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THE DEPARTMENT OF ADVANCED SCIENCE AND TECHNOLOGY
UNIVERSITIES OF COMPUTER STUDIES
THIRD 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)**

One of the first great intellectual feats of a young child is learning how to talk, closely followed by learning how to count. From easiest childhood we are so bound up with our system of numeration that it is a feat of imagination to consider the problems faced by early humans who had not yet developed this facility. Careful consideration of our system of numeration leads to the conviction that, rather than being a facility that comes naturally to a person, it is one of the great and remarkable achievements of the human race.

It is impossible to learn the sequence of events that led to our developing the concept of number. Even the earliest of tribes had a system of numeration that, if not advanced, was sufficient for the tasks that they had to perform. Our ancestors had little use for actual numbers; instead their considerations would have been more of the kind *Is this enough?* rather than *How many?* when they were engaged in food gathering, for example. However, when early humans first began to reflect on the nature of things around them, they discovered that they needed an idea of number simply to keep their thoughts in order. As they began to settle, grow plants and herd animals, the need for a sophisticated number system became paramount. It will never be known how and when this numeration ability developed, but it is certain that numeration was well developed by the time humans had formed even semi-permanent settlements.

Evidence of early stages of arithmetic and numeration can be readily found. The indigenous peoples of Tasmania were only able to count *one, two, many*; those of South Africa counted *one, two, two and one, two twos, two twos and one*, and so on. But in real situations the number and words are often accompanied by gestures to help resolve any confusion. For example, when using the *one, two, many* type of system, the word *many* would mean, *Look at my hands and see how many fingers I am showing you*. This basic approach is limited in the range of numbers that it can express, but this range will generally suffice when dealing with the simpler aspects of human existence.

The lack of ability of some cultures to deal with large numbers is not really surprising. European languages, when traced back to their earlier version, are very poor in number words and expressions. The ancient Gothic word for ten, tachund, is used to express the number 100 as tachund tachund. By the seventh century, the word teon had become interchangeable with the tachund or hund of the Anglo-Saxon language, and so 100 was denoted as hundteontig, or ten times ten. The average person in the seventh century in Europe was not as familiar with numbers as we are today. In fact, to qualify as a witness in a court of law a man had to be able to count to nine!

Perhaps the most fundamental step in developing a sense of number is not the ability to count, but rather to see that a number is really an abstract idea instead of a simple attachment to a group of particular objects. It must have been within the grasp of the earliest humans to conceive that four birds are distinct from two birds; however, it is not an elementary step to associate the number 4, as connected with four birds, to the number 4, as connected with four rocks. Associating a number as one of the qualities of a specific object is a great hindrance to the development of a true number sense. When the number 4 can be registered in the mind as a specific word, independent of the object being referenced, the individual is ready to take the first step toward the development of a notational system for numbers and, from there, to arithmetic.

Traces of the very first stages in the development of numeration can be seen in several living languages today. The numeration system of the Tsimshian language in British Columbia contains seven distinct sets of words for numbers according to the class of the item being counted: for counting flat objects and animals, for round objects and time, for people, for long objects and trees, for canoes, for measures, and for counting when no particular object is being numerated. It seems that the last is a later development while the first six groups show the relics of an older system. This diversity of number names can also be found in some widely used languages such as Japanese.

Intermixed with the development of a number sense is the development of an ability to count. Counting is not directly related to the formation of a number concept because it is possible to count by matching the items being counted against a group of pebbles, grains of corn, or the counter's fingers. These aids would have been indispensable to very early people who would have found the process impossible without some form of mechanical aid. Such aids, while different, are still used even by the most educated in today's society due to their convenience. All counting ultimately involves reference to something other than the things being counted. At first it may have been grains or pebbles but now it is a memorised sequence of words that happen to be the names of the numbers.

Questions 1-5

Complete each sentence with the correct ending, A-G below. Write the correct letter, A-G.

- 1 An additional hand signal
- 2 Expressing number differently according to class of item
- 3 Thinking about numbers as concepts separate from physical objects
- 4 In seventh-century Europe, the ability to count to a certain number
- 5 A developed system of numbering

- A was necessary in order to fulfil a civic role.
- B was a characteristic of early numeration systems.
- C persists in all societies.
- D was used when the range of number words was restricted.
- E was necessary when people began farming.
- F was necessary for the development of arithmetic.
- G can be traced back to early European languages.

Questions 6-10

Do the following statements agree with the information given in Reading Passage?

Write

TRUE if the statement agrees with the information

FALSE if the statement contradicts the information

NOT GIVEN if there is no information on this

- 6 For the earliest tribes, the concept of sufficiency was more important than the concept of quantity.
- 7 Indigenous Tasmanians used only four terms to indicate numbers of objects.
- 8 Some peoples with simple number systems use body language to prevent misunderstanding of expressions of number.
- 9 All cultures have been able to express large numbers clearly.
- 10 The word 'thousand' has Anglo-Saxon origins.

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A-G.

QUESTION-II

(A) Fill in the gaps with the correct form of verbs using past simple or present perfect simple. (10 marks)

I would like to be considered for your degree course in Zoology, starting in October next year. I feel I am a good candidate for this course as I 1..... (always/be) interested in natural history and even as a child I 2..... (enjoy) studying animals and insects in my garden. Your science faculty has a good reputation and I would very much like to be part of it.

As you 3..... (already/see) in Section A of this application, I have a good academic record and I 4..... (just/receive) the results of my recent exams, all of which were excellent.

In addition, your university attracts me because I enjoy sports and I 5..... (read) in your prospectus about the large number of sports on offer. Last year I 6..... (represent) my school at badminton and I 7..... (play) in football teams since I was eleven. I 8..... (recently/join) a basketball team which competes at a national level.

I 9..... (not/travel) abroad much yet, although as a young child I 10..... (go) to Singapore and Hong Kong with my family. I realize that I have not spent much time away from home up to now, but am keen to become more independent.

(B) Write sentences using the correct form of tense.

(10 marks)

E.g. A. Have you been to Thailand?

B. Yes, I went there last year. (I/go/there/last year)

1. A. Do you like Pyin-Oo-Lwin?

B. I don't know. I (I/never/there)

2. A. What time is Paul going out?

B. (he/already/go)

3. A. What are you doing this weekend?

B. I don't know. (I/not/decide/yet)

4. A. Paula and Sue are here.

B. Are they? (what time/they/arrive)

5. A. Has Su Su gone home?

B. Yes, (she/leave/at 4 o'clock)

QUESTION-III

(10 marks)

Fill in the gaps with the correct form of verbs.

1. I usually (get) the lunch ready at one o'clock.

2. Tom is in the garden. He (water) the flower.

3. Light..... (travel) faster than sound.

4. They (live) here since 1999.

5. The video (play) for two hours. It hasn't finished yet.

6. I (not/see) Susan today, until now.

7. My table is tidy now. I (clean) it.

8. When the doors opened, the students..... (rush) in.

9. The campers saw that the sun (shine) when they woke up..

10. The Thanlwin (flow) from north to south.

QUESTION-IV

(A) *Describe a movie that you saw recently;* (15 marks)

- what the title of the movie is
- what it was about
- when and where you saw it
- who you saw it with and explain why you enjoyed/ didn't enjoy seeing that movie

(B) *Answer the following questions completely.* (15 marks)

1. What is your favourite dance?
2. Do you enjoy dancing? (Why/Why not?)
3. Has anyone ever taught you to dance? (Why/Why not?)
4. Tell me about any traditional dancing in your country.
5. Do you think that traditional dancing will be popular in the future? (Why/Why not?)

QUESTION-V (20 marks)

Write an essay on the following topic:

Thanks to modern technology, there have been enormous changes in the workplace over the past 100 years.

What are the most significant changes that have occurred and what changes do you foresee in the next 100 years?

THE END

Department of Advanced Science and Technology

University of Computer Studies

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

Computer Organization (CST-301)

Mid Term Examination

March, 2015

Zone IV

Time allowed 3 hours.

- Answer ALL questions**
-
1. (a) State whether the following statements are **TRUE or FALSE**. (5 marks)
- A clock in this context is a circuit that emits a series of pulses with a precise pulse width and precise clock cycle time.
 - Memory is used for storing both instructions to be executed and data.
 - The direct addressing can only be used to access constant variables whose address is known at compile time.
 - Monadic operations have one operand and produce one result.
 - Kernal mode is intended to run application programs and does not permit certain sensitive instructions to be executed.
- (b) Choose **correct or the best alternative** in the following: (5 marks)
- Two of the key parameters that determine the performance of a CPU are the number of _____ pins.
A. data and control B. address and control C. data and address D. control and data
 - A flip-flop is a binary cell capable of storing information of _____.
A. one bit B. byte C. zero bit D. word
 - _____ connects an external device to the system bus.
A. I/O module B. DMA C. ALU D. Control unit
 - A stack-organised computer uses instruction of _____.
A. indirect addressing B. zero addressing C. two addressing D. index addressing
 - _____ registers can be assigned to a variety of functions by the programmer.
A. Data B. Address C. Control D. General purpose
- (c) Match each of items in List-1 with the most appropriate one in List-2: (5 marks)
- | List-1 | List-2 |
|--|--------|
| (i) Data register for reading and writing ISA-level data words | A. MPC |
| (ii) Address register for reading and writing ISA-level data words | B. PC |
| (iii) Data register for reading the executable ISA-level program | C. MBR |
| (iv) Address register for reading the executable ISA-level program | D. MAR |
| (v) Address register for control store's memory | E. MDR |
| | F. MIR |
2. (a) Describe the differences between **ANY THREE** of the following: (12 marks)
- Differences between software and hardware.
 - Differences between register addressing and register indirect addressing
 - Differences between ripple carry adder and carry select adder
 - Differences between noninverting and inverting buffer

- (b) (i) Discuss the differences between level 0 to level 3 and level 4 to level 5 from the multilevel machines. (4 marks)
- (ii) Briefly explain the decentralized bus arbitration. (4 marks)
3. (a) Draw a circuit diagram for the new 1 bit ALU to compute any one of four functions- namely A AND B , A XOR B, A OR B or A add B depending on whether the function-select input lines. (8 marks)
- (b) Draw a 64 M x 4 bit memory chip using n x n matrices. Calculate the size of this memory chip in bit. (4 marks)
- (c) A 16-bit ALU is built up of 16 1-bit ALUs, each one having an add time of 10 nsec. If there is an additional 1-nsec delay for propagation from one ALU to the next, how long does it take for the result of a 16-bit add to appear? (3 marks)
4. (a) Draw a logic diagram for four 3 bit words memory organization. (8 marks)
- (b) Consider the timing of a synchronous bus with 100 MHz clock rate and it takes 1 nsec for a signal to change. The data setup time is 2 nsec , the address output delay is 4 nsec, MREQ delay from falling edge of Φ in T1 is 3 nsec, RD delay from falling edge of Φ in T1 is 3 nsec. How much time would the memory have to get the data onto the bus after MREQ is asserted? (3 marks)
- (c) Draw a circuit diagram for decoder to select one of eight output line. Give the two names of example usage (application) of it. (5-mark)
5. (a) Write the detail of MIR to represent the following IJVM instructions: (12 marks)

Label	Operations
Main1	PC=PC + 1; goto (MBR)
istore1	H=LV
istore2	MAR=MBRU + H
istore3	MDR=TOS; wr
istore4	SP= MAR= SP - 1; rd
istore5	PC=PC + 1; fetch
istore6	TOS=MDR; goto Main1
iflt1	MAR = SP = SP - 1; rd
iflt2	OPC = TOS
iflt3	TOS = MDR
iflt4	N = OPC; if (N) goto T; else goto F

- (b) Convert the following “factorial of 10” java code to IJVM instructions if the IJVM instruction set is added new Mnemonic (IMUL) for multiplication. (5 marks)

```

j = 1; f=1;
while ( j <= 10)
{
    f *= j;
    j++;
}

```

- multilevel 6. (a) Compare 0-, 1-, 2-, and 3- address machine by writing programs to compute

(4 marks)

(4 marks)

$$X = (A * B) / (C * D) - E$$

for each of the four machines. The instructions available for use are as follows: (12 marks)

ns- namely
elect input

8 marks)

is memory

marks)

If there is

oes it take

3 marks)

marks)

nsec for a

c, MREQ

is 3 nsec.

asserted?

3 marks)

names of

5-mark)

2 marks)

0- Address	1- Address	2- Address	3- Address
PUSH M	LOAD M	MOV (X = Y)	MOV (X = Y)
POP M	STORE M	ADD (X = X + Y)	ADD (X = Y + Z)
ADD	ADD M	SUB (X = X - Y)	SUB (X = Y - Z)
SUB	SUB M	MUL (X = X * Y)	MUL (X = Y * Z)
MUL	MUL M	DIV (X = X / Y)	DIV (X = Y / Z)
DIV	DIV M		

M is a 16 bits memory address and X, Y, Z are either 16 bit addresses or 4 bit registers. Assuming 8-bit opcodes, and instruction lengths that are multiples of 4 bits, how many bits does each machine need to compute X?

- (b) Convert the following reverse Polish notation formulas to infix. (3 marks)

- (i) A B - C + D *
- (ii) A B C D E + * * /
- (iii) A B C D E * F / + G - H / * +

- (c) Convert the following infix Boolean formulas to reverse Polish notation. (2 marks)

- (i) (A OR B) AND (A OR C)
- (ii) (A AND B) OR (C AND D)

Instruction
marks)

Department of Advanced Science and Technology
University of Computer Studies
Third Year (B.C.Sc./ B.C.Tech.)
Mid Term Examination
Mathematics of Computing III (CST 302)

March, 2015

Answer All Questions.

Zone IV

Time Allowed: 3 hours.

1. (a) Find the Fourier series of $f(x) = x^2$ ($-\pi < x < \pi$), which is assumed to have the period 2π . Show the details of your work.

- (b) Find the Fourier series of the function

$$f(x) = \begin{cases} 0 & \text{if } -2 < x < -1 \\ k & \text{if } -1 < x < 1 \\ 0 & \text{if } 1 < x < 2 \end{cases} \quad p = 2L = 4, L = 2.$$

2. (a) Represent $f(x) = \frac{1}{(1+x^2)}$ [$x>0$] as an Fourier Cosine integral.

- (b)(i) Let $z_1 = -2 + 11i$, $z_2 = 2 - i$. Showing the details of your work, find $\operatorname{Re}(z_1^2)$, $(\operatorname{Re} z_1)^2$, in the form $x + iy$.

- (ii) Graph $\sqrt{50} \left(\cos \frac{3}{4}\pi + i \sin \frac{3}{4}\pi \right)$ in the complex plane and represent in the form $x + iy$.

3. (a) Is the function $u = xy$ harmonic? If so, find its analytic function $f(z) = u(x, y) + iv(x, y)$.

- (b) Find Re and Im of $\exp(z^2)$.

- (c) Find $\cos i, \sin i$ in the form $u + iv$.

4. (a) Graph a sample space for the experiment: Rolling a die until the first Six appears.

- (b) A pressure control apparatus contains 4 electronic tubes. The apparatus will not work unless all tubes are operative. If the probability of failure of each tube during some interval of time is 0.05, what is the corresponding probability of failure of the apparatus?

5. (a) Let X be the number of years before a certain kind of pump needs replacement. Let X have the probability function $f(x) = kx^3$, $x = 0, 1, 2, 3, 4, 5$, Find k . Sketch f and F .

- (b) Let X be normal with mean 10 and variance 4. Find $P(X > 12)$, $P(X < 10)$, $P(X < 11)$,

$$P(9 < X < 13),$$

Department of Advanced Science and Technology
University of Computer Studies
B.C.Sc. /B.C.Tech. (Third Year)
Mid Term Examination
Data Communication (CST- 303)
March 2015

Answer ALL Questions.

Zone IV

Time allowed: 3 hours

1. Define the followings:

- | | |
|------------------------|----------------------|
| (a) WDM | (f) ARQ |
| (b) Near-end Crosstalk | (g) CRC |
| (c) FHSS | (h) QAM |
| (d) Trunks | (i) Channel Capacity |
| (e) VLAN | (j) Choke Packet |
- (each 2-marks)**

2. Answer ANY SIX of the followings:

- | | |
|---|--|
| (a) Difference between half-duplex and full-duplex transmission modes | |
| (b) Distinguishing characteristics of optical fiber from others | |
| (c) Biphase Encoding | |
| (d) Synchronous Transmission | |
| (e) Two-way Data Exchange of HDLC Operation | |
| (f) Statistical Time Division Multiplexing | |
| (g) Satellite Communication | |
| (h) The advantages of packet switching compared to circuit switching | |
| (i) Explicit Congestion Signaling | |
| (j) Two types of Layer 2 Switch | |
- (each 4-marks)**

3.(a) How does ADSL divide the bandwidth of a twisted-pair cable? How does ADSL modulate a signal?

(b) Name three types of transmission impairment. Explain about attenuation.

4.(a) Explain the difference between datagram and virtual circuit operation in a packet switching network.

(b) Why is flow control needed ? What is the mechanism of sliding window flow control?

5.(a) Define spread spectrum and its goal. Define DSSS and explain how it achieves bandwidth spreading.

(b) List the layers of the OSI model. What are the responsibilities of the data link layer ?

6. How does the sampling rate affect the transmitted digital signal? Compare and contrast PCM and DM.

(OR)

Describe four key Routing Strategies and explain each. Which strategies require network information? .

(each 14-marks)

Department of Advanced Science and Technology
University of Computer Studies
B.C.Sc. Third Year, Mid Term Examination
CS-305 Computer Application Technique III

March, 2015

Answer all questions

Zone IV

Time Allowed: 3 hours

1(a). A sales person earns a weekly base salary plus a commission when sales are at or above quota. Create a project that allows the user to input the weekly sales amount and calculates the commission, total pay and displays summary information.

Form: The form should have combo box for the salesperson names and a multiline text box for display result.

The screenshot shows a Windows application window. On the left is a dropdown menu labeled "Zaw Zaw". To its right is a table with four columns: "Name", "Sales Amount", "Commission", and "Total Pay". The table has two rows of data. Below the table is a text box containing "Total =". At the bottom are three buttons: "Summary", "Clear", and "Close".

Name	Sales Amount	Commission	Total Pay
Myo Myo	\$1,000.00	\$150.00	\$400.00
Zaw Zaw	\$2,000.00	\$300.00	\$550.00

Total = \$3,000.00 \$450.00 \$950.00

Summary **Clear** **Close**

Use constants to establish the base pay, the quota, and the commission rate.

At the start of form, 5 sales person's names are added into the **combo box**.

When user **selects** the name in combo box, a dialog box appears for user enter **weekly sales amount** and then calculate the **commission** and **total pay** and insert into the **text box** for each person.

Write a **function** procedure to calculate the commission. The function must compare sales to the quota. When the sales are equal to or greater than the quota, calculate the commission by multiplying sales by the commission rate.

Each salesperson receive the base pay plus the commission (if one has been earned). Format the dollar amounts to two decimal places; do not display a dollar sign.

The **Summary** button displays total sales, total commissions, and grand total pay for all salespersons in text box (at the last line of multiline text box). Display the numbers with two decimal places and dollar signs.

The **Clear** button clears the text box.

Write also the property setting for given form's element.

Quota =1000; Commission rate=0.15; and Base pay =\$250.

(15 marks)

(b). Create a program to compute the area of a triangle, given its two dimensions (base and height). It includes a user defined sub procedure named "area" that takes two arguments and display the area of a triangle in a message box. (5 marks)

2(a). Create a project that will display the students' information of 'Students' table and 'Marks' table. At the start of form, the 'All' radio button is selected so that all records are displayed in data grid view. When user clicks to 'Display' button, the desired records will be displayed in data grid view. Use 'Students' table with rno, sname, dob and address fields and 'Marks' table with rno, p1, p2, total and result fields in Students database. Write also property setting for given form. (12 marks)

Select

Pass
 Fail
 All

Display

rno	sname	result
3CS-1001	Mg Mg	pass
3CS-1002	Soe Soe	pass
3CS-1003	Pa Pa	fail
3CS-1004	Thazin	pass
3CS-1005	Khin Khin	fail
*		

(b) Create a project that deletes the record in 'Staff_Info' table in order to user desired staff_id. If it isn't in table, 'Not found' message will display. Otherwise, confirm to user "Are you sure to delete?". If user agrees, delete the record from data source table. Use 'Staff_Info' table with staff_id, name, rank and salary fields in 'Org' database. Write the code by using command object. (8 marks)

3(a). Create a project that displays the students' information (rno, sname, dob, address) in a message box according to user desired character included in name. If it isn't in table, 'Not found' message will display. Use 'Students' table with rno, sname, dob and address fields in 'Students' database. Write the code by using the data reader object. (5 marks)

(b) Create a project that inserts the record into 'Staff_Info' table. Use 'Staff_Info' table with staff Name, rank and salary fields in 'Org' database. Write the code by using data adapter object's select command property. (5 marks)

Staff Id	<input type="text"/>
Staff Name	<input type="text"/>
Rank	<input type="text"/>
Salary	<input type="text"/>
<input type="button" value="Insert"/>	

4(a). A firm has just started trading and has asked the bank for an overdraft to cover the first few months of trading. Use the following information to prepare a cash budget for the first four months of trading and state how much overdraft would be required.

Sales : The firm expects to sell 100 units each month and a price of \$ 40 each. It will offer two months' credit and so will not receive the first payment until March.

Purchases : Purchases will also be at a rate of 100 units per month and will cost \$ 15 per unit. Suppliers offer one month credit.

Wages : The firm is initially employing two assistants who will be paid \$ 75 per week each.

Rent : Machinery have been acquired at a rental of \$ 2000 per year and payable in advance.

Sundry Expenses : Other expenses are expected to be \$ 300 for the first two months and \$ 100 thereafter.

Equipment : The firm will require equipment costing \$ 1000 in its first month's trading.

(10 marks)

(b) A firm that uses budgetary control techniques has devised a budgeted Profit & Loss account for the year ended May 2011. The actual figures have now been received and the Profit & Loss account drawn up. The details are as --

	Budgeted	Actual
Sales in units	10,000	11,900
	\$	\$
Revenue	850,000	1029,350
Materials	210,000	255,850
Direct Labour	165,000	184,450
Production Overheads	105,000	113,000
Selling Overheads	45,000	45,000
Administration Overheads	90,000	88,000
Net Profit	235,000	343,050

Required: Devise a Flexible budget for 11,900 units and calculate any variances. (10 marks)

5(a). The secretary of the Golden Golf club has been approached by a well known international golfer who wishes to retire to the area. The proposal is that the club will purchase a house next to the golf course for \$ 500,000 and in addition pay a salary of \$ 25,000 per annum for five years for which the golfer will give tuition to members. The house will become the property of the golfer.

It is intended to choose this project and to finance it is as follows:

	\$,000	cost of capital
Ordinary share	300	17%
Loans	200	12%

The benefits to the club will be increased membership and the charging of higher subscriptions particularly by local business.

Year	1	2	3	4	5
Additional subscription	180,000	250,000	300,000	250,000	150,000
Income:					
Additional membership	40,000	25,000	10,000	-	-

expenses :

Required:

- (a) the weighted average cost of capital for this project.
- (b) The Net Present Value of this project (discount at the rate of calculated in (a))
- (c) the Internal Rate of Return
- (d) the Pay-back Period

(20 marks)

Notes:

$$PV = 1/r * (1 - 1 / (1+r)^n)$$

Year	10%	15%	20%
1	0.909	0.870	0.833
2	1.736	1.626	1.528
3	2.487	2.283	2.106
4	3.170	2.855	2.589
5	3.791	3.352	2.991

$$PV = 1 / (1 + r)^n$$

Year	10%	15%	20%
1	0.909	0.870	0.833
2	0.826	0.756	0.694
3	0.751	0.658	0.579
4	0.683	0.572	0.482
5	0.621	0.497	0.402

(b) Describe the differences between Financial Accounting and Management Accounting.

(10 marks)

Department of Advanced Science and Technology

University of Computer Studies

B.C.Sc. (Third Year)

PHP Programming (CS-306)

Mid Term Examination

March 2015

Answer All questions.

Zone IV

Time Allowed: 3 hours.

1. (a) Write a PHP script to create dice roll form and input no of times for rolling dice and no of faces of dice. Information is submitted by "Roll" button and display the face number of dice for each roll. Use suitable built-in function to generate face number of dice.

How many times to dice roll:

How many faces of dice? :

(7 marks)

- (b) Write a PHP script to create the following page. User enter only the important date and today date is automatically display in today date input text box. Calculate the days between important date and today date and display the Days as follow page:

Waiting Days

Today Date:	April 01,2015
Important Date:	May 17,2015
Days:	46

[Back](#)

Create input form and date calculating process form. The number of days between today date and important date would be calculated again by Back link.

(13 marks)

2. (a) Write a PHP code to create a weather array : rain, sunshine, clouds, hail, sleet, snow, wind and display weathers on the page as shown page. User selects the favorite weather and then submits to convert a favorite weather string. The favorite weather string displays on the page.

Select Favorite Weather

rain sunshine clouds hail sleet snow wind

(7 marks)

- (b) Write a PHP code to create user contact form as shown page. User inputs name, city and email and then check for validity.

User Contact Information

Today Date: April 01,2015

User Name:

City:

Email:

The valid user name is any A-Za-z character including space character. The valid City name is **ayemandalay** with capital letter and any a-z letters can follow. The valid mail is xxxx@gmail.com. The contact information successfully recorded message display for valid user contact. The incorrect and try again message display for invalid user contact. User contact information do again by Try Again link as follows. (Using pattern matching for validity check)

User Contact Information	
Aye Aye Contact Successfully recorded !!!	User Contact Information Incorrect!! Aye Aye,mandalay and aye@hotmail.com Try Again

(13 marks)

3. Write a PHP code to create Calculator Process page as shown below. The page includes four functions for add, subtract, multiply and divide operations. Two numbers accept and submit by click of four buttons of calculator form page. The selected operation result is displayed on the result page and user can back to the calculator form page by Again link.

Calculator	
Enter number 1:	<input type="text"/>
Enter number 2:	<input type="text"/>
ADD	SUBTRACT
MULTIPLY	DIVIDE

Calculator	
$10 + 20 = 30$	
Again	

(20marks)

4. Write a PHP codes Login page, welcome page and Logout page. Only the valid user can see welcome page and the invalid user see try again message and Login page link. Valid user name is "Admin" and password is "001". Use session called "userid" to control welcome page.

Login	
Username	Admin
Password	***
Login	
Hello! Welcome to my home page!	

The valid user can logout on welcome page, "Thank you" message and login again link will be displayed for logout user.

Thank you. Please come again.	Sorry to Try Again!
Please click here to login again.	Login Page

(20 marks)

5. Create a database "martDB" and a table "stock". The stock table includes fours fields: stock_id, stock_Name, stock_qty, stock_price. Write PHP codes for menu page, database create page and table create page. The menu page includes the links to database create file and table create file. The database create page accepts the database name from user and displays whether the database successfully created message or not message after database creation is done. The table create page accepts the table name and field names of table and display whether the table is successfully created or not message after table creation is done. (Use form tag for accept data)

(20 marks)

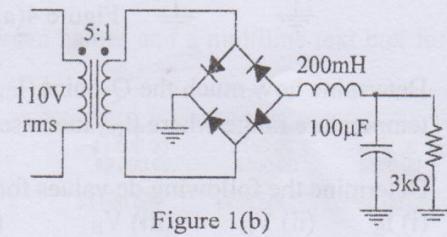
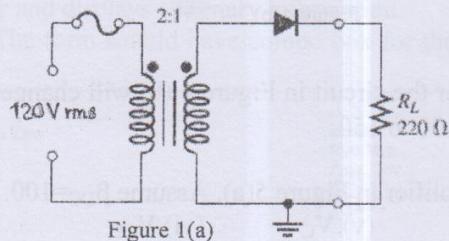
Department of Advanced Science and Technology
University of Computer Studies
Third Year (B.C.Tech.)
Mid Term Examination
Electronic I (CT 304)
March, 2015

Answer all questions.

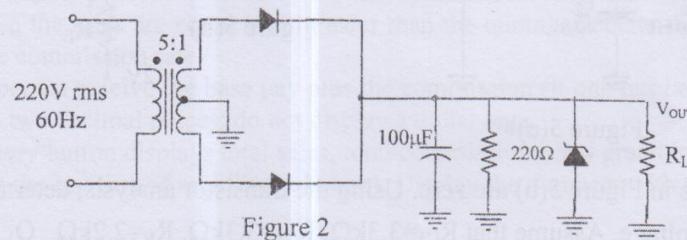
Zone IV

Time allowed: 3 hours

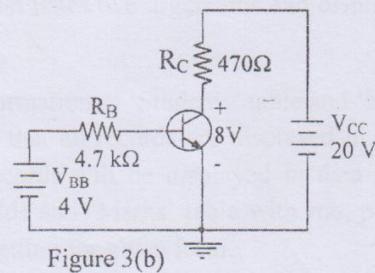
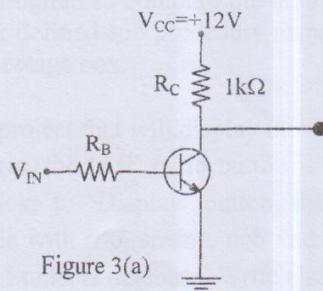
- 1(a) Determine the peak and average power delivered to R_L in Figure 1(a).



- (b) Sketch the output voltage of the bridge rectifier shown in Figure 1(b). The line voltage has a frequency of 60Hz and the winding resistance of the coil is 100Ω. Determine the peak-to-peak ripple and dc output voltages. Find also the ripple factor.
2. Determine the minimum and the maximum load currents for which the zener diode in Figure 2 will maintain regulation. What is the minimum value of R_L that can be used? $V_Z = 12V$, $I_{ZK}=1mA$, and $I_{ZM}=50mA$. Assume an ideal zener diode where $Z_Z=0 \Omega$ and V_Z remains a constant 12 V over the range of current values, for simplicity.



- 3(a) The transistor in Figure 3(a) has a β_{DC} of 50. Determine the value of R_B required to ensure saturation when V_{IN} is 5 V. What must V_{IN} be to cut off the transistor? Assume $V_{CE(sat)}=0 V$.



- (b) Determine each current in Figure 3(b). What is the β_{DC} ?

- 4(a) Find I_C , V_{CE} and $R_{IN(base)}$ in Figure 4(a). Determine whether or not this transistor is in saturation.

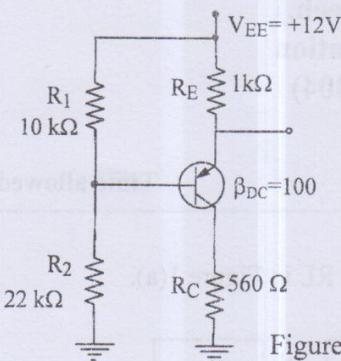


Figure 4(a)

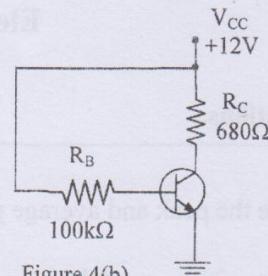


Figure 4(b)

- (b) Determine how much the Q-point (I_C , V_{CE}) for the circuit in Figure 4 (b) will change over a temperature range where β_{DC} increases from 100 to 150.

- 5(a) Determine the following dc values for the amplifier in Figure 5(a). Assume $\beta_{DC}=100$.
 (i) I_E (ii) V_E (iii) V_B (iv) I_C (v) V_C (vi) V_{CE}

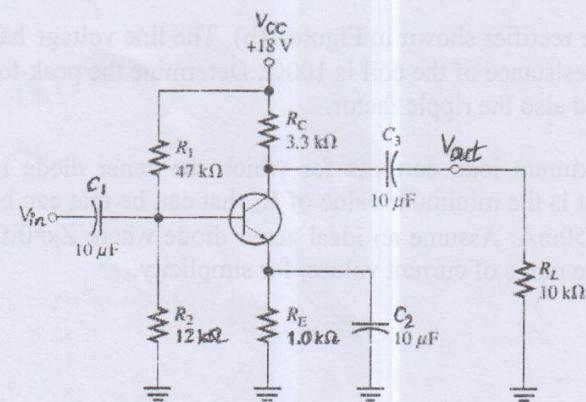


Figure 5(a)

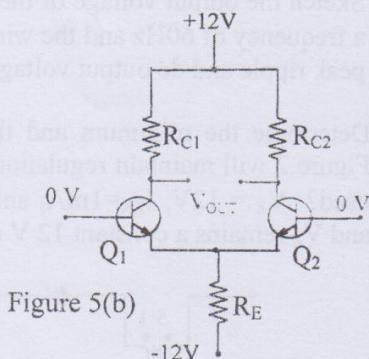


Figure 5(b)

- (b) The dc base voltages in Figure 5(b) are zero. Using the transistor analysis, determine the dc differential output voltage. Assume that $R_{C1}=3.3\text{k}\Omega$, $R_{C2}=3.3\text{k}\Omega$, $R_E=2.2\text{k}\Omega$, Q_1 has $\alpha=0.98$ and Q_2 has $\alpha=0.87$.

Department of Advanced Science and Technology
University of Computer Studies
Third Year (B.C.Tech.)
Mid-Term Examination
Linear Control System (CT 305)
March, 2015

Answer all questions.

Zone IV

Time allowed: 3 hours

- 1(a) Off-road vehicles experience many disturbance inputs as they traverse over rough roads. An active suspension system can be controlled by a sensor that looks "ahead" at the road conditions. An example of a simple suspension system that can accommodate the bumps is shown in Figure 1(a). Find the appropriate gain K_1 so that the vehicle does not bounce when the desired deflection is $R(s)=0$ and the disturbance is $T_d(s)$.

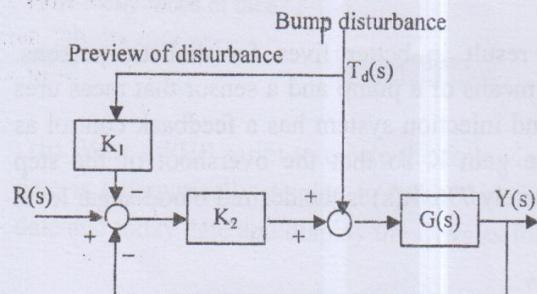


Figure 1(a)

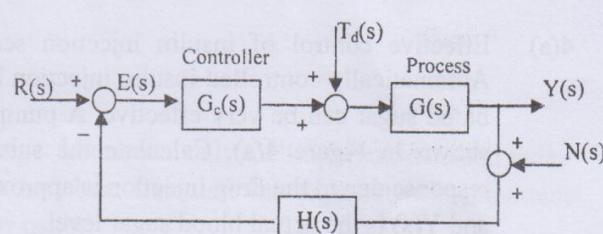


Figure 1(b)

- (b) Consider the system in Figure 1(b) where $G_c(s) = 10$, $H(s) = 1$, and $G(s) = \frac{s+30}{s^2 + 40s + 300}$

If the $R(s)$ is a unit step input, $T_d(s) = 0$, and $N(s) = 0$, the final value of output $Y(s)$.

- 2(a) A four-wheel antilock automobile braking system uses electronic feedback to control automatically the brake force on each wheel. A block diagram model of a brake control system is shown in Figure 2(a), where $F_f(s)$ and $F_R(s)$ are the braking force of the front and rear wheels, respectively, and $R(s)$ is the desired automobile response on an icy road. Find $F_f(s)/R(s)$.

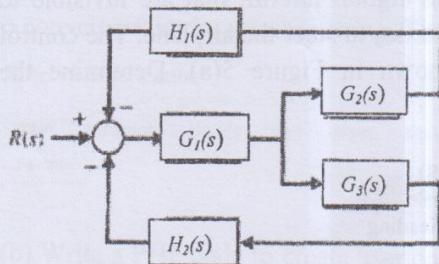


Figure 2(a)

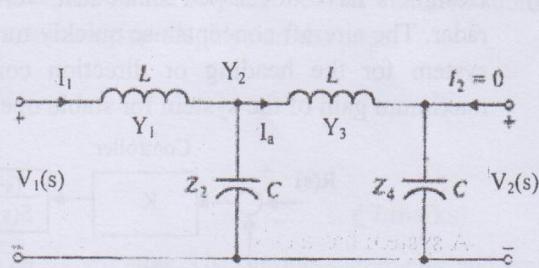


Figure 2(b)

- (b) An LC ladder network is shown in Figure 2(b). One may write the equations describing the network as follows:

$$I_1 = (V_1 - V_a)Y_1, \quad V_a = (I_1 - I_a)Z_2, \quad I_a = (V_a - V_2)Y_3, \quad V_2 = I_a Z_4$$

Construct a flow graph from the equations and determine the transfer function $V_2(s)/V_1(s)$.

- 3(a) A robotic arm and camera could be used to pick fruit, as shown in Figure 3(a). The camera is used to close the feedback loop to a microcomputer, which controls the arm. The transfer

function for the process is $G(s) = \frac{k}{(s+7)^2}$ (i) Calculate the expected steady-state error of the gripper for a step command A as a function of K . (ii) Name a possible disturbance signal for this system.

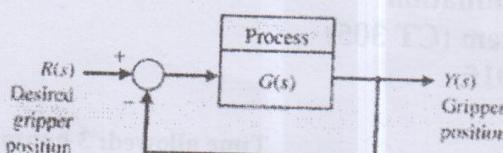


Figure 3(a)

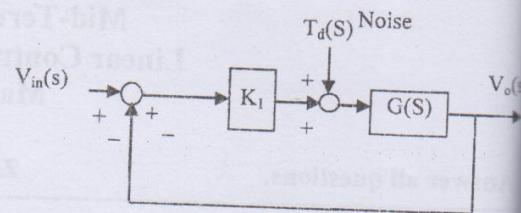


Figure 3(b)

- (b) A digital audio system is designed to minimize the effect of disturbances and noise as shown in Figure 3(b). As an approximation, we may represent $G(S) = K_2$. (i) Calculate the sensitivity of the due to K_2 (ii) Calculate the effect of the disturbance $T_d(s)$ on V_o . (iii) What value would you select for K_1 to minimize the effect of the disturbance.

- 4(a) Effective control of insulin injection can result in better lives for diabetic persons. Automatically controlled insulin injection by means of a pump and a sensor that measures blood sugar can be very effective. A pump and injection system has a feedback control as shown in Figure 4(a). Calculate the suitable gain K so that the overshoot of the step response due to the drug injection is approximately 7%. $R(s)$ is the desired blood-sugar level and $Y(s)$ is the actual blood sugar level.

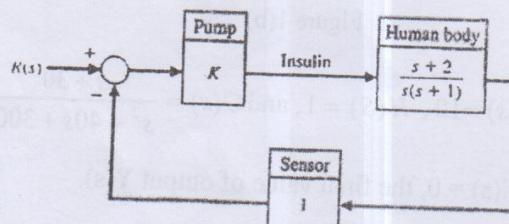


Figure 4(a)

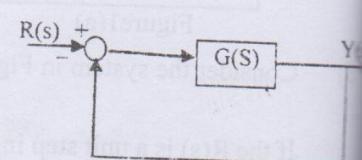


Figure 4(b)

- (b) For the system with unity feedback shown in Figure 4(b), determine the steady-state error for a step and a ramp input when $G(s) = \frac{20}{s^2 + 14s + 5}$

- 5(a) Designers have developed small fast, vertical-takeoff fighter aircraft that are invisible to radar. The aircraft concepts use quickly turning jet nozzles to steer the airplane. The control system for the heading or direction control is shown in Figure 5(a). Determine the maximum gain of the system for stable operation.

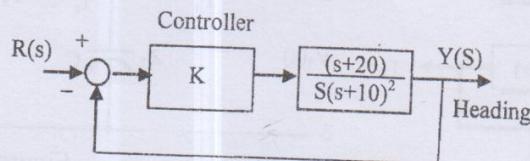


Figure 5(a)

- (b) A system has a characteristic equation $q(s) = s^3 + 20s^2 + 5s + 100 = 0$

- (i) Determine whether the system is stable, using the Routh-Hurwitz criterion,
(ii) Determine the roots of the characteristic equation.

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Department of Advanced Science and Technology

University of Computer Studies

Third Year (B.C.Tech.)

Mid-Term Examination

Electrical Circuits II (CT 306)

March, 2015

Answer all questions.

Zone IV

Time allowed: 3 hours

- 1.(a) Determine the inductor voltage v in the circuit of Fig. 1(a) for $t > 0$.

- (b) Find the current $i(t)$ in the $180\text{k}\Omega$ resistor of Fig. 1(b) for all time.

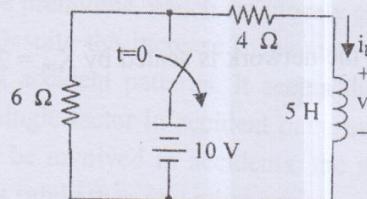


Fig- 1(a)

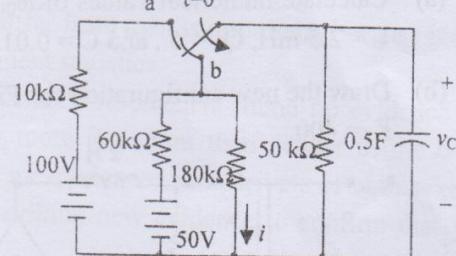


Fig- 1(b)

- 2 (a) Determine $i_L(t)$ for the circuit of Fig. 2(a), and plot the waveform.

- (b) Complete the determination of the initial conditions in the circuit of Fig. 2(b). Find $v_C(t)$ for $t > 0$

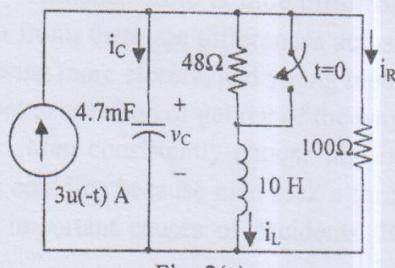


Fig- 2(a)

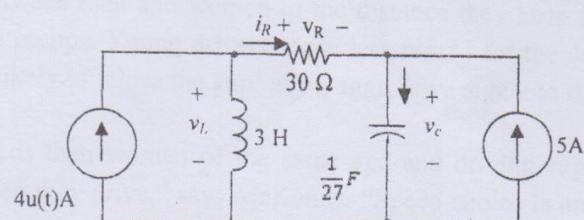


Fig- 2(b)

- 3 (a) Given; $H(s) = \frac{2}{s} - \frac{4}{s^2} + \frac{3.5}{(s+10)(s+10)}$, obtain $h(t)$.

- (b) Determine $i(t)$ for $t > 0$ in the series RC circuit shown in Fig. 3(b).

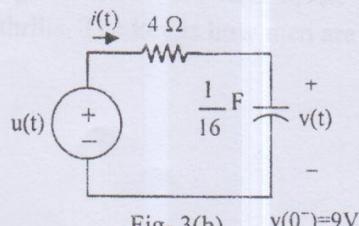


Fig- 3(b) $v(0^-)=9\text{V}$

- 4 (a) Determine the current $v(t)$ in the circuit of Fig. 4(a), given an initial current $i(0^-)=4A$.
 (b) (i) Convert the circuit of Fig. 4(b) to an appropriate s -domain representation. (ii) Find an expression for $p(t)$, the power absorbed in the resistor.

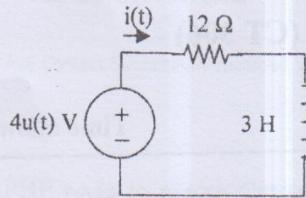


Fig- 4(a)

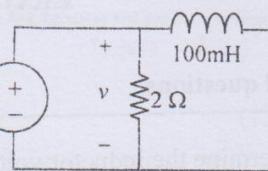


Fig- 4(b)

- 5 (a) Calculate numerical values of ω_0 , α , ω_d , and R for a parallel resonant circuit having $L = 2.5 \text{ mH}$, $Q_0 = 5$, and $C = 0.01 \mu\text{F}$.
 (b) Draw the new configuration for Fig. 5(b) after the network is scaled by $K_m = 250$ and $K_f = 400$.

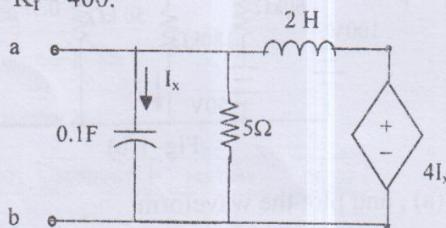


Fig- 5(b)

