

Department of Higher Education
University of Computer Studies, Hinthada
Second Year (B.C.Sc./B.C.Tech.)
Mid Term Examination
English
March, 2018

Answer All Questions

Time Allowed: 3 Hours

Question I. Read the passage and answers the following questions.

(20-marks)

Easter Island was named by a Dutchman, Jacob Roggeveen, who arrived there on Easter day, 6 April 1722, but its native name is Rapa Nui, sometimes translated as 'centre of the earth'. Nearly 4,025km from the coast of Chile and 4,185km from Tahiti, this island is a triangular volcanic rock of just 17 square kilometres, and is one of the most isolated places on Earth. The top of the highest of its three volcanoes, which are now extinct, is 511m above sea level. Currently, the island has 3,000 inhabitants and a single town, Hanga Roa. Easter Island or Rapa Nui is now a nature reserve and is governed by Chile. The island is particularly known for the large statues or sculptures, called Moai, which are found there.

In 1989, the Chilean government invited Giuseppe Orifici, an Italian archaeologist, to visit the island. Impressed by the wealth of archaeological remains, Orifici arranged to begin digging the following year. He coordinated a team of experts, each a specialist in their own field, who visited the island for several weeks over the next ten years. These specialists ranged from archaeologists and anthropologists to botanists and sculpture experts.

Scientists once believed that the Rapa Nui people had originally come from South America around the 7th century. However, a few surviving traditions, as well as the shapes of some the sculptures, show that the people from Polynesia and probably arrived on the island in the 5th century. Recent research on bones and teeth strongly supports this theory. While anthropologists Dr Andrea Drusini and Professor Daris Swindler were carrying out research on teeth from various sites on the island, they found that something known as a 'genetic bottleneck' had occurred. On a small island, where people never marry outside their own clan, inbreeding is inevitable, and as a result, the gene pool for each group is narrow. A particular feature, such as large or missing teeth, then shows up within family members with much more regularity than would otherwise be expected and this enabled the scientists to prove where the people had originally come from.

Questions 1-6

I. (A) Complete the sentences with appropriate word from the passage by using **NO MORE THAN**

THREE WORDS.

1. Easter Island is situated between _____.
2. The Easter Island is famous for _____.
3. Giuseppe Orifici is _____.
4. According to research, Rapa Nui people originally come from _____.
5. A _____ means that the gene pool for each group is narrow.
6. A particular feature, such as large or missing teeth within family members is _____.

Questions 7-13

I. (B) Answer the questions in complete sentences.

7. Why was Easter Island called?
8. What does Rapa Nui mean?

9. When did Giuseppe Orifici arrange to begin digging?
10. Do Rapa Nui people actually come from South America around the 7th century?
11. What does the research on bones and teeth approve?
12. Why does genetic bottleneck occur on the people of the island?
13. What feature shows where Rapa Nui people had originally come from?

Question II.

(20-marks)

II. (A) Complete the sentences with **past simple, past perfect or past continuous tenses** using the verb in bracket.

1. When the USA (become) _____ independent?
2. The museum director accidentally (drop) _____ an ancient vase when he was putting it back on the shelf.
3. Before Europeans arrived on Easter Island, the people (build) _____ large sculptures called Moai.
4. The Berlin Wall (fall) _____ in 1989.
5. Scientists once believed that the Rapa Nui people (originally come) _____ from South America.
6. Howard Carter (spend) _____ many years looking for the burial place before he discovered the tomb of King Tutankhamen.
7. After Richard Branson (left) _____ school, he went to Oxford University.
8. At the age of 20, Richard Branson (found) _____ Virgin Records.
9. While we (look) _____ round the gallery, we heard a loud noise outside.
10. The Space Age (start) _____ in the 1950s.

II. (B) Complete the sentences. Choose the most suitable ending from the box and make it into a relative clause using who, which or that. You need to add 'comma' if it is necessary. **(You have to rewrite the given clause and make a full sentence.)**

1. I met the two actresses
2. Mr. Carter returned to work yesterday
3. Marine biologists are scientists
4. The man isn't perfect
5. The pictures won prizes

i married him
 he has been ill for a month
 We watched them on TV last night
 they study animals and plants that live in the sea
 they were shown at the exhibition

Question III.

(20-marks)

III. (A) Complete the sentences with **a verb** from the box in **the right form**.

change give invest leave lend
 make pay save spend waste

1. Don't _____ your money on buying a cheap office desk - it won't last very long.
2. My grandmother _____ me 10,000 when she died.
3. Claudia _____ all her money on presents for the family.
4. Don't _____ your money at the airport -- they don't give a good rate.
5. Every month I _____ a certain percentage of my salary into my pension scheme.
6. Can you _____ me 20 until the weekend?
7. The woman _____ 10 to the man playing the guitar in the market square.
8. If you _____ your money in stocks and shares, you might lose it.
9. Jon _____ over 100 by buying his books second hand.
10. Steve Rogers _____ his money selling insurance.

III. (B) Match the following meanings with the appropriate words from the box.

1. To get a general idea of what it is about
2. The ability to communicate using words
3. To search or examine with continued care
4. Work of art created by shaping malleable objects
5. A sugar, starch or cellulose that is a food source of energy for an animal or plant
6. Source of food energy abundant in animal-derived foods (ie: meat) and some vegetables, such as legumes
7. A specialized animal tissue with a high oil content, used for long-term storage of energy
8. To display or show something for others to see
9. To search for specific information
10. Something that one uses to achieve an objective

- | |
|-----------------|
| a. research |
| b. exhibit |
| c. sculpture |
| d. skim |
| e. language |
| f. resource |
| g. scan |
| h. fat |
| i. carbohydrate |
| j. protein |

Question IV.

(20-marks)

IV. (A) Answer the following questions **in complete sentences with meaningful sense.**

1. What kinds of drink do you like best?
2. Are there some foods which are better for you than others?
3. What is the staple food in your country?
4. What do you eat on special occasions?
5. How well do you cook?

IV. (B) You recently went on holiday with your family to an island resort. Upon your return home, you discovered that you had forgotten a very valuable item there.

Write a letter to the hotel manager to inform him/her of your problem. In your letter, you should:

- Describe the item
- Say why it is important that you get the item back
- Tell the manager what you would like him/her to do

Write at least 150 words.

Question V.

(20-marks)

V. In achieving personal happiness, our relationships with other people (family, friends, colleagues) are more important than anything else. Issues such as work and wealth take second place.

Do you agree or disagree?

*****END*****

Department of Higher Education
University of Computer Studies, Hinthada
Second Year (B.C.Sc. / B.C.Tech.)
Mid Term Examination
Java Programming (CST- 201)
March, 2018

Answer All Questions.

Time Allowed: 3 Hours

1. (a) Choose the correct answers. (7 marks)
- (i) What is byte code in Java?
 A. Code generated by a Java compiler B. Code generated by a Java Virtual Machine
 C. Name of Java source code file D. Block of code written inside a class
- (ii) Which of these have highest precedence?
 A. () B. ++ C. * D. >>
- (iii) Which variables are created when an object is created with the use of the keyword 'new' and destroyed when the object is destroyed?
 A. Local variables B. Instance variables C. Class Variables D. Static variables
- (iv) The default layout manager of JFrame is:
 A. FlowLayout B. BorderLayout C. GridLayout D. BoxLayout
- (v) In java control statements break, continue, return, try-catch-finally and assert belongs to?
 A. Selection statements B. Loop statements C. Transfer statements D. Pause statement
- (vi) What is garbage collection in the context of Java?
 A. Java deletes all unused java files on the system.
 B. Memory used by the object with no reference is automatically reclaimed.
 C. The JVM cleans output of Java program with error.
 D. Any unused package in a program automatically gets deleted.
- (vii) Which one is true about a constructor ?
 A. A constructor must have the same name as the class it is declared within.
 B. A constructor is used to create objects.
 C. A constructor may be declared private
 D. All of the above

1. (b) Indicate whether each of the statements (i) to (v) is **valid** or **invalid**. (5 marks)

(i) short x=80000;	(iv) int g=9/2;
(ii) double x=5+5;	(v) String t=true;
(iii) boolean double=false;	

2. What are the **outputs** of the following programs? (18 marks)

<pre>(a) public class output1 { static int fun1(int no) { int SU = 0; while (no != 0) { SU = SU + no % 10; no /= 10; } return SU; } public static void main(String[] args) { int S; for (int i = 15; i <= 20; i++) { S = fun1(i); System.out.println(S); } } }</pre>	<pre>(b) public class output2 { public static void main(String[] args) { for (int i = 1; i <= 2; i++) { for (int j = 1; j <= 3; j++) { for (int k = 0; k <= 2; k++) System.out.print(k+1); System.out.print(" "); } System.out.println(); } } }</pre>
---	--

```
(c) public class output3 {
    public static void main(String[] args) {
        int [][]arr={{1,2,3,4},{3,2},{4,6,1}};
        System.out.println(arr.length);
        System.out.println(arr[0].length);
        System.out.println(arr[1].length);
        System.out.println(arr[2].length);
        System.out.println(arr[arr[0][1]][2]);
        System.out.println(arr[2][1]++);
        System.out.println(arr[2][1]);
        System.out.println(arr[2][2]);
    }
}
```

3. Find and fix **all errors** in the following code segments.

(30 marks)

(a)

```
1. public class Factorial {
2. // Print factorial of n
3. public static void main(String args) { // Set an initial breakpoint at this
4. // statement
5. int n = 20.0;
6. factorial = 1;
7. // n! = 1*2*3...*n
8. for (int i = 1; i >= n; i++) {
9. factorial = factorial * i;
10. }
11. System.out.println("The Factorial of " + n + " is " + factorial);
12. }
13. }
```

(b)

```
1. int k = 6;
2. i = k * 1 / 3;
3. switch (i)
4. case 1; k= 0;
5. case 2: k= 1;
6. default: k= 2;
7. System.out.println (k),
```

(c)

```
1. public class ArrayCopy {
2. public static void main(String[] args) {
3. int sourceMark[]={78,88,94,56,70.0};
4. int targetMark=int[5];
5. System.out.println(Output Array is:);
6. for(int i=0;i<sourceMark.length();i++){
7. targetMark[i]==sourceMark[i];
8. System.out.println("targetMark["+i+"]="+targetMark[i]);
9. System.out.println();
10. }
11. }
12. }
```

3.(d) Complete the following Java code to compute the average of 10 random even numbers ranging from 1 to 10 (inclusive).

```
public class EvenAverage {
    public static void main(String[] args) {
        int total = 0;
        for (int count = 1; ___(a)___; count++) {
            int randomInt;
            do {
                randomInt = (int) ((___(b)___ * 10) + 1);
            } while (___(c)___);
            System.out.println(randomInt);
            total ___(d)___ randomInt;
        }
        double average=___(e)___;
        System.out.println(average);
    }
}
```

3. (e) Complete the following Java code to check the palindrome number or not.

```
public class PalindromeNumber {
    public static void main(String[] args) {
        int numbers[]=new int[]{121,13,34,11,22,54};
        for(int i=0;i<__(a)__;i++){
            int number=numbers[i];
            int reversedNumber=0;
            int temp=__(b)__;
            while(__(c)__){
                temp=number%10;
                number=__(d)__;
                reversedNumber=reversedNumber*10+temp;
            }
            if(numbers[i]==__(e)__)
                System.out.println(numbers[i]+" is a palindrome number");
            else
                System.out.println(numbers[i]+" is not a palindrome number");
        }
    }
}
```

3.(f) Write a program to print 15 fibonacci series.

4.(a) Given a text file named “studentsInfo.txt” that contains information of at most 100 students. Each line represents a student: rollno, Name, paper1 mark, paper2 mark and paper3 mark separated by *. Assume there exists a Student class with Student(int roll, String name, int mark1,int mark2, int mark3) constructor. Write a java program that reads the content of the text file and creates 100 students instances, storing them in an array of Students. (10 marks)

```
1*Ko Ko*77*90*45
2*Ma Ma*67*80*85
3*Hla Hla*75*56*40
4*Su Su*88*78*55
5*Aye Aye*34*56*79
```

4. (b) A Book store keeps track of its sales data daily as five attributes: CodeNo, Title, Price, Quantity and Cost. There are five records and their data are given in the following table:

CodeNo	Title	Price	Quantity	Cost
001	Novel	3000	1	3000
002	English	2500	2	5000
003	Dictionary	1000	4	4000
004	Essay	2000	3	6000
005	Poem	1500	1	1500

Develop an application to display the sorted lists of book sales based on the **decreasing** order of their cost in neat tabular format as below. Use Arrays class and **Comparator** interface for sorting sales data. (10 marks)

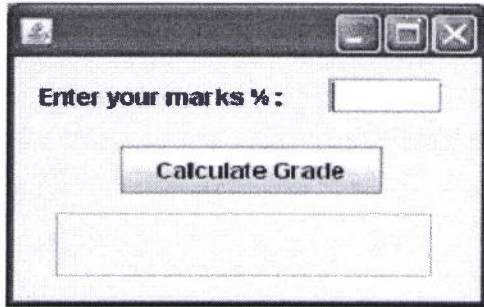
Before Sorting:

CodeNo	Title	Price	Quantity	Cost
001	Novel	3000.0	1	3000.0
002	English	2500.0	2	5000.0
003	Dictionary	1000.0	4	4000.0
004	Essay	2000.0	3	6000.0
005	Poem	1500.0	1	1500.0

After Sorting:

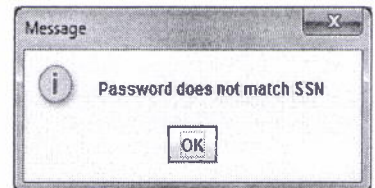
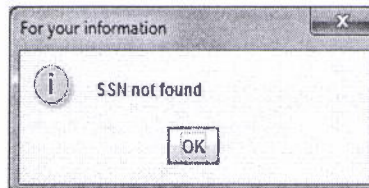
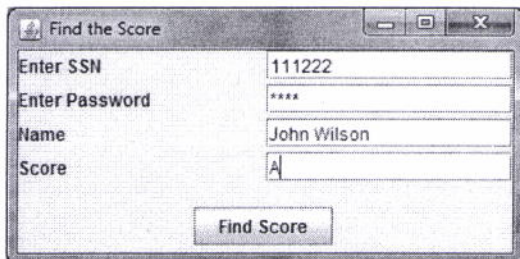
CodeNo	Title	Price	Quantity	Cost
004	Essay	2000.0	3	6000.0
002	English	2500.0	2	5000.0
003	Dictionary	1000.0	4	4000.0
001	Novel	3000.0	1	3000.0
005	Poem	1500.0	1	1500.0

5.(a) Write a Java program for the following GUI application. The percentage marks are to be entered in the TextField and upon clicking the Button, corresponding grade (as per following rules) should be displayed in the Label. **(10 marks)**



Marks Percentage	Grade
> =60	A
>=45<60	B
>=33<45	C
<33	F

5.(b) Write a program that displays student exam grade. The user enters the SSN and the password, and then clicks the Find Score button to show the student name and the grade. If the SSN is incorrect, a message dialog box display "SSN not found" and if the password is incorrect, a message dialog box displays "Password does not match SSN. In either case, the user must click the OK button in the message dialog box to go back to the main frame. **(10 marks)**



*****END*****

Department of Higher Education
University of Computer Studies, Hinthada
Second Year (B.C.Sc./ B.C.Tech.)
Mid-Term Examination
Mathematics of Computing II (CST-202)
March, 2018

Answer All Questions.

Time Allowed: 3 Hours.

1. (a) (i) How many bit strings of length ten both begin and end with a 1?
(ii) How many strings are there of lowercase letters of length four or less, not counting the empty string?
- (b) The English alphabet contains 21 consonants and five vowels. How many strings of six lowercase letters of the English alphabet contain (i) exactly one vowel? (ii) exactly two vowels?
(iii) at least one vowels (iv) at least two vowels?
2. (a) (i) How many different ways are there to seat four people around a circular table, where two seatings are considered the same when each person has the same left neighbor and the same right neighbor?
(ii) What is the coefficient of x^9 in the expansion of $(2 - x)^{19}$?
- (b) Let R be the relation represented by the matrix
- $$M_R = \begin{bmatrix} 0 & 1 & 0 \\ 0 & 0 & 1 \\ 1 & 1 & 0 \end{bmatrix}.$$
- Find the matrices that represent (i) R^2 (ii) R^3 (iii) R^4 .
3. (a) Test for exactness and solve the Differential Equation $\sin x \cos y \, dx + \cos x \sin y \, dy = 0$.
(b) Solve the initial value problem $xy' + 2y = 4x^2$, $y(1) = 2$.
4. (a) Verify that the functions $x^{3/2}$ and $x^{-1/2}$ are linearly independent and form a basis of solutions of the Ordinary Differential Equation $4x^2y'' - 3y = 0$, and solve the initial value problem using initial conditions $y(1) = -3$, $y'(1) = 0$ for that ODE.
(b) Solve the Euler-Cauchy differential equation $(x^2D^2 - xD - 15I)y = 0$, $y(1) = 0.1$, $y'(1) = -4.5$.
5. (a) (i) Find a second-order homogeneous linear ODE for which the functions $\cosh 1.8x$ and $\sinh 1.8x$ are solutions of it.
(ii) Show by the Wronskian that the solutions given in (i) are linear independence.
(iii) Solve the initial value problem for ODE in (i) with initial conditions $y(0) = 14.20$, $y'(0) = 16.38$
- (b) Find the general solution of nonhomogeneous ODE $y'' + 3y = 18x^2$, $y(0) = -3$, $y'(0) = 0$.

*****END*****

Department of Higher Education
University of Computer Studies, Hinthada
Second Year (B.C.Sc./B.C.Tech.)
Mid-Term Examination
Digital Logic Fundamentals II (CST-203)
March, 2018

Answer All Questions.

Time Allowed: 3 Hours

- 1.(a) Develop the f_{out} waveform for the circuit in Fig.1(a) when an 8 kHz square wave input is applied to the clock input of flip-flop A. How many flip flops are required to divide a frequency by thirty-two? **(8 marks)**

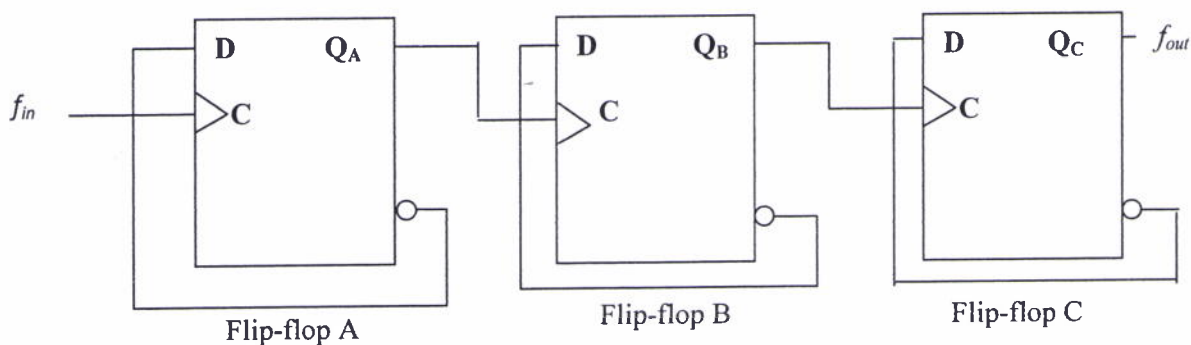


Figure -1(a)

- (b) The following serial data are applied to the flip-flop through the AND gates as indicated in Fig.1(b). Determine the resulting serial data that appear on the Q output. There is one clock pulse for each bit time. Assume that Q is initially 0 and that \overline{PRE} and \overline{CLR} are high. Right most bits are applied first. **(8 marks)**

J_1 : 1 0 1 0 0 1 1
 J_2 : 0 1 1 1 0 1 0
 K_1 : 0 0 0 1 1 1 0
 K_2 : 1 1 0 1 1 0 0

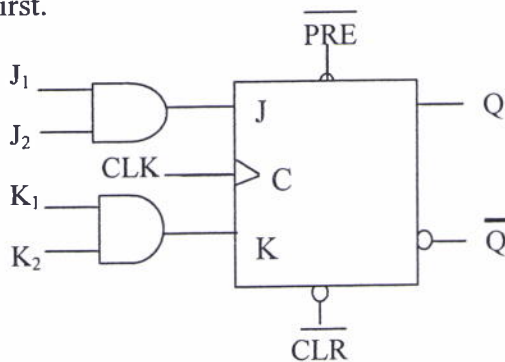


Figure - 1(b)

- 2.(a) Draw the logic diagram for a basic D flip-flop with active-LOW preset and clear inputs and the logic diagram for active-LOW input $\overline{S} - \overline{R}$ latch. **(8 marks)**
- (b) Show the connections and component values for a 74LS122 one-shot with an output pulse width of $5\mu s$. Assume $C_{EXT} = 560$ pF. And then determine the value of R_{EXT} that will produce a pulse width of $1\mu s$ when connected to a 74LS122. **(8 marks)**
- 3.(a) Design a logic diagram for 4- bits bidirectional shift register. **(10 marks)**
- (b) Determine the state of the bidirectional shift register after each clock pulse for the given control input waveform in Fig- 3 (b). Assume that $Q_0=1, Q_1=0, Q_2=0, Q_3=1$ and that the serial data input lines LOW.

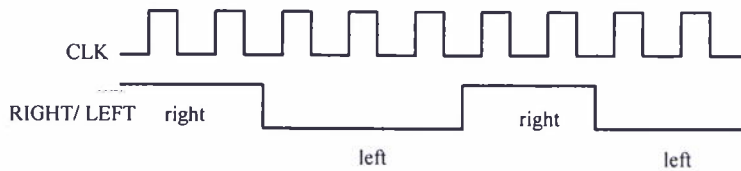


Figure - 3 (b)

(8marks)

4.(a) Draw the logic diagram for a modulus-18 Johnson counter. Show the timing diagram and write the sequence in tabular form. (8marks)

(b) Develop the Q_0 through Q_7 outputs for a 74HC164 shift register with the input waveform shown in Fig-4 (b).

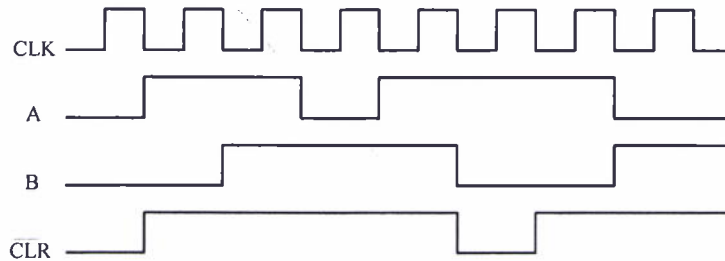


Figure - 4 (b)

(8marks)

5.(a) Design a 4-bit asynchronous binary counter using D flip-flops and each D flip-flop is negative edge-triggered and has a propagation delay for 12 nanoseconds(ns). Develop a timing diagram showing the Q output of each flip-flop and determine the total propagation delay time from the triggering edge of a clock pulse until a corresponding change can occur in the state of Q_3 . Also determine the maximum clock frequency at which the counter can be operated. (9 marks)

(b) Implement a 4 bit synchronous decade counter. Show the entire counter timing diagram and output waveforms of the decoding gates. How many flip-flops are require to implement 5 bit synchronous binary counter? (9 marks)

6.(a) Show the timing diagram and determine the sequence of a 3-bit synchronous binary up/down counter if the clock and UP/\overline{DOWN} control inputs have waveforms as shown in Fig.6(a). The counter starts in the all-0s state and is positive edge-triggered. (7 marks)

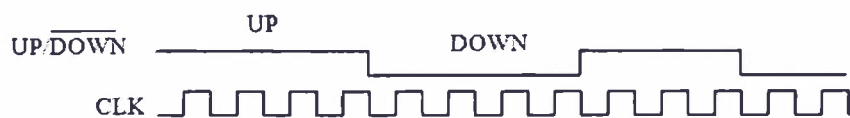


Figure -6(a)

6.(b) Design a counter with 3-bit Gray code sequence by using D Flip-Flops. (9 marks)

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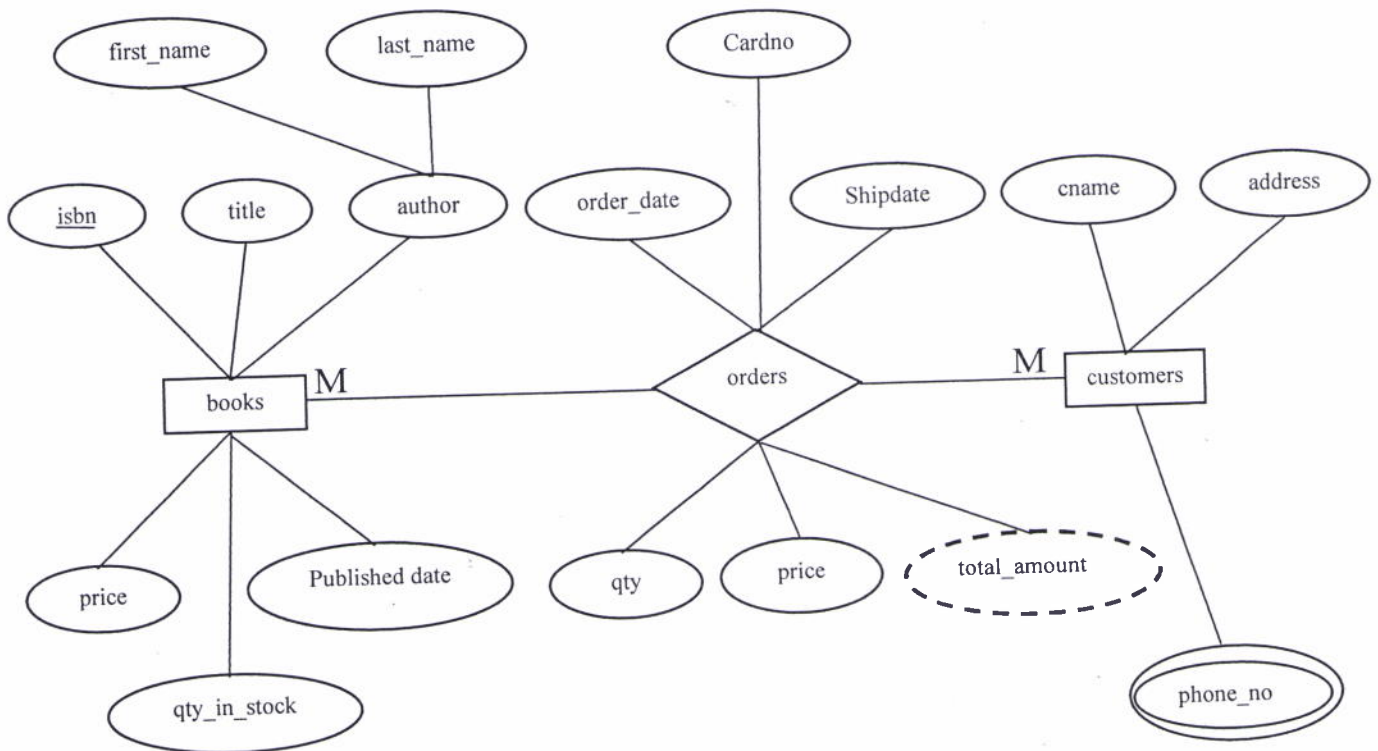
- (18) A functional dependency(FD) is a _____ relationship from one set of attributes to another within a given relvar.
 (A) one-to-one (B) one-to-many (C) many-to-many (D) many-to-one
- (19) SQL supports more or less self-explanatory built in data types.(True/False)
- (20) SQL is used to communicate with a programming language.(True/False)

2. (a) Write the **data definition language** for the following: (5 marks)

EMPLOYEE (E_{no}, Ename, Address, Gender, Salary)
 PROJECT (P_{no}, Pname, Plocation)
 WORKHOUR (E_{no}, P_{no}, Hour)

2. (b) Write SQL statements for the following problems using the tables create in 2(a). (20 marks)
- Retrieve the names of employees who work for project 'P2'.
 - Insert a new employee into employee table whose employee number, name, address, gender and salary are 'E9', 'Smith', 'Paris', 'Male' and 15000 respectively.
 - Add 5000 to salary of all employees.
 - Delete all information of employees who work for project name 'Foundation'.
 - Get all information of employees whose gender is female.
 - Retrieve the names of employees whose name end with 'h'.

3.(a) Convert the following ER diagram to relational schema with keys consideration. (8 marks)



3. (b) Draw **ER diagram and map to relational schema**.

(12 marks)

In a hospital database,

- Patients are identified by patient_no, name, address and ages must be record.
- Doctors are identified by doctor_id for each doctor, the name, specialty and years of experience must be recorded.
- Each pharmacy has a name, address, and phone number.
- For each drug, the trade name and formula must be recorded.

Every patient has a primary physician. Doctor prescribes drugs for patients. A doctor could prescribe one or more drugs for several patients, and a patient could obtain prescriptions from several doctors. "Date" and "quantity" is used to record prescription. Each pharmacy sells several drugs and has a price for each.

4. Suppose a relvar R with attributes A, B, C, D, E, F and given functional dependencies, FDs:

$A \rightarrow BC$, $E \rightarrow C$, $E \rightarrow EF$, $CD \rightarrow EF$

(i) Compute the irreducible set of FDs that is equivalent to this given set.

(ii) What are the candidate keys?

(iii) Compute the closure $\{AB\}^+$, $\{ABCD\}^+$, $\{CDE\}^+$ under given set of FDs. (15 marks)

5. (a) Why should a database be normalized? (5 marks)

5. (b) Consider the following relational schema: (15 marks)

Hotel Info (Hid, Hname, star_rate, Rno, Rname, Rtype, Amount)

The functional dependencies (FDs) are as following:

$\{Hid, Rno\} \rightarrow star_rate$,

$\{Hid\} \rightarrow Hname$, $\{Rtype\} \rightarrow Amount$,

$\{Rno\} \rightarrow Rname, Rtype, Amount$

(i) Explain in which normal form this relation is in.

(ii) Normalize this relation successively into 2NF and 3NF with FD diagrams. Clearly show intermediate relations and the primary key of each relation at each level of normalization.

*******END*******

Department of Higher Education
University of Computer Studies, Hinthada
Second Year (B.C.Tech.)
Mid Term Examination
Computer Application Technique II (CT-205)
March, 2018

Answer all Questions

Time Allowed: 3 Hours

1. What are the outputs of the following questions?

(30 marks)

(a) <pre><script type="text/javascript"> var num1 =Number("Hello world!"); var num2 =Number(""); var num3 =Number("00011"); var num4 =Number(true); alert(num1); alert(num2); alert(num3); alert(num4); </script></pre>	(b) <pre><body> First Item <li class="selected">Second Item Third Item <script type="text/javascript"> if(document.querySelector){ var selected=document.querySelector(".selected"); alert(selected.innerHTML);} </script></pre>
(c) <pre><script type="text/javascript"> var color= "blue"; function changeColor(){ if(color==="blue"){ color="red";} else{color="blue";}} changeColor(); alert("Color is now "+color); </script></pre>	(d) <pre><script type="text/javascript"> var num =10; alert(num.toString()); alert(num.toString(2)); alert(num.toString(8)); alert(num.toString(10)); </script></pre>
(e) <pre><script type="text/javascript"> var stringValue="yellow"; alert(stringValue.localeCompare("brick")); alert(stringValue.localeCompare("yellow")); alert(stringValue.localeCompare("zoo")); </script></pre>	(f) <pre><script type="text/javascript"> var stringValue="hello world"; alert(stringValue.length); alert(stringValue.charAt(1)); alert(stringValue.slice(3)); </script></pre>
(g) <pre><script type="text/javascript"> var colorText="red,blue,green,yellow"; var colors1=colorText.split(","); alert(colors1); var colors2=colorText.split(",",2); alert(colors2); </script></pre>	(h) <pre><script type="text/javascript"> var colors=["red","blue","green"]; alert(colors.length); colors[colors.length]="black"; colors[colors.length]="brown"; alert(colors[3]); alert(colors.length); </script></pre>
(i) <pre><script type="text/javascript"> window.color="red"; var o={color:"blue"}; function sayColor(){ alert(this.color);} sayColor(); sayColor.call(this); sayColor.call(window); sayColor.call(o); </script></pre>	(j) <pre><script type="text/javascript"> function sayName(name){alert(name);} function sum(num1,num2){return num1+num2;} function sayHi(){alert("hi");} alert(sayName.length); alert(sum.length); alert(sayHi.length); </script></pre>

2. Write the JavaScript statements for following.

(25 marks)

- (a) Create an array named "fruits" with the following items: "Apple, Orange, Pipe Apple". Create an array named "flowers" with the following items: "Lily, Orchid". Combine these two arrays into an array named "vegetables". Create a random integer to access as index of "vegetables" array and display random vegetables with alert.

- (b) Create an object with three properties (name,age,job) and a method named sayName(). The method returns the name of object with alert. Set the properties of object with "Nicholas", 29, "Software Engineer". Create an instance of object and call the method of object. **(Use Prototype Pattern)**
- (c) Create an array with given items (1,2,3,4,5,4,3,2,1). And then checks every item is greater than 3. If every item is greater than 3, display an alert with "Every item is greater than 3". Otherwise "Every item is not greater than 3" (Use array iterative method and reduction method)
- (d) Create a function named welcome_site() that pops up alerts says, "Welcome to My Site". And then execute this function at every 3 seconds. Create another function that stop the endless calling of 'welcome_site()' function. Create another function named new_window() that opens a new window with "http://www.google.com" in window.
- (e) Write the dynamic script by using the DOM to specify JavaScript code is inline example:

```
<script type= "text/javascript" src= "external.js"></script>
```

3.(a) Create an html page. In this page, uses the regular expression to validate an email address the viewer entered. If the email address validate, an alert pops up to say "Valid email". Otherwise display "Invalid email!". Assume that you need the email contain the following:

- It must begin a letter or a number. It has a letter, number or underscore.
- This type of character occurs at least twice. The at @ sign required.
- The letters, number, and the hyphen(-) occurs at least the characters.
- The dots(.) sign required. The letter occurs exactly three characters. **(6 marks)**

3.(b) Create an html page with following: **(6 marks)**

- Create a function to sort the array by descending order. Create an array with given numbers (1,4,2,6,3,7). Sort the array by descending order. And then reverse the order and display items with alert.

3.(c) Create an external Javascript file EventUtil.js with EventUtil object for Cros-Browser way. This object includes following methods. **(8 marks)**

- addHandler() method: to use the DOM Level 0 approach, the DOM level 2 the Internet Explore to adding elements, depending on which is available.
- removeHandler() method: to remove a previously added event Handler.

4.(a) Create an html page with following: **(5 marks)**

- Create a button "Draw Rectangle".
- Create a function that create draw a red rectangle on the 2D drawing context and this rectangle accepts four arguments: x-coordinate of 10 pixels, y-coordinate of 10 pixels, 50 pixels of width and 50 pixels of height. And draw a blue rectangle and this rectangle accepts four arguments: x-coordinate of 30 pixels, y-coordinate of 30 pixels, 50 pixels of width and 50 pixels of height.

4.(b) Create an html page with following design.

When user clicks the "Store" button user entered information in text boxes will be stored in session Storage. When user clicks the "Display" button display the information in the division below the form as shown. **(13 marks)**

Remarks: You can use desired Event Handler Method or EventUtil.js file by creating yourself.

The screenshot shows a web form with two input fields: "Roll no:" containing "2CT-2" and "Name:" containing "Zin Zin". Below the input fields are two buttons: "Store" and "Display". Below the buttons is a display area showing the stored information: "Roll No :2CT-2" and "Name :Zin Zin".

4.(c) Create an html page with following. (Write some statements by using DOM.) **(7 marks)**

- Create an empty unordered list and a button "Add items".
- Create a function that creates a document fragment node with following list item and append the document fragment node to unordered list by using DOM.
 - Item 1
 - Item 2
 - Item 3
- Call the function when user clicks the "Add items" button.

*****END*****

Department of Higher Education
University of Computer Studies, Hinthada
Second Year (B.C.Tech.)
Mid-Term Examination
Electrical Circuits I (CT-206)
March, 2018

Answer All Questions.

Time Allowed: 3 Hours

1.(a) A dc power link is to be made between two islands separated by a distance of 24 miles. The operating voltage is 500kV and the system capacity is 600 MW. Calculate the maximum dc current flow, and estimate the resistivity of the cable, assuming a diameter of 2.5cm and a solid (not stranded) wire.

(b)(i) Find the power absorbed by each element in the circuit in Fig-1(b)(i).

(ii) In the circuit of Fig-1(b)(ii) there are eight circuit elements. Find v_{R_2} (the voltage across R_2) and the voltage labeled v_x .

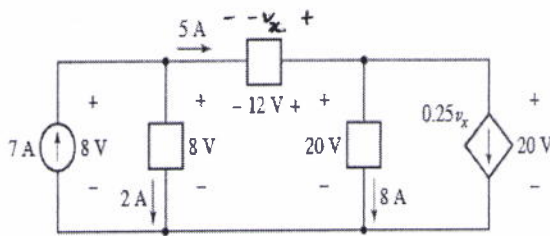


Fig-1(b)(i)

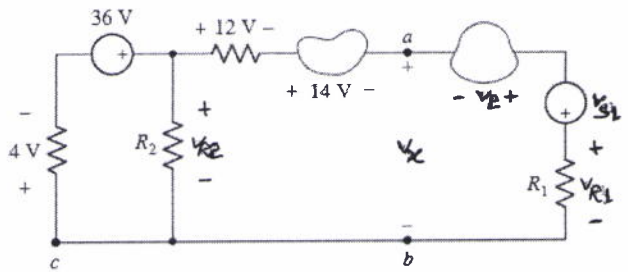


Fig-1(b)(ii)

(20 marks)

2.(a) Compute the power absorbed in each element for the circuit shown in Fig-2(a).

(b) For the single-node-pair circuit of Fig-2(b), find i_A , i_B and i_C .

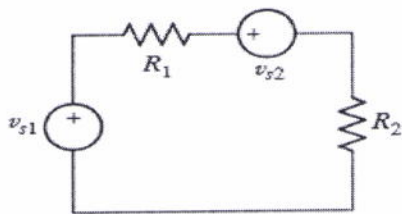


Fig-2(a)

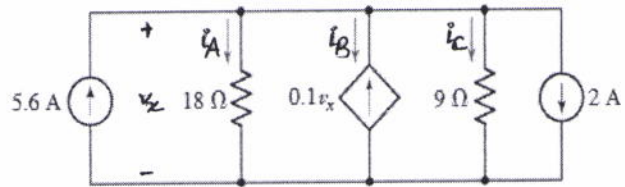


Fig-2(b)

(20 marks)

3. (a) Determine the node-to-reference voltages in the circuit of Fig-3(a).

(b) Through careful application of the supermesh technique, obtain values for all three mesh currents as labeled in Fig-3(b).

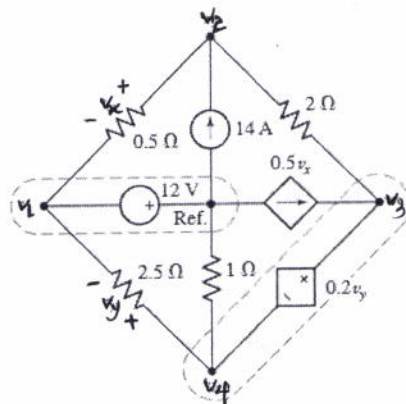


Fig-3(a)

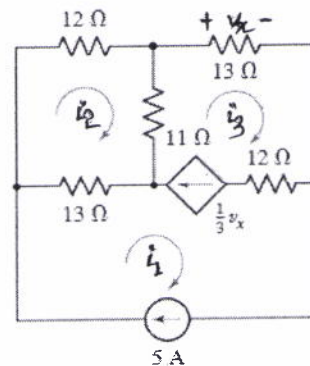


Fig-3(b)

(20 marks)

4. (a) Using nodal analysis as appropriate, determine the current labeled i_I in the circuit of Fig-4(a).

(b) In the circuit of Fig.4 (b), use the superposition principle to determine the value of i_x .

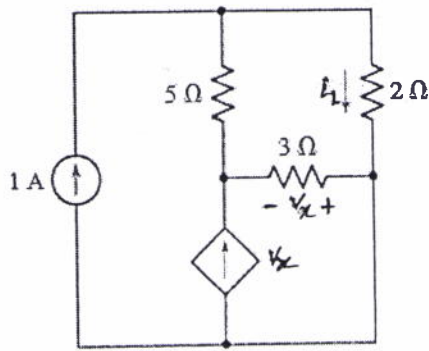


Fig-4(a)

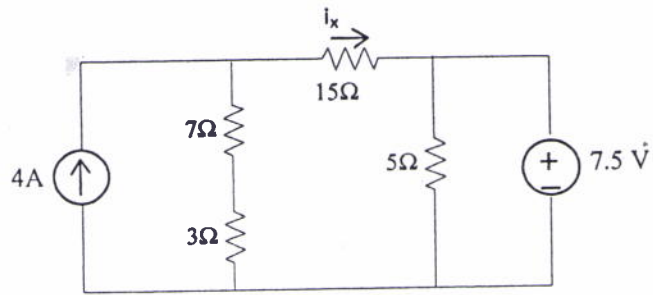


Fig-4(b)

(20 marks)

5. (a) Consider the circuit of Fig. 5(a),

i. If $R_{out} = 3k\Omega$, find the power delivered to it.

ii. What is the maximum power that can be delivered to any R_{out} ?

iii. What two different values of R_{out} will have exactly 20 mW delivered to them?

(b) Find the Thevenin equivalent for the network of Fig. 5(b) by using with a 1V test source.

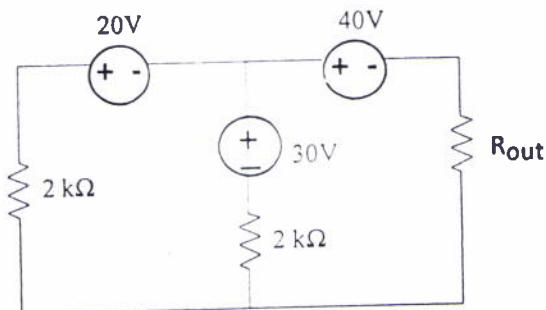


Fig-5(a)

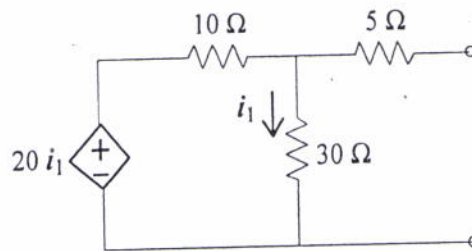


Fig-5(b)

(20 marks)

*****END*****