University of Asia Pacific

Department of Computer Science & Engineering

Mid-Semester Examination Spring-2016

Program: B. Sc. Engineering (1st Year/ 2nd Semester)

Course Title: Computer Programming I Course No.: CSE 103 Credit: 3.00

Time: 1.00 Hour Full Marks: 60

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

1. a) What are the basic differences between call by value and call by reference? Explain with appropriate examples. 10

   b) Write a C code that will swap two strings. You are allowed to use any type of advanced functions defined in string.h library. For instance, s1="abc", s2="def". After swapping string output should be s1="def" and s2="abc". 10

2. a) Write a look-up table for the following "for loop". 10

Code Segment:

```
#include <stdio.h>
int main()
{
   int sum=0, i=0, j=0;
   for(i=1; i<6; i++)
   {
      for(j=i; j<6; j=j+2)
      {
         sum=sum+i+j;
      }
   }
   printf("%d", sum);
   return 0;
}
```

   b) Write a function 'factorial' that will take an integer as input and return the factorial of that integer. Suppose, n=3. Then factorial(3) will return 6 to the main function. 10

3. a) Declare a structure named student_db which will contain the following attributes: 5
   i. Student name
   ii. Student ID
   iii. Gender

iv. Age

b) Consider the structure 'student_db' given at question 3(a), hence solve the queries given below: (you don't need to input anything to the structure) 10

i. Count the number of female students in the class.
ii. Find out the Student ID of the youngest student.
iii. Find out the Student IDs with name length between 6 and 12.

c) Write down the differences among structure, array and variable. 5

4. a) Write a C code that will copy the contents of File1 into File2 then concatenate File3 with File2. So, File2 is the output file. For example, file1.txt="hello world ", file3.txt="hello cse". Then file2.txt will be "hello world hello cse". [first copy then concatenate] 10

b) 5

```
int i = 10;
int *p = &i;
int **q = &p;
int ***r = &q;
```

What will be printed in each of the following cases?

a. printf("%d", *p)
b. printf("%d", *q)
c. printf("%d", *r)
d. printf("%d", **p)
e. printf("%d", **

c) Suppose i is an integer variable whose value is 10 and address in 0x532. Also suppose ptr is an integer pointer variable which holds the address of i (i.e. address of i is value of ptr). ptr has its own address which is 0x528. Draw a picture to depict this situation meaningfully. Your picture should contain all the necessary information about i and ptr and should show the relation between i and ptr. 5

i = 10,
* ptr
ptr = & i

University of Asia Pacific
Department of Basic Sciences & Humanities
Mid Semester Examination, Spring-2016
Program: B.Sc. Engineering (Computer Science)
1st Year / 2nd Semester

Course Title: Math II: Calculus | Course No. MTH 103 | Credit: 3.00

Time: 1.00 Hour | Full Mark: 60

N.B: There are Four questions. Answer any Three (3) of the following:

1. (a) Define Continuity. Show that the function $f(x) = |x|$ is continuous at $x = 0$ but not differentiable at $x = 0$. **12**

   (b) If $\sin y = x\sin(a+y)$, prove that $\frac{dy}{dx} = \frac{\sin^2(a+y)}{\sin a}$. **8**

2. (a) State Leibnitz's theorem. If $y = e^{m\cos^{-1}x}$, then show that **13**
   $$(1-x^2)y_{n+2} - (2n+1)xy_{n+1} - (n^2+m^2)y_n = 0$$

   (b) Find the radius of curvature at $x = \frac{\pi}{2}$ of the curve $y = 4sinx - sin2x$ **7**

3. (a) State Mean value theorem. Discuss the applicability of the Mean value theorem for the function $f(x) = x(x-1)(x-3)$ over [2,4]. **10**

   (b) State Euler's theorem on homogeneous functions in two variables. **10**

   If $u = \tan^{-1}\frac{x^3+y^3}{x+y}$, show that $x\frac{\partial u}{\partial x} + y\frac{\partial u}{\partial y} = Sin2u$

4. (a) Find the maximum and minimum value and the inflection point of the function **10**
   $$f(x) = 2x^3 - 6x^2 - 18x + 7$$

   (b) If $u = \frac{x^2+y^2}{x+y}$, then show that $\left(\frac{\partial u}{\partial x} - \frac{\partial u}{\partial y}\right)^2 = 4\left(1 - \frac{\partial u}{\partial x} - \frac{\partial u}{\partial y}\right)$ **10**

University of Asia Pacific
Department of Basic Sciences and Humanities
Mid-Semester Examination Spring – 2016
Program: B. Sc Engineering (CSE)

Course Title: Physics II | Course Code: PHY-103 | Credit: 3.00
Time: 1.00 Hour | Full Mark: 60

N.B- There are ***Four*** Questions. Answer any ***Three***. All questions are of equal value. Figures in the right margin indicate marks.

1. (a) What is called flux density? **05**

   (b) Seven thousand lines of force enter a certain volume of space and four thousand lines leave it. Find the total charge contained in it. **15**

2. (a) Deduce Gauss's law. **05**

   (b) Two small equal charges $3x10^{-9}$ C are placed at A & B, one is positive and another is negative. AB is equal to 8 cm. Find the force on a charge $+2x10^{-9}$ C placed at P, where P is 6 cm from the line AB along the perpendicular bisector XP. **15**

3. What is called hysteresis? Find out the relation between B and H (hysteresis loop) **20**

4. What is called Magnetization? State and explain the atomic theory of magnetism. **20**

University of Asia Pacific

Department of Computer Science &Engineering

Mid-Semester Examination Spring-2016

Program: B. Sc Engineering (1st Year / 2nd Semester)

Course Title: Basic Electrical Engineering Course No. ECE 101 Credits: 3.00

Time: 1.00 Hour. Full Marks: 60

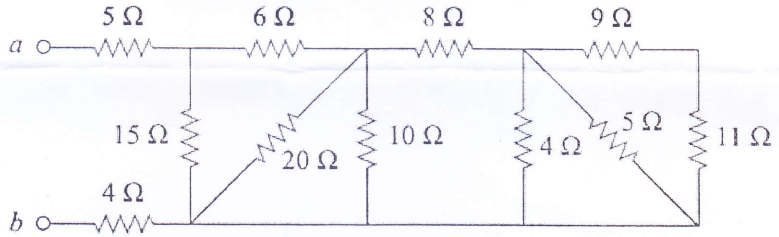
There are **Four** Questions. Answer any **Three**. Figures in the right margin indicate marks.

1. (a) The current flowing through an element is (10)

$$i = \begin{cases} 2\text{ A}, & 0 < t < 1 \\ 2t^2\text{ A}, & t > 1 \end{cases}$$

Calculate the charge entering the element from t = 0s to t = 2s.

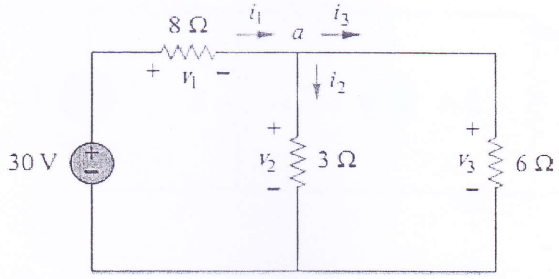
(b) Determine the equivalent resistance R_{ab} of the following circuit. (10)



2. (a) Define Power. If a current divider has N conductors (G_1 , G_2 , ……. , G_N) in parallel with the source current i, then prove that the n th conductor (G_n) will have current (10)

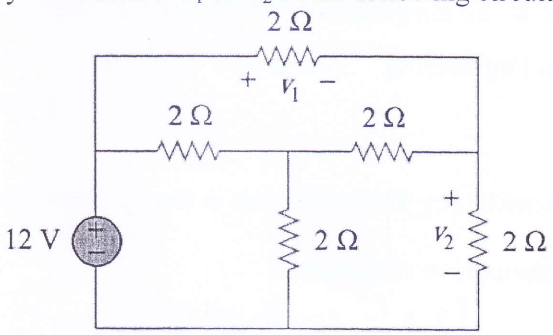
$$i_n = \frac{G_n}{G_1 + G_2 + \cdots + G_N} i$$

(b) Find the currents and voltages for the following circuit. Also calculate dissipated power for 6Ω resistor. (10)

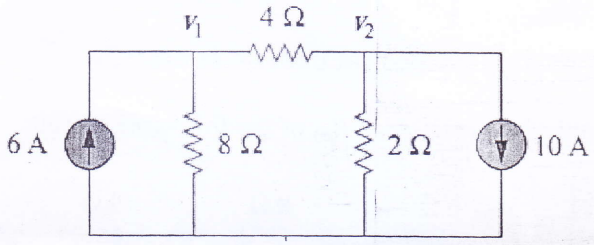


3. (a) Write short note on KVL and KCL. (4)

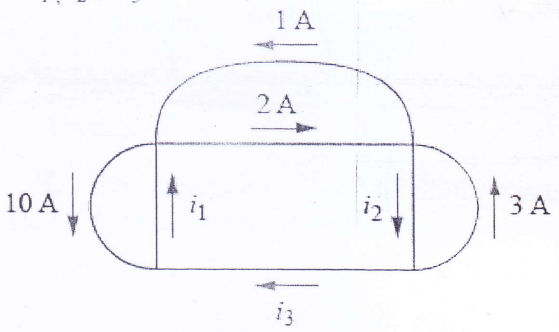
(b) Using mesh analysis calculate V_1 & V_2 in the following circuit (8)



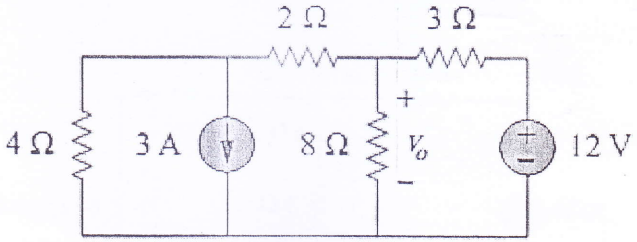
(c) Determine v_1 and v_2 in the following circuit using nodal analysis. (8)



4. (a) Using KCL find out i_1, i_2 &i_3 (12)



(b) State Superposition theorem. Using superposition theorem find 'V_o' in the following circuit (8)



University of Asia Pacific
Department of Basic Sciences and Humanities
Mid-Semester Examination Spring – 2016
Program: B. Sc Engineering (CSE)

Course Title: Physics II | Course Code: PHY-103 | Credit: 3.00
Time: 1.00 Hour | Full Mark: 60

N.B- There are ***Four*** Questions. Answer any ***Three***. All questions are of equal value. Figures in the right margin indicate marks.

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University of Asia Pacific

Department of Computer Science & Engineering

Mid-Semester Examination Spring-2016

Program: B. Sc Engineering

Course Title: Discrete Mathematics. Course No. CSE105. Credit: 3.00

Time: 1.00 Hours. Full Mark: 60

Answer any **Three out of Four.** Each answer is judged out of 20.

1. In a survey of 60 players, it was found that: 25 play football, 26 play cricket, 26 play hockey, 9 play both football & cricket, 11 play both football & hockey, 8 play both cricket & hockey, 3 play all three games. Find the number of players who play a) at least one of three games b) exactly one game c) no games. Draw the Venn diagram.

2. Suppose m and n denote positive integers. Suppose a function A is defined recursively as follows:
   If m=0, then A(m,n) = n+1,
   If m≠0 but n=0, then A(m,n) =A(m-1,1),
   If m≠0 and n≠0, then A(m,n) =A(m-1, A(m,n-1)).
   Find A(1,3).

3. Suppose the assumptions are follows: All my friends are players; Rashed is my friend; None of my neighbors are players.
   The conclusion is : Rashed is not my neighbor.
   Using Venn Diagram prove that the above argument is valid.

4. Determine whether each of the following functions from R into R is one-to-one or not
   $f(n) = n - 1$
   $f(n) = 1+n^2$
   $f(n) = n^3$
   $f(n) = |n| + 1$
   $f(n) = \lceil n/2 \rceil$
   Explain with reasons.

University of Asia Pacific
Department of CSE
Mid Semester Examination, Spring-2016
Program: CSE

Course Title: English Language II | Course Code: HSS 103
Time: 1 Hour | Full Marks: 20

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1. Write a story beginning with the following sentence: 07

"Rasha was very happy to hear the news. He is finally one important step closer to fulfilling his lifelong dream"

2. Fix the following run-on sentences: Any three 03

a) Judy leads a charmed life she never seems to have a serious accident.
b) Greece is a fantastic country it has lovely people and great food.
c) She found the wallet he found the money.
d) Tim rushed out of the house he desperately needed another pint of milk.

3. Write the definitions of any 2 of the following: 02

a) Mentor
b) Table
c) Windows

4. Make sentence with any three pairs of the following: 03

a) Quite, quiet
b) Peace, piece
c) Affect, Effect
d) Choose, Chose

5. Rewrite the following sentences with proper subject-verb agreement. 2.5

a) Everybody from the Humane Society _____ (is, are) here to see Mizan.
b) The issues of war, peace, and nuclear holocaust _____ (was, were) of paramount importance at the conference.
c) A few of the teachers at my school _____ (is, are) not happy with the new schedule.
d) Some of the men _____ (has, have) already signed their contracts.
e) Neither my friend nor I _____ (am, is) ready for the oral examination.

6. Fill in the blanks with appropriate conditionals: 2.5

a) If Akram earned more money, he _____ (go) to Africa.
b) It would have been silly if we _____(try) to walk there.
c) She'd have taken me to the station if her car _____ (break) down.
d) Would you mind if I _____ (use) your mobile.
e) I _____ (open) the mail if it had contained a virus.