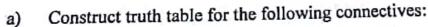# MID-Term Questions

PREMIER UNIVERSITY, CHITTAGONG
Department of Computer Science & Engineering (CSE)
2nd Semester(Section A) Mid Term Exam, November 2018

Course Code: CSE 111

Marks: 20

. Title: Structured Programming

Time: 1.00 Hour

There are **three** questions. Answer two of them. Figures in the right-hand margin indicate full marks.

1.   a)   Compare the use of *switch* statement with the use of *nested if-else* statements. Which is more convenient?   3

     b)   Describe the output generated by the following program   3

```
#include<stdio.h>
main(){
    int a, b=0;
    static int c[10] = {1,2,3,4,5,6,7,8,9,0};
    for(a =0; a<10;a++)
        if((a%2)!=0) b+=c[a];
    printf("%d", b);
}
```

     c)   In what way does an array differ from an ordinary variable?   2

     d)   Explain the meaning of each of the following function prototypes   2
       i.   int f(in a);
       ii.   void f(long a, short b, unsigned c);

2.   a)   What is the purpose of the *continue* statement? Within which control statements can the *continue* statement be included? Compare with the **break** statement.   3

     b)   Describe the output generated by the following program.   3

```
#include<stdio.h>
main(){
    int a;
    static char c[]="Programming with C can be great fun!";
    for(a =0; c[a]!='\0'; a++)
        if((a%2)==0)
            printf("%c", c[a]);
}
```

     c)   Suppose an array is passed to a function as an argument. If the value of an array element is changed within the function, will this changed be recognized within the calling portion of the program? Justify your answer with example.   4

3.   a)   Can loops be nested within *if-else* statements? Can *if-else* statement be nested within loops? Explain with example.   3

     b)   Compare local variable with global variable.   3

     c)   Write a program to reverse a string without using **strrev** library function.   4

Premier University, Chittagong
Department of Computer Science and Engineering
2ⁿᵈSemester mid-term Examination, November 2018
Course Title: Discrete Mathematics, Course Code: CSE 103
Time-40mins; Total-20

1 a) Construct truth table for the following connectives:

   (i) $(s->(p \wedge \bar{r})) \wedge ((p->(r \vee q)) \wedge s)$

   (ii) $(p \vee (\bar{p} \wedge \overline{(q \vee r)}))->(p \vee \overline{(r \vee q)})$

   b) Prove that every formula has an equal number of right and left parentheses.

2 a) Let the universal set U={1,--------,10},A={1,4,7,10}, B={1,2,3,4,5} and C={2,4,6,8}.Use bit representations for A,B and C together with UNION, INTER, DIFF and COMP to find the bit representation for the following:

   (i) $((C \cap A) - \overline{(B-A)}) \cap C$

   (ii) $(B-\bar{\bar{C}}) \cup ((B-\overline{A}) \cap (C \cup B))$

   (iii) $A \times B \times C$

   b) Define Symmetric Difference. State and prove De-Morgan's Laws.

Premier University, Chittagong
Department of Computer Science and Engineering
2nd Semester mid-term Examination, November 2018
Course Title: Discrete Mathematics; Course Code: CSE 103
Time: 30 mins, Full Marks: 20

[N.B. - (Answer all questions;]

1   a)   Construct truth table for the following connectives:

      (i)   If $P = (s \rightarrow (p \wedge \bar{r})) \wedge ((p \rightarrow (r \vee q)) \wedge s)$ and $Q = p \vee t$

         Then show that $P \equiv Q$

   a)   Let $A = \{n : n \in N$ and $n = 3k + 2$ for some $k \in N\}$;

     $B = \{n : n \in N$ and $n = 5k - 1$ for some $k \in N$ such that $k \geq 5\}$ and

     $C = \{m \in N : m = 6k - 4$ and $k \in N$ and $k \geq 1\}$

     Prove that (a) $C \subset A$

             (b) $A \neq B$

Time: 1 hour   (Answer any one question) $\dfrac{4\mu_0}{4\pi} \times \dfrac{il}{2\pi}$ Marks: 20

1. (a) State and explain Biot-savart law?
   (b) Find an expression of magnetic induction at a point due to a straight conductor carrying current.
   (c) 15 A current passing through a straight wire of length 2m. Find the magnetic field at a perpendicular distance of 3cm from the wire. $\mu = il$
   (d) Explain magnetic field vector (B)? ✓
   (e) Calculate the magnetic field of long straight wire that has a circular loop with a radius of 0.05m. The current flowing through this closed loop is given as 2 A.

                                                          3+7+3+3+4=20

2. (a) State Gauss's law? Find an expression for a long charged cylinder from the application of Gauss's law.
   (b) What is the velocity of electron that has been acceleration through a potential difference of 100 volt?
   (c) Find an expression of potential for an electric dipole.
   (d) The potential at points in a plane is given by:

   $$V = \frac{ax}{(x^2 + y^2)^{3/2}} + \frac{b}{(x^2 + y^2)^{1/2}}$$

   Where, x and y are the rectangular coordinates of a point, a & b are constants. Find the components E_x and E_y and the electric intensity at any point.

                                                          (2+5)+3+6+4=20

Time: 1.00 hour   Full Marks:40

Read the passage below and answer the following questions:

The phone rang on Dr Aliya's desk.

"Hello", she said, picking up the phone."Dr Aliya here."

"Oh, good morning, Dr Aliya", a voice said. "It's Jharna here, professor Salam's secretary. It's about that meeting on Monday. You are definitely coming, aren't you?"

"The meeting. Yes, of course". Dr Aliya said, looking in her diary. "It's at eleven, I see".

"Well, no. We had to change the time", Jharna said, "It's going to be at twelve. I'm sure I told you".

"But I've got a lecture at twelve", Dr Aliya said. "But surely you can cancel your lecture -just for once", Jharna suggested. "The meeting's very important, as you know".

"I've never cancelled a lecture in my life", Dr Aliya told her. "Sorry!" There was a silence. "However", she went on. "I've got an idea. I've just got a new cassette recorder- rather a good one, in fact. I'll record my lecture beforehand- and then I'll be able to come to the meeting".

"Wonderful", said Jharna. "I'll tell professor Salam you'll be there, then".

At five to twelve on Monday morning Dr Aliya went along to the lecture room. There were about twenty students waiting there for her. "I'm sorry," she told them, "I won't be able to give my lecture today". The students looked surprised. Dr Aliya explained that she had an important meeting. "However", she went on, "although I can't be with you myself, my voice can!" She gestured towards the cassette recorder on the table. "You see, I've recorded my lecture and you can listen to it while I go to my meeting. So, in a way, I'll be in two places at once! One of the miracles of modern science!" Feeling rather pleased with herself, Dr Aliya switched on the cassette recorder and left.

The meeting in professor Salam's office finished a little early, so Dr Aliya decided to go back to the lecture room. She stood for a moment outside the door, listening to her own voice. Then, very quietly, she opened the door. To her surprise, the room was empty. But then, as she looked around, she saw a number of small cassette recorders- all 'listening' to her lecture! "Well", she thought, "if I can be in two places at once, so can they!"

1. Answer these questions. If you cannot find the answer in the text, say, " the answer isn't there"   10

    1) What was Jharna's official status?

    2) Why did she ring Dr Aliya?

    3) Was Dr. Aliya aware of the meeting?

    4) Where was the meeting?

    5) What was the meeting about?

6) Who changed the time of the meeting?
7) Did Dr. Aliya agree with Jharna?
8) What was Dr. Aliya's 'idea'?
9) Did Dr. Aliya go to the lecture room in the afternoon?
10) Did the students listen to Dr. Aliya's lecture?

2. Try to guess the meaning of these words.   05
   1) Definitely 2) Cancel 3) Beforehand 4) Gestured 5) Miracle

3. Make true sentences and then put them in order.   10

Dr. Aliya	Will be informed about her presence.	1
Jharna	Proposed an alternative arrangement.	2
Professor Salam	Wanted to ensure the schedule.	3
	Checked the facts about the meeting.	4
	Talked about her lecture with students.	5

4. Complete the sentences. Use the idea in the text.   05
   1) Dr. Aliya thought that-----------------but instead it was at twelve.
   2) Jharna wanted-------------------because the meeting was important.
   3) Dr. Aliya---------------------so she was able to record her lecture beforehand.
   4) Before she left the lecture room, Dr. Aliya--------------------.
   5) When she opened the door of the lecture room, Dr. Aliya expected to find-----not------!

5. Describe in not more than 100 words the use of modern electronic devices in your
   class room. If you find it interesting, say why?   10

Premier University
Department of CSE
Midterm Examination (Fall 2018)
semester

Course: Electronics I
Marks:20

Code: EEE 211
Time: 1 Hour

Question Number: 01

a. Between energy band and conduction band there is an energy gap. What is the name of that energy gap?

1

b. What is the dark current and dark resistance of a photodiode

2

c. Write down different equivalent circuits of crystal diode.

d. A crystal diode having internal resistance r_f= 20ohm is used for half wave rectification. If the applied voltage v=50sinwt and load resistance R_L =800ohm

3

find out : (i) I_m, I_{dc}, I_r ii) ac power input and dc power output iii) dc output voltage iv) efficiency 4

Question Number: 02

a. In how many ways we can connect a transistor in a circuit? Mention the name of those ways.

1

b. Express a common base connection using a circuit. Mention the reason why it is called a common base.

2

c. For common emitter connection Proof $\beta=\alpha/1-\alpha$

3

d. In a common base connection, the current amplification factor is 0.9. If the emitter current is 1mA, determine the value of base current.

5

CT
Questions

CT-2

DCSE, Engineering physics II

1.(a) Show that the difference between two consecutive Bright fringe and dark fringe $\beta = \lambda D / d$.   6

(b)In Young's double slit experience the separation of the slits is 1.9 mm and the fringe spacing is 0.31mm at a distance of 1 meter from the slits. Calculate the wavelength of light.   4

2.(a) Give analytical treatment of interference.   6

(b)In Young's double slit experience the separation of the slits is 1.9 mm and the fringe spacing is 0.31mm at a distance of 1 meter from the slits. Calculate the wavelength of light.

Course Code: CSE 111   Title: Structured Programming
Marks: 10   Time: 20 minutes

Answer all the questions. Figure in the right-hand margin indicate full marks.

1.   A C program contains the following statements.   1*10

```
int i, j = 25;

int *pi, *pj = &j;

*pj = j+5;

i = *pj + 5;

pi = pj;

*pi = i + j;
```

Suppose each integer quantity occupies 2 bytes of memory. If the value
assigned to i begin at (hexadecimal) address F9C and the value assign to j
begins at address F9E, then
   i.   What value is represented by &i?
   ii.   What value is represented by &j?
   iii.   What value is assigned to pj?
   iv.   What value is assigned to *pj?
   v.   What value is assigned to i?
   vi.   What value is represented by pi?
   vii.   What value is represented assigned to *pi
   viii. What value is represented by (pi+2)?
   ix.   What value is represented by the expression (*pi+2)?
   x.   What value is represented by the expression *(pi+2)?

Course Code: CSE 111

Marks: 10

Title: Structured Programming

Time: 40 minutes

Answer all the questions

1 A C program contains the following statements: 0.5*3=1.5
        #include<stdio.h>
        int i, j, k;
   Write a printf function for each of the following groups of variables or expressions.
   Assumes all variables represent decimal integers.
   - a) i, j and k
   - b) (i+j),(i-k)
   - c) sqrt(i+j), abs(i-k)

2 A C program contains the following declarations and initial assignments: 0.5*3=1.5
   int i = 8, j = 5;
   float x=0.005, y = -0.01;
   char c = 'c', d = 'd';
   Determine the value of each of the following expressions. Use the values
   initially assigned to the variables for each expression.
   - a. (x>y)&&(i>0)&&(j<5)
   - b. 5*(i+j)>'c'
   - c. (i+j*3)%(c+2*d)/(x-y)

3 Rewrite the following code fragment using conditional-operator: 1
$$if(i\%5==0)$$
$$sum +=i;$$

4 Write a loop that will examine each characters in character type are text and   3
   determine how many of them are digit, how many are letters, how many are
   other types of characters.

5 Describe the output of the following C program: 3

```
#include<stdio.h>
int main(){
int i=0, x=0;
for(i=1;i<10;i++){
if(i%2==1)
   x+=1;
else
   x--;
if(i%2==0)
   continue;
   printf("%d\n",x);
}
}
```