Translate by (**5, 4**) and then 2) Scale by (**2, 3**) to the line **P1 (3, 2)** and **P2(15,12)**. What will be the new coordinates of P1 and P2 after transformation?   10

    b) Convert the RGB coordinate of a color at (**0.7, 0.1, 0.3**) into HSI color space.   10

University of Asia Pacific

Department of Computer Science and Engineering

Mid-Semester Examination Fall-2021

Program: B.Sc. in CSE

Course Title: Design and Testing of VLSI   Course No. 457

Time: 1.00 Hour.

Credit: 3.00

Full Mark: 60

There are Four Questions. Answer three questions including Q-1 and Q-2.

1. a. Sketch a transistor-level schematic for a compound CMOS logic gate for the   **10**
        following function:

        $F = \overline{(A+B).(C+D)}$

    b. Briefly explain how to choose an appropriate model for Yield in a chip from defect   **10**
        density information.

2. a. Explain why FPGA is chosen for prototype.   **10**

    b. Find out the logical effort of 5input NAND gate.   **10**

3. a. Consider a wafer with Defect density 2 defects/cm^2, clustering parameter 0.75, chip   **15**
        width 6mm, chip length 7mm. Each wafer has 100 chips. The cost of processing a
        wafer is $365.

        Determine the processing cost of 20 chips.

    b. Explain what happens to the cost of a single chip if the chip area is increased by   **5**
        20%.

    OR

4. a. Consider an nMOS transistor with W/L = 10. In this process, the gate oxide   **15**
        thickness is 100 Å and the mobility of electrons is 350 cm^2/V· s. The threshold
        voltage is 1 V.
        Determine the plot of I_{ds} vs. V_{ds} for V_{gs} = 5 V.

    b. Explain how did you get the point where saturation begins?   **5**