

THE DEPARTMENT OF ADVANCED SCIENCE AND TECHNOLOGY
UNIVERSITIES OF COMPUTER STUDIES
SECOND YEAR B.C.Sc. / B.C.Tech.
FIRST SEMESTER EXAMINATION
MARCH 2015 (ZONE IV)

Answer all questions.

ENGLISH

Time allowed: 3 hours

QUESTION - I

(20 marks)

The functions of Language

The question "Why do we use language?" hardly seems to need an answer. But our everyday familiarity with speech and writing can make it difficult to realize how complex the skills are that we have learned. This is particularly so when we try to define the range of functions to which language can be put. "To communicate our ideas" is the answer that most of us would give to the question – and, indeed, this must surely be the most widely recognized function of language. Whenever we tell people about ourselves or our circumstances, or ask for information about other people and their circumstances, we are using language in order to exchange facts and opinions. It is the kind of language which is found in any spoken or written interaction where people wish to learn from each other. But it would be wrong to think of it as the only way in which we use language. There are several other functions where the communication of ideas is irrelevant.

Emotional expression

Mr X carefully leans his walking stick against a wall, but it falls over. He tries again, and it falls a second time. He shouts at the walking stick. How should we classify this function of language? It cannot be 'communication of ideas', for there is no one else in the room. Here we have one of the commonest uses of language – a means of getting rid of our nervous energy when we are under stress. This type of language can be used whether or not we are alone. Swear words are probably the commonest signals to be used in this way, especially when we are angry. But there are also many words that we use to express positive feelings, such as affection, or a reaction to beautiful art or scenery.

The most common linguistic expressions of emotion consist of conventional words or phrases (such as 'Gosh', 'My') and the semi-linguistic noises often called interjections (such as 'Wow' and 'Ouch')

Social Interaction

Mrs P sneezes violently. Mrs Q says, 'Bless you!' Mrs P says, 'Thank you.' Again, this hardly seems to be a case of language being used to communicate ideas, but rather to maintain a comfortable relationship between people. No factual content is involved. Similarly, the use of such phrases as 'Good morning' or 'Pleased to meet you', and conventional exchanges about health or the weather, do not 'communicate ideas' in the usual sense. Phrases of this type often state the obvious (e.g. 'It's a lovely day') or have no content at all

(e.g. 'Hello'). They are used to maintain a friendly relationship between people, arising out of the basic human need to signal such an attitude. If someone does not say these sentences when they are expected to, their absence may be interpreted as a sign of distance or even danger. These illustrations apply to English and to many European languages. But cultures vary greatly in the topics which they permit in this type of social interaction. The weather is not as universal a conversation-filler as English people might like to think. Other topics are used to serve the same purpose, and some cultures avoid this type of language and prefer silence.

The power of sound

In many situations the only apparent reason for a use of language is the enjoyment that the users or listeners gain from the sounds, and this applies to all age groups. Many children's rhymes are of this type, as are the lyrics of popular songs, and the voices of individuals singing in the kitchen or the bath.

Questions 1-10

Do the following statements reflect the claims of the writer in the reading passage? Write

YES if the statement reflects the claims of the writer

NO if the statement contradicts the claims of the writer

NOT GIVEN if it is impossible to say what the writer thinks about this

1. Using a language involves complicated skills.
2. Most people are aware that a major function of language is to communicate ideas.
3. We communicate ideas every time we use language.
4. The communication of ideas involves at least two people.
5. We are becoming more aware of how language is used for emotional expression.
6. Interjections are similar in all languages.
7. Phrases like *Good morning* can be used to express a range of feelings.
8. The weather is used as a standard topic of social communication in all languages.
9. When we want to express negative feelings, we use rude or offensive words.
10. Some types of sounds can give pleasure to both adults and children.

QUESTION – II

(A) Choose the word from the list and complete the sentences.

(5 marks)

research performance manager exhibition earn save activity

1. I hope I can work my way up from tea boy toof the whole department.
2. You should never ask someone how much money they.....from their job.
3. We saw an excellentof *Macbeth* last night.
4. Paola has spent the last four years doinginto students' leisure habits.
5. I went to a photographylast night.

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- QUESTION – III
- (B) Complete the sentences using the comparative or superlative form of the word in brackets. (5 marks)
- I think salad is (healthy).....than chips.
 - This is (good)..... hamburger I've ever eaten!
 - The old chef was (bad).....than the new one.
 - Our college canteen is (expensive)..... place to eat in town – three courses for only £ 5!
 - This restaurant is (expensive)in London. It costs a fortune.

- (C) Choose the correct alternative. (5 marks)
- An amazed / amazing number of people watch the Dragon Boat Races.
 - I'm very interesting / interested in the way that Sydney has developed.
 - I was astonishing / astonished to discover that Sydney has a large Chinese population.
 - Sydney is the very attractive / attracted city.
 - A fascinating / fascinated book was published recently about the history of Sydney.

- (D) Correct the following sentences. (5marks)
- Our principal is believing in democracy in the classroom.
 - I am enjoying studying mathematics this term.
 - What do you do? – I read a book.
 - I've been going to the college twice this week.
 - Dr. Scott knows my father since 2001.

QUESTION – III (10marks)

(A) Complete the passage using the verbs in brackets in either **the past simple, past continuous or past perfect simple tense**. Just write down the number and the answer.

The British archaeologist Howard Carter (1) (work).....for Lord Carnarvon when he (2) (discover).....the tomb of King Tutankhamen. Carnarvon was keen to be the first person to find the tomb and the treasure it (3) (contain)..... Before this, Carter (4)) (spend)..... many years looking for the burial place but (5) (not have).....any success. However, in 1922, Carter was very lucky. His team (6) (begin).....digging on November 1, 1922. On November 4, while they (7) (dig).....in the Valley of the Kings, they (8) (find).....a staircase and this (9) (lead).....them to a sealed door. Luckily, no one (10) (break into).....the tomb before them and the contents were still untouched.

- (B) Complete the sentences with a verb below in the right form. (10marks)

change	give	invest	leave	lend
make	pay	save	spend	waste

- 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 very 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.

QUESTION – IV

(A) Answer these questions with complete sense. (10marks)

1. What are the benefits of playing computer games?
2. What are the drawbacks of playing computer games?
3. How often do you play computer games?
4. What do you think about the amount of time some people spend on computer games?
5. Do you think that children should be banned from playing games?

(B) Describe a place that you like to go. Write at least 150 words. (10marks)

You should say:

- Where the place is
- How you get there
- What it looks like

And explain why you like this place.

QUESTION – V

Write an ESSAY on the following topic. Write at least 250 words.

"Face-to-face communication is better than other types of communication, such as letters, e-mail or telephone calls."

Do you agree or disagree with this statement?

Use specific reasons and examples to support your choice.

THE END

Department of Advanced Science and Technology
University of Computer Studies
B.C.Sc./ B.C.Tech. (Second Year)
Java Programming (CST - 201)

Mid Term Examination

March 2015

Answer ALL questions.

Zone IV

Time allowed : 3 hours.

1. (a) Indicate whether each of the statements (i) to (x) is *valid* OR *invalid*. (10 marks)

- (i) byte a = -229;
- (ii) long b = 1000000000;
- (iii) double c = 27 + 3.7e3;
- (iv) float d = 6.58711324;
- (v) boolean e = true && true;
- (vi) double f = 13. - .33;
- (vii) double g = 99.5f;
- (viii) String h = "null";
- (ix) short i = 100000-10000 ;
- (x) char j = '\u0041';

- (b) (i) Write a fragment of Java code to print "Sunday", "Monday", ... "Saturday" if the int variable "day" is 0, 1, ..., 6, respectively by using "switch-case" statements. Otherwise, it shall print "Not a valid day". (5 marks)

- (ii) Complete the following Java code to compute x^y . (5 marks)

```
double result = ___(a)___; //initialize result
//repeat for i = 0 to absolute value of y
for (int i=0; i < ___(b)___; i++) {
    result = ___(c)___; //compute power
}
if (y < 0) { // if y is negative
    return ___(d)___;
} else { // y is positive
    return ___(e)___;
}
```

2. (a) The **Tribonacci numbers** are like the Fibonacci numbers, but instead of starting with two predetermined terms, the sequence starts with three predetermined terms and each term afterwards is the sum of the preceding three terms. The first few tribonacci numbers are: 0, 0, 1, 1, 2, 4, 7, 13, ...

Write a method void *tribonacci* (int n) to print the first *n* tribonacci numbers.

(7 marks)

- (b) Create a Java class, *SamsungPhone*, for the purpose of price calculation. The class should keep track of the following attributes and methods to determine the sale price of it considering discounts.:
 - name as String
 - model as String
 - year as int
 - price as double
 - *SamsungPhone*(String name, String model, int year, double price) constructor to instantiate the Phone objects.
 - **void increasePrice(int p)** that updates the price according to given percentage *p*.
 - **void decreasePrice(int p)** that updates the price according to given percentage *p*.
 - **double discountPrice(int n)** that calculates the total cost of selling *n* items by using the following discount rules:
 - For the phones launched below 2012, if the customer buys 1-5 items, discount rate is 15%, otherwise the discount rate is 30%.
 - For the phones launched above 2012, if the customer buys 1-5 items, discount rate is 10%, otherwise the discount rate is 15%.

(13 marks)

3. Create a Java application regarding with football teams. Assume that you have created a file "football.txt" which consists of the team names and their number of goals separated by '#' follows:

```
Manchester United#1#Chelsea#0
Arsenal#1# Manchester United#1
Manchester United#3#Fullham#1
Liverpool#1#Arsenal#0
Chelsea#1#Fullham#1
Arsenal#2#Fullham#1
Liverpool#2# Manchester United#1
Swansea#2# Manchester United#4
Chelsea#2#Liverpool#1
Fullham#3#Swansea#0
Chelsea#1# Swansea #0
Liverpool#1# Swansea#1
```

Your Java program should work out and display how many *games* Liverpool played, how many *wins* they had, how many *drews* they had, and how many *losses* they had.
Suppose a win gains you 3 points, a draw 1 point, and a loss no points. Your program should also compute and display how many *points* in total Liverpool has acquired.

(20 marks)

4. (i) Create the **encapsulated** *BankAccount* class including the following data:

- name
- accountNumber
- balance

and following methods:

- double **deposit**(double amount) that will increase the balance with the given amount and return the new balance.
 - double **withdraw**(double amount) that will check the balance and make the withdrawal operation when enough. If the operation is successful, the method will return the new balance, otherwise it will return -1.
 - boolean **checkBalance**(double amount) that will check if the balance is enough or not for the given amount.
- (10 marks)

- (b) Assume you have created an abstract base class, *Shape*, and subclasses, *Rectangle* and *Triangle*. The *Shape* class has a method *calculateArea()*.

Define an *ShapeList* class that can store an arbitrary collection of objects of subclasses. Your *ShapeList* class should contain the methods to add, remove *Shape* object from the list as well as returning the *Shape* object at a given index.

Write the user class by creating instances of *Rectangle* and *Triangle* class as *Shape*, add them in an *ShapeList*, remove some *Shape* objects and invoke the *calculateArea()* method while retrieving from this list. (Note: use Vector to store *Shape* objects.)

5. Consider the following application:

A cosmetic store keeps track of its sales data daily as five attributes: *brandName*, *itemName*, *price*, *quantity*, *cost*. There are five records and their data are given in the following table:

BrandName	ItemName	Price	Quantity	Cost
Lipstick	Color Riche Lip	15	7	105
Make up	True Match	20	3	60
Lipstick	Rouge Caresse	18	5	90
Make up	Nude	25	2	50
Eye Shadow	Hip	12	6	72

Develop an application to display the sorted lists of sales based on the decreasing order of their *quantity* sold in neat tabular format as follows:

Before Sorting:

BrandName	ItemName	Price	Quantity	Cost
Lipstick	Color Riche Lip	15	7	105
Make up	True Match	20	3	60
Lipstick	Rouge Caresse	18	5	90
Make up	Nude	25	2	50
Eye Shadow	Hip	12	6	72

After Sorting:

BrandName	ItemName	Price	Quantity	Cost
Lipstick	Color Riche Lip	15	7	105
Eye Shadow	Hip	12	6	72
Lipstick	Rouge Caresse	18	5	90
Make up	True Match	20	3	60
Make up	Nude	25	2	50

Use Arrays class and **Comparable** interface for sorting sales data.

(20 marks)

Department of Advanced Science and Technology
University of Computer Studies
B.C.Sc/B.C.Tech(Second Year)
Mathematics of Computing II (CST-202)
Mid Term Examination
March , 2015
Zone IV

Answer ALL Questions.

Time allowed: 3 hours

How many bit strings of length four do not consecutive 1s?

How many strings are there of lower case letters of length four or less?

How many strings of three decimal digits begin an odd digit?

How many ways can we select three students from a group of five students to stand in line for a picture and how many ways can we select five students from a group of five students to stand in line for a picture?

Find the expansion of $(x+y)^6$ by using the binomial theorem.

Consider the relations on $\{1,2,3,4,5\}$

$R_1 = \{(1,1), (1,2), (2,1), (2,2), (3,4), (4,1), (4,4), (5,1), (5,3), (5,5)\}$, $R_2 = \{(1,1), (1,2), (2,1), (2,3), (2,4)\}$, $R_3 = \{(1,1), (1,2), (1,4), (2,1), (2,2), (3,3), (4,1), (4,4), (5,5)\}$, $R_4 = \{(2,1), (3,1), (3,2), (4,1), (4,2), (4,3)\}$, $R_5 = \{(1,1), (1,2), (1,3), (2,2), (2,3), (2,4), (3,3), (3,4), (4,4)\}$, $R_6 = \{(3,4)\}$

Which are reflexive, symmetric, antisymmetric and transitive?

- i) Find $R_1 - R_2, R_2 \cup R_3, R_3 - R_4, R_4$ dot circle $R_5 (R_4 \cdot R_5)$
- ii) Express matrix representation of R_1, R_2, R_3 and R_4, R_5

i) Solve first order equation $y' = (x+1)e^{-x} y^2$ ii) $yy' + 36x = 0$ iii) $r' = -2tr, r(0) = 5$
ii) Solve the exact equation $2xy \, dx + x^2 \, dy = 0$ ii) $2x \tan y \, dx + \sec^2 y \, dy = 0$

- 1) Solve the equation $(n^2 D^2 - 3xD + 3I)y = 3 \ln x - 4, y(1) = 0, y'(1) = 1$.
- 2) Solve the equation $y'' + 3y = 18x^2, y(0) = -3, y'(0) = 0$

Department of Advanced Science and Technology
University of Computer Studies
B.C.Sc. / B.C.Tech. (Second Year)
Mid Term Examination
Digital System I (CST-203)
March, 2015

Answer all questions.

Zone IV

Time allowed: 3 hours

- 1.(a) Answer the following questions.
- List three types of latches.
 - How many flip-flops are required to produce a divide by 64 device?
 - How many states does a modulus-14 counter have? What is the minimum number of flip-flops required?
 - How many decade counters are necessary to implement a divide-by-1000 (modulus 1000) counter? A divide-by- 10,000?
 - How many states are there in an 8 bit Johnson counter sequence?
 - What is the difference between a counter and a shift register?
- (b) Two edge-triggered S-R flip-flops are shown in Figure 1(b). If the input are as shown, draw the Q output of each flip-flop relative to the clock, and explain the difference between the two. The flip-flops are initially RESET.

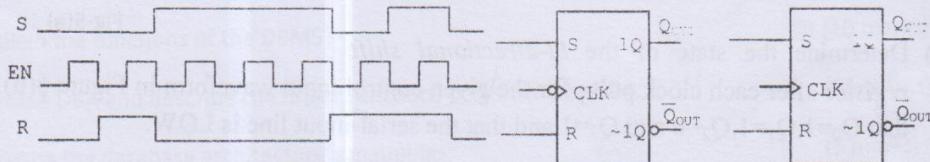


Fig-1(b)

- 2.(a) The following serial data are applied to the flip-flop through the AND gates as indicated in Figure 2(a). Determine the resulting serial data that appear on the Q output. Assume that Q is initially 0 and that \overline{PRE} and \overline{CLR} are HIGH. Right most bit are apply first.

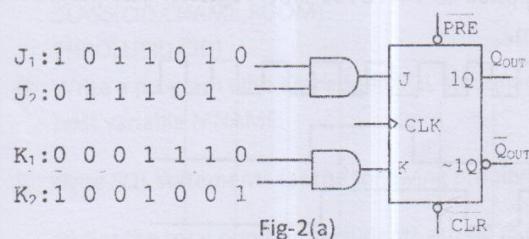


Fig-2(a)

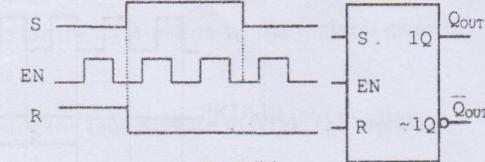
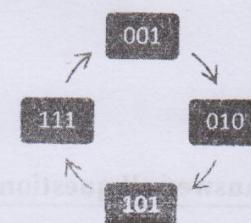
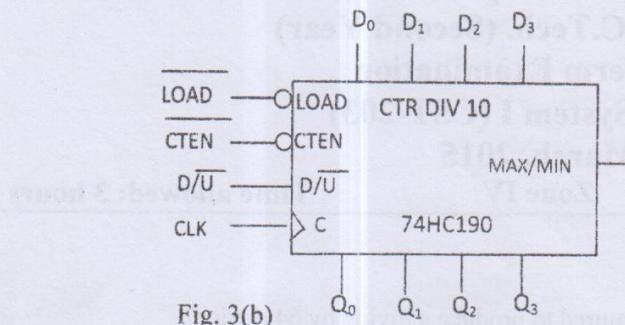


Fig-2(b)

- (b) For a gated S-R latch, determine the Q and \overline{Q} for the input in Figure 2(b). Show them in proper relation to the enable input. Assume that Q starts LOW.
- 3.(a) Show how an asynchronous counter can be implemented having a modulus of 13 with a straight binary sequence from 0000 through 1100.

- (b) Use 74HC190 up/down decade counters as shown in figure 3(b) connected in the UP mode to obtain a 1 kHz waveforms from a 1MHz clock. Show the logic diagram.



- 4.(a) Design a synchronous counter with the irregular binary sequence shown in the state diagram Figure 4(a) by applying sequential circuit design techniques.

- (b) Implement a *4 bit synchronous Decade counter*. Show the entire counter timing diagram and output waveform of the decoding gates.

- 5.(a) Design a logic diagram for *4 bit parallel in/Serial out shift Register* for the logic symbol shown in Figure 5(a).

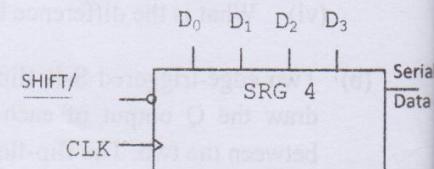
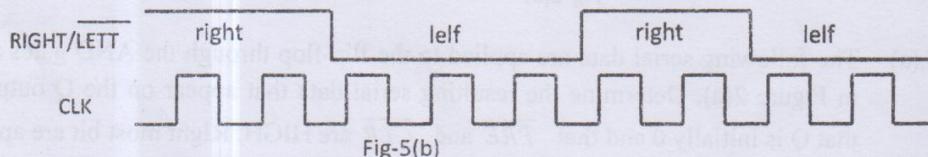
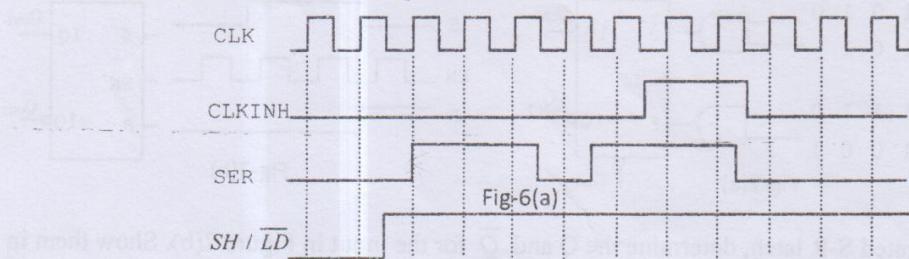


Fig-5(a)

- (b) Determine the state of the *bi-directional shift register* after each clock pulse for the given control input waveform in Figure 5(b). Assume that $Q_0=1, Q_1=1, Q_2=0$ and $Q_3=1$ and that the serial-input line is LOW.



- 6(a) The waveforms in Figure 6(a) are applied to 74HC165 shift register. The parallel input are all 0. Determine the Q_7 waveform.



- (b) Design 10-bit *Ring Counter*. Write the sequence in tabular form. Assume that FF1, FF5 and FF5 are initially SET and that the reset are RESET.

ected in the UP
gram.

Department of Advanced Science and Technology

University of Computer Studies

B.C.Sc./B.C.Tech.(Second Year)

Mid Term Examination

CST-204 (Database Management System)

March, 2015

Answer all questions.

Zone IV

Time Allowed : 3 hours

a)

I. Define any five of the following: (15 marks)

- a) The relational model
- b) Database Management System
- c) Catalog
- d) Functional dependency
- e) Catalog
- f) Data dictionary
- g) Optimization

II. (a) What are the advantages and disadvantages of the database system. (8 marks)

(b) Explain the functions of the DBMS? (10 marks)

III. (a). Define DBA and describe the major functions performed by DBA. (14 marks)

(b) Discuss the database architecture's mappings. (6 marks)

IV. (a) Write the data definition language for the following. (10 marks)

- (i) Create the followings tables which contain the following associate fields and choose the suitable keys.

STUDENT(SID,SNAME,MAJOR,AGE)

CLASS(CID,CNAME,ROOM)

ENROLL(SID,CID)

- (ii) Write a program with embedded SQL statements to list the all students whose major is given in host variable MNAME.

(b) Write SQL statements for the following problems using the tables create in IV(a) . (15 marks)

(i) Get the total number of students attend in class 'SECOND YEAR'.

(ii) Insert new students ('2CS-1001','KO KO','CS',20).

(iii) Get the list of all student details who are attend in room no 5.

(iv) Update the class name to 'SECOND YEAR ' at room no 6.

(v) Delete all record for student attend at class id 'C-205'.

V.(a) Suppose we are given relvar R with attributes A,B,C,D,E,F and FDs

$$A \rightarrow BC$$

$$B \rightarrow E$$

$$CD \rightarrow EF$$

Show that the FD $AD \rightarrow F$ for R and describe which inference rules you have applied.

(6 marks)

(b)(i) Define 1NF,2NF and 3NF.

(6 marks)

(ii) The following table used for book store to store their information. ISBN is unique for every book.

ISBN	Title	Author	Publisher	No.of copies
0-2104-225-5	Database Management System	C.J.Date	S.Jones	100
1-2105-335-3	Software Engineering	L.Sommerville	J.Smith	200
2-2114-454-4	Unified Modeling Language	G.Booch	J.Herry	300
3-3558-555-6	Programming Logic	Joyce	P.White	100

(1) Explain in which normal form this table is.

(2) Find the primary key for this relation and explain your choice.

(3) Normalize the table into 2NF.

(4) Decide whether the generated tables are in 3NF too and explain why. (10 marks)

Department of Advanced Science and Technology
University of Computer Studies
B.C.Sc. Second Year (Mid Term Exam)
CS-205 (Computer Application Technique II)

Mar-2015

Zone IV

Time Allowed: 3hrs

(15 marks)

Answer all questions

1. Write the output string of given JavaScript statements.

(a)

```
function doAdd() {
    if(arguments.length == 1) {
        alert(arguments[0] + 10);
    } else if (arguments.length == 2) {
        alert(arguments[0] + arguments[1]);
    }
}
doAdd(10);
doAdd(30, 20);
```

(c)

```
var colors = new Array();
var count = colors.push("red", "green");
alert(count);
count = colors.push("black");
alert(count);
var item = colors.pop();
alert(item);
alert(colors.length);
```

(e)

```
var text = "this has been a short summer";
var pattern = /(..)or(.)g;

if (pattern.test(text)){
    alert(RegExp.$1);
    alert(RegExp.$2);
}
```

(b)

```
var text = "cat, bat, sat, fat";
var pattern = /.at/;
//same as pattern.exec(text)
var matches = text.match(pattern);
alert(matches.index);
alert(matches[0]);
alert(pattern.lastIndex);
```

(d)

```
var colors = ["red", "green", "blue"];
var colors2 = colors.concat("yellow", ["black", "brown"]);

alert(colors);
alert(colors2);
```

(f)

```
var stringValue = "hello world";
alert(stringValue.slice(-3));
alert(stringValue.substring(-3));
alert(stringValue.substr(-3));
```

2. Write the JavaScript statement(s) for following.

(15 marks)

(a) Create a factorial function. Call it with value 5 and display the value of 5!.

10 marks)

(b) Create an object named createPerson with properties(name, age, job) and a method named sayName which return the name of object with alert. Create with instances of object with "Nicholas". 29. "Software Engineer" and ("Greg". 27. "Doctor"). Call method of each object. (UseFactory Pattern)

(c) Create an array with "Lily", "Carnation", "Orchid", "Tulip". Create another array with "Rose", "Jasmine", "Tuberose", "Lavender". Combine these arrays into an array named "flowers". Remove 2 elements ("Lily", "Carnation") from flowers array. Insert items "Aster", "Cherry Blossom", "Daisy", and "Iris" before "Rose" in "flowers" array. Display all flowers' names with alert.

3(a). Create an html page with following. (by using array iterative methods)

-Create an array with given items (1,2,3,4,5,4,3,2,1).

-And then checks some items are greater than 2. If some items are greater than 2, display an alert with "Some items are greater than 2." Otherwise display "No item is greater than 2."

-Extract the items which are greater than 3 into another array and display them in alert. (6 marks)

(b) Create an html page with following:

-Create a function named selectFrom() that handles the calculation of the total number of choices and the first possible value and **return an random integer**. The function selectFrom() accepts two arguments: the lowest value that should be returned and the highest value that should be returned.

- Using the function to select a random integer between 2 and 10 (inclusive) by calling. And then display the number with alert.

-Using the function to select a random item in given array ("red", "green", "blue", "yellow", "black", "purple", "brown") and display the random item of array with alert. (8 marks)

(c) Create an html page with following:

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 "Validate 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 three characters.

-The dot(.) sign required. The letter occur exactly three characters. (6 marks)

4(a). Draw up the balance sheet to record the following items using the Standard Layout.

	\$
Capital	12900
Office equipments	700
Premises	10000
Profit	1710
Stocks	390
Creditors	1500
Drawing	180
Machinery	3600
Bank	1200
Bank overdraft	770
Bank Loan	5000
Debtors	5300
Cash	510

(5 marks)

- (b). Draw up the double entry accounts to record the following transactions, balance off the accounts at the end of month and extract the Trial Balance.
- 1 Aug. A trader started business with \$ 30000 in the bank, and Motor Van \$ 1300.
- 5 Aug. Bought goods from Orange Co. \$ 5000 on credit.
- 7 Aug. Sold goods to Michael \$ 6700 on credit.
- 10 Aug. Michael paid \$ 6500 by cheque and the remaining balance is offered as discount. We returned goods to Orange Co. \$ 300.
- 12 Aug. Bought Furniture on credit from Sun Shine Co. \$ 600.
- 15 Aug. Paid by cheque \$ 4500 to Orange Co., and the remaining balance is given as discount.
- 16 Aug. Returned some of Furniture costing \$ 150 to Sun Shine Co..
- 18 Aug. The bank lend him \$ 2500 with which he bought stocks for \$ 2000, paying by cheque, he leaves the remainder in his bank account.
- 20 Aug. Paid for wages \$ 200 and rent of \$ 500 by cheque. Paid for interest 5% on bank loan by cheque.
- 25 Aug. Received commission from ABC for goods sold on their behalf \$ 3000 by cheque.
- 30 Aug. Owner withdrew from the bank \$ 200 for his personal used.

(20 marks)

- 5(a). The following Trial balance has been drawn up by an inexperienced account clerk, redraft the Trial balance to show the correct entries. (5 marks)

	Dr	Cr
Bank	7000	
Debtors		14900
Creditors	5300	
Stock	420	
Interest received	850	
Bank Loan		4000
Premises	29000	
Capital		70480
Fixture and Fitting		35000
Sales		40500
Purchases	27450	
Carriage in	200	
Carriage Out		300
Wages		9400

(5 marks)

Discount Allowed	360
Commission Received	2500
Discount Received	400
	<hr/> 72720
	175340

(b). A firm has produced the following Trial Balance at 31st May 2012. Prepare a Trading, Profit & Loss Account and a Balance Sheet at that date.

	Dr	Cr
Bank	8000	
Cash	4000	
Debtors and Creditors	13000	6500
Provision for bad debts		1300
Bank loan		4000
Premises	25000	
Capital		80900
Motor vehicle	47000	
Sales and Purchases	19000	40500
Opening stocks	400	
Return	200	500
Interest	1000	300
Wages	15000	
Motor expenses	5000	
Discount	500	600
Accumulated Depreciation(motor vehicle)		4000
Rent	500	
	<hr/> 138600	<hr/> 138600

Adjustments:

1. Closing stock \$ 1000.
2. Rent owing \$ 2000.
3. Wages paid in advance \$1500.
4. Provision for bad debt is to be decreased 5% of debtors.
5. Calculate depreciation for Motor vehicle at 10% of cost.

(20 marks)

Department of Advanced Science and Technology
University of Computer Studies
B.C.Sc. (Second Year), Mid-Term Examination
CS-206 (Software Engineering)
April 2015

Answer all questions.

Zone IV

Time allowed: 3 hours

I. (a) Fill in the blank.

(10 marks)

- (1) Socio-technical systems include but, crucially, also include knowledge of how the system should be used to achieve some broader objective.
- (2) appear when all the parts of a system work together to achieve some objective.
- (3) Like reliability, other emergent properties such as..... are hard to access but can be measured after the system is operational.
- (4) The basic functions that the system must provide are defined at
- (5) Large complex systems usually consist of a mixture of and specially built components.
- (6) A system whose failure may result in injury, loss of life or serious environmental damage is called
- (7) includes correctness, precision and timeliness.
- (8) A condition with the potential for causing or contributing to an accident is called.....
- (9) An exposure is analogous to
- (10) is a measure of the loss resulting from a mishap.

(b) Answer with True or False.

(10 marks)

- (1) Emergent properties are associated with individual parts of the system rather than properties of the system as a whole.
- (2) In practice, the process of requirements engineering and design are inextricably linked.
- (3) Properties such as safety and security can be measured.
- (4) Incremental integration reduces the cost of error location.
- (5) Socio-technical systems are enterprise systems that are intended to help deliver some organizational or business goal.
- (6) Critical systems are usually developed using well-tried techniques rather than newer techniques.
- (7) Hardware control of safety-critical systems is simpler to implement and analyze than software control.
- (8) An unplanned event or sequence of events which results in human death or injury, damage to property or to the environment is called a hazard.
- (9) A system whose failure may result in injury, loss of life or serious environmental damage is called business-critical systems.
- (10) Possible loss or harm in a computing system is called an attack.

II. Answer any three of the followings: (15 marks)

- (i) What is software?
- (ii) What are the key challenges facing software engineering?
- (iii) Two process models that have been explicitly designed to support process iteration.
- (iv) Explain about risk monitoring.

III. (a) What are the principle stages of the 'waterfall model' map onto fundamental development activities? (10 marks)

(b) Evolutionary development is based on the idea of developing an initial implementation, exposing this to user comment and refining this through many versions until an adequate system has been developed. Explain detail it. (10 marks)
(or)

Discuss the requirement engineering process in detail. (10 marks)

IV. (a) The details of the project plan vary depending on the type of project and organization. Discuss about the project plan and what are involved in the project plan. (10 marks)
(or)

Risk management is increasingly seen as one of the main jobs of project managers. Briefly discuss about the risk management process. (10 marks)

(b) System requirements are more detail descriptions of the user requirements. Briefly explain it. (10 marks)

V. When 'a standard form' is used for specifying functional requirements, what kinds of information should be included. (10 marks)

(or)

Functional requirements for a system describe the functionality or services that the system is expected to provide. Identify a number of functional requirements for a University Library system for students and faculty to order books from other library.

(10 marks)

VI. Using the following number of activities, duration (weeks) and proceeding activities. Draw the activity diagram showing the project schedule. (15 marks)

<u>Activity</u>	<u>Duration (Weeks)</u>	<u>Proceeding Activity</u>
A	2	None
B	2	A
C	1	A
D	3	A
E	3	C,D
F	1	D
G	5	B
H	3	D
I	3	G
J	6	A
K	10	J,E,F,H,I
L	1	K

A	2	None
B	2	A
C	1	A
D	3	A
E	3	C,D
F	1	D
G	5	B
H	3	D
I	3	G
J	6	A
K	10	J,E,F,H,I
L	1	K

3 (a)
(b)

Department of Advanced Science and Technology
University of Computer Studies
B.C.Tech. Second Year (Mid Term Exam)
CT-205 (Computer Application Technique II)

Mar-2015

Zone IV

Time Allowed:3 hrs

Answer all questions

1. Write the output string of given JavaScript statements.

(30 marks)

(a)

```
var diff=function(num1, num2) {
    if (num1 < num2) {
        return num2 - num1;
    } else {
        return num1 - num2;
    }
}
var result = diff(7, 10);
alert(result);
var result1=diff(10,7);
alert(result1);
```

(c)

```
var numbers = [1,2,3,4,5,4,3,2,1];
alert(numbers.indexOf(4));
alert(numbers.lastIndexOf(4));
alert(numbers.indexOf(4, 4));
alert(numbers.lastIndexOf(4, 4));
```

(e)

```
window.color = "red";
var o = { color: "blue" };
function sayColor(){
    alert(this.color);
}
sayColor();
o.sayColor = sayColor;
o.sayColor();
```

(g)

```
var text = "this has been a short summer";
var pattern = /(.)hort/g;
if (pattern.test(text)){
    alert(RegExp.leftContext);
    alert(RegExp.rightContext);
    alert(RegExp.lastMatch);
    alert(RegExp.lastParen); }
```

(20 marks)

(b)

```
var s = "Nicholas";
var b = true;
var i = 22;
var u;
var n = null;
alert(typeof s);
alert(typeof i);
alert(typeof b);
alert(typeof u);
alert(typeof n);
```

(d)

```
function sum(num1, num2){
    return num1 + num2;
}
function callSum1(num1, num2){
    return sum.apply(this, arguments);
}
function callSum2(num1, num2){
    return sum.apply(this, [num1, num2]);
}
alert(callSum1(10,10));
alert(callSum2(10,10));
```

(f)

```
var text = "cat, bat, sat, fat";
var pattern = /.at/;
var matches = text.match(pattern);
alert(matches.index);
alert(matches[0]);
alert(pattern.lastIndex);
```

(h)

```
var colors = ["red", "green", "blue"];
var colors2 = colors.concat("yellow", ["black", "brown"]);
alert(colors);
alert(colors2);
```

(i)

```
var stringValue = "yellow";
alert(stringValue.localeCompare("brick"));
alert(stringValue.localeCompare("yellow"));
alert(stringValue.localeCompare("zoo"));
```

(k)

```
<div id="content">
<p>This is a <strong>paragraph</strong>
with a list following it.</p>
<ul>
<li>Item 1</li>
<li>Item 2</li>
<li>Item 3</li>
</ul>
</div>
<script type="text/javascript">
var div =
document.getElementById("content");
alert(div.innerHTML);
</script>
```

(j)

```
var stringValue = "hello world";
alert(stringValue.slice(-3));
alert(stringValue.substring(-3));
alert(stringValue.substr(-3));
```

(l)

```
<div id="myDiv" class="bd" title="Body text"
my_special_attribute="hello!">Some text</div>
<script type="text/javascript">
var pairs = new Array(), attrName, attrValue, i, len;
var element=document.getElementById("myDiv");
for (i=0, len=element.attributes.length; i < len; i++){
    attrName = element.attributes[i].nodeName;
    attrValue = element.attributes[i].nodeValue;
    if (element.attributes[i].specified){
        pairs.push(attrName + "=" + attrValue + "\n");
    }
}
var p=pairs.join(" ");
alert(p); </script>
```

2. Write the JavaScript statement(s) for following. (25 marks)

(a) Create an array with “Lily”, “Carnation”, “Orchid”, “Tulip”. Create another array with “Rose”, “Jasmine”, “Tuberose”, “Lavender”. Concatenate these two arrays into ‘flowers’ array. At the start of the ‘flowers’ array add “Calla Lily” and “Casablanca Lily”. Create a random integer to access as index of “flowers” array and display random flower’s name with alert.

(b) Create an object named Person with properties (name, age, job) and a method named sayName which return the name of object with alert. Create an instance of object with “Nicholas”, 29, “Software Engineer”. Call the method of object. (Parasitic Constructor Pattern)

(c) Write a function that pops up an alert to display the html code of an element that id is “content” by using DOM. Create another function that replace the html code of an element that id is “content” with “Hello World!” by using DOM. After replacing, the element no longer exists and cannot be accessed.(It works in IE, Safari, and Opera)

(d) Write the dynamic script by using the DOM to specify JavaScript code is inline as in this example: `<script type="text/javascript" src="client.js"></script>`

(e) Write Javascript code that open the new window with the web site named “<http://www.wrox.com>” and give the window name “wroxWindow”. Its dimension is 400 pixels width and 400 pixels height and open the window at the screen position (10,10) and it can be resizable. Write a function to resize the window by 50 pixel width and 50 pixels height. Write another function to move the window by 50 pixels left and 50 pixels down from the current position.

- 3(a). Create an html page with following. (Use array iterative methods.)
-Create an array with given items (1,2,3,4,5,4,3,2,1).
-And then checks some items are greater than 2. If some items are greater than 2, display an alert with "Some items are greater than 2." Otherwise "No item is greater than 2."
-Extract the items which are greater than 3 into another array and display them in alert. (6 marks)

- (b) Create an html page with following. Write some statements by using the DOM.

- Write a CSS rule that specify the paragraph with following:
(line-spacing:20px; border-style:double; border-color:green; color:darkblue;
-Write a function that create a **paragraph** element which apply above CSS rule. Type the text "The various climatic changes that occur in cyclic patterns are termed as 'seasons'. There are four general seasons occurring on Earth - Spring, Summer, Autumn and Winter." by using DOM.
-Create a button to call the above function when user clicked it. (8 marks)

- (c) Create an html page. In this page, uses the regular expression to validate an URL the viewer entered. If the URL validate, an alert pops up to say "Validate URL". Otherwise display "Invalid URL!". Assume that you need the URL contain the following:

- It must begin with http://.
- The characters in between need to be dots (.), hyphen (-), letters or numbers.
- It must end with a dot and no more than three letters characters. (6 marks)

- 4(a) Create an html page with following:

- Create a function named sayhello() that pops up alert says, "Hello." And then wait 10 seconds before attempting to execute the code.
-Create another function 'cancelhello()' that cancels the calling of 'sayhello()' function. Call this function by clicking button 'Cancel Hello'. (5 marks)

- (b) Create an html page with following. (Write some statements by using DOM.) (13 marks)

- Create a table with 1 row and 2 columns and add the text "Item" and "Price". Display this table on the page by using DOM.
- Use a loop that asks the user whether the new table row input should be terminated.
- If user agrees to add, ask the item's name and price of item by prompt. And then append them into the above table by using DOM.
- If user does not want to add the new row, program terminates the loop.
-Display the table on the page.

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

- create an empty ordered 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 ordered list.
1. Item1
2. Item2
3. Item3
- call the function when user clicks the "Add items" button.

(15 marks)

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Activity

Department of Advanced Science and Technology

University of Computer Studies

Second Year (B.C.Tech.)

First Semester Examination

Electrical Circuits I (CT 206)

March, 2015

Answer all questions.

Zone IV

Time allowed: 3 hours

- 1 (a) Find the *power absorbed* by each element in the circuit in Fig. 1(a).

- (b) The circuit depicted in Fig. 1(b) contains a dependent current source; the magnitude and direction of the current it supplies are directly determined by the voltage labeled v_1 . Determine the voltages v_s and v_2 if $v_2=33i_2$ and $i_2=100\text{mA}$.

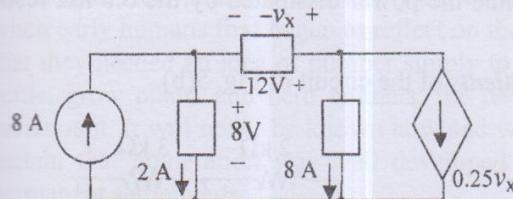


Fig. 1(a)

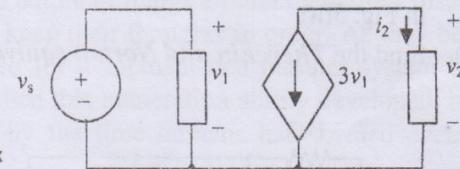


Fig- 1(b)

- 2 (a) Determine the current labeled I_3 in the circuit of Fig. 2(a).

- (b) Calculate the voltage labeled v_x in the circuit of Fig. 2(b) after first simplifying, using appropriate **source and resistor combinations**.

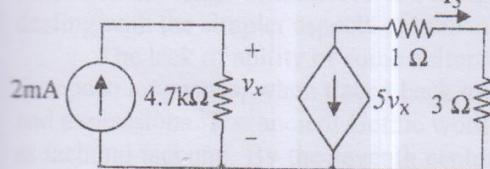


Fig- 2(a)

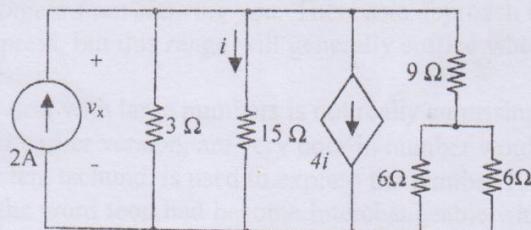


Fig- 2(b)

- 3 (a) Determine the value of the unknown node voltage v_1 in the circuit of Fig. 3(a).

- (b) Determine i_2 in the circuit of Fig. 3(b) if the controlling quantity A is equal to (i) $2i_2$,
(ii) $2v_x$.

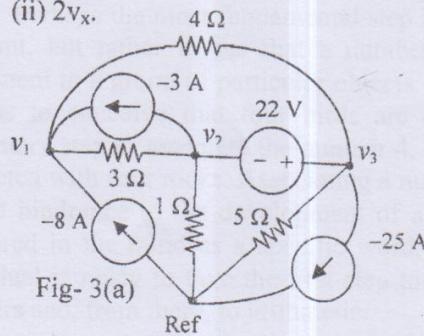


Fig- 3(a)

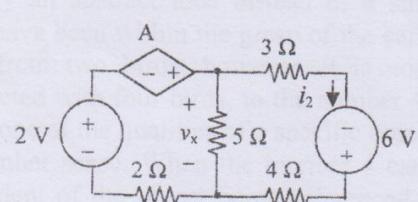


Fig- 3(b)

- 4 (a) Determine the three mesh currents in Fig. 4(a).
 (b) For the circuit shown in Fig. 4(b), use *superposition* to obtain the voltage across each current source.

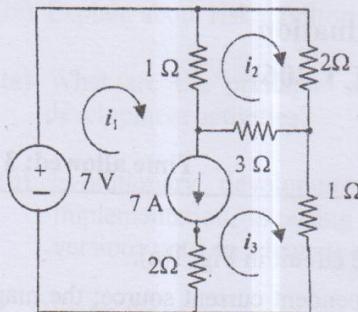


Fig- 4(a)

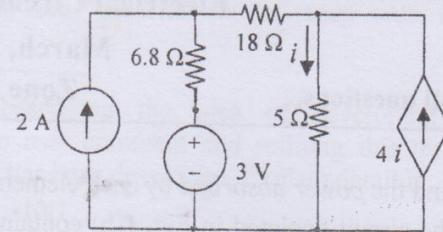


Fig- 4(b)

- 5 (a) Using *source transformation*, determine the power dissipated by the $5.8\text{ k}\Omega$ resistor in Fig. 5(a).
 (b) Find the *Thevenin and Norton equivalents* of the circuit of Fig. 5(b).

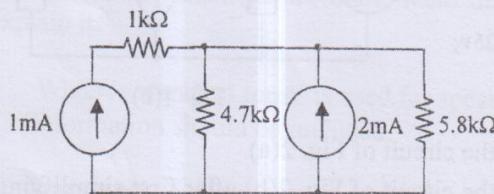


Fig- 5(a)

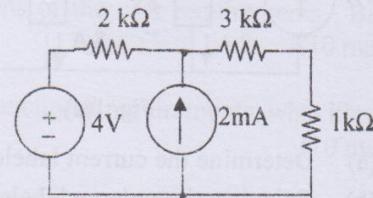


Fig- 5(b)