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Department of Computer Science & Engineering

Begum Rokeya University, Rangpur

1st Year 1st Semester Final Examination – 2012(Session: 2011–12)

Course Code: **CSE 1101** Course Title: **Computer Fundamentals**

Marks: **50** Time: **03:00 hrs.**

(Answer any Five. Figures in the right margin indicate full marks.)

1.	(a)	What is computer? What are the features of fifth generation (1983-1990) of computer?	**3**
	(b)	What is the importance of computer in communication?	**3**
	(c)	How analog computers differ from digital computers?	**2**
	(d)	What are the parts of information processing cycle?	**2**
2.	(a)	What are the differences between data and information?	**2**
	(b)	Convert the following number as indicated in brackets (precision up to 4 digit points). i) $B9D.C6_{16}$ (to Binary) (ii) 110111.1011011_2 (to decimal)	**3**
	(c)	How does Unicode include all of the characters and symbols in the world?	**2**
	(d)	Draw the organization of a PC system.	**2**
	(e)	What are the functions of power supply unit of a computer?	**1**
3.	(a)	What is system bus? If a computer supports a maximum of 2GB physical memory, then mention the width of its address bus.	**1+2=3**
	(b)	What are the steps required to execute an instruction in computer? Briefly discuss all the steps with example.	**1+4=5**
	(c)	Mention different cooling techniques in a computer.	**2**
4.	(a)	How does a computer accept input from keyboard? What does the "PrintScreen" key of the keyboard do?	**2+1=3**
	(b)	How does a color CRT monitor produce images on the screen?	**3**
	(c)	How are the monitors categorized based on the color feature?	**2**
	(d)	Define the following term: i) Dot Pitch ii) Pixel	**2**
5.	(a)	How does a LASER printer create an image on paper?	**3**
	(b)	What four colors are used in color printer?	**1**
	(c)	How does a CD-ROM drive read data from the surface of a compact disk?	**3**
	(d)	What is meant by 16x speed of CD-ROM drive?	**1**
	(e)	Calculate capacity of a hard disk having 1632 cylinders, 12 heads and 54 sectors/track.	**2**
6.	(a)	Define Software. Give a comparison between commercial, shareware and freeware software.	**1+2=3**
	(b)	What are the disadvantages of machine language programming?	**2**
	(c)	Distinguish between compiler and interpreter.	**2**
	(d)	Define database. What is Database Management System?	**1+2=3**
7.	(a)	Define computer Network. List the possible topologies of Computer Network.	**2**
	(b)	What are the differences between IP address and DNS address?	**2**
	(c)	Write short notes on the following: i) E-Mail ii) WWW iii) HUB	**3×2=6**

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Course Code: **CSE 1103** Course Title: **Electrical Circuit Analysis**

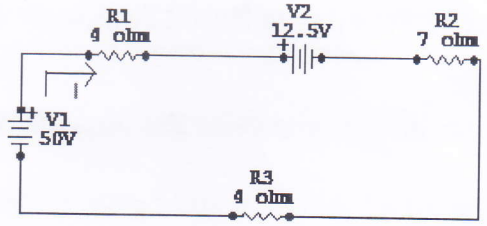
Marks: **50** Time: **03:00 hrs.**

(Answer any Five. Figures in the right margin indicate full marks.)

1. (a) What is series circuit? Write down the characteristics of series circuit? **1+2=3**

(b) Explain kirchoff's voltage law with proper circuit diagram. **3**

(c) Determine I and the voltage across the 7 ohm resistor for the given circuit. **4**



2. (a) Write down the characteristics of parallel circuits. **3**

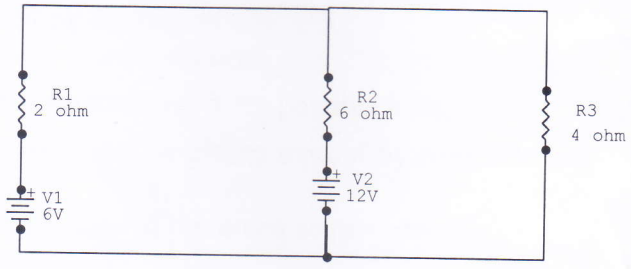
(b) State and Explain current divider rule. **3**

(c) Determine the magnitude of the current I_1, I_2, and I_3 for the given network. **4**

3. (a) Define ideal current source and voltage source. **2**

(b) Explain the different steps of nodal analysis for dc circuit. **4**

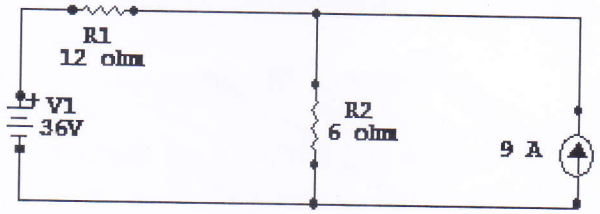
(c) Find the current through each branch of the network with mesh analysis. **4**



4. (a) What are the different network theorems? **2**

(b) State and explain the Thevenin's theorem with proper circuits. **4**

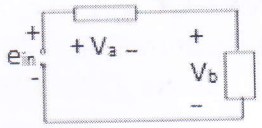
(c) Find the current through the 6Ω resistor of the below network using Superposition theorem. **4**



5. (a) Explain what happens when dc and ac sources are connected with resistor, inductor and capacitor separately. **5**

(b) Define phasors

(c) Find the input voltage e_{in} if, $V_a = 50\text{Sin}(377t+30^0)$ and $V_b = 30\text{Sin}(377t+60^0)$



6. (a) Describe Forier Transform of Signal and Transfer function. **4**
   (b) Elucidate RC Low, Hi and Band Pass Filters. **6**

7. (a) Define self inductance and mutual inductance. **2**
   (b) Write down the working principle of step-down transfer. **4**
   (c) 220v ac is connected to the primary coil of 625 turns of a transformer. Calculate the number of turns of secondary coil to produce 12v ac. **4**

6. (a) Describe linear search algorithm. Why binary search algorithm is much more efficient than the linear search algorithm.
   (b) What is sorting? Describe the steps of bubble sort with relevant example. 1+
   (c) Show that the halting problem is unsolvable.

7. (a) Define: i) Binary tree ii) Complete binary tree iii) Extended binary tree iv) binary search tree. 4
   (b) The six weights 4, 15, 24, 8, 16 are given. Find a 2-tree with the given weights and a minimum path length p. 3
   (C) Explain the pruning Algorithm for shortest path. 3

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Course Code: **CSE 1106** Course Title: **Communicative English**

Full Marks: **50** Time: **03:00 hrs**

(Answer all the questions. Figures in the right margin indicate full marks.)

1. Read the passage and answer the following questions. **5**

Are you unhappy about the shape of your nose? Or do you feel that your ears are too big or your eyes too small? You don't need to despair about any of these things any longer. They can all be put right by a surgeon. Surgeons are doctors who make sick people well by operating on them. But some surgeons today are really beauty specialists. Their job is to make ugly or plain people beautiful. This work is called plastic surgery.

Plastic surgeons are very popular in some countries. They make a lot of money by selling beauty to men and women – especially women. Plastic surgery is very expensive. A new nose may cost almost as much as a new car. Suppose, I can afford to pay so much money and want to change my ugly nose for a more handsome one. I must consult a plastic surgeon. What will he do?

First of all, he will ask me to enter a nursing home. I shall have to spend about three weeks there. The surgeon will give me an anesthetic. Then he will operate on my nose to give it the shape I want. He will put the plastic cover it to keep it in its new shape. I shall have to spend the next week or two anxiously wondering whether the operation has been successful or not. 'Will my nose really look better? Or shall I look uglier than before? And so on. And then the great day will come.

The surgeon will take off the bandages and the plaster, and I shall see my expensive new nose! Will it be worth all the trouble and expense? Sometimes these operations go wrong, and then the patient comes away looking worse than before.

a) What is the function of a plastic surgeon?
b) Why plastic surgeons are so popular in some countries?
c) What are anxieties that a person feel regarding plastic surgery?
d) Would you like to do a plastic surgery if you feel that your nose is not well-shaped one? Give reasons for your answer.
e) What is the gist of the given passage?

2. Use the right form of verbs within the brackets (any five). **5**

a) You had better (go) home.
b) Had you told me, I (bring) a mule.
c) I hope they (repair) this road by the time we come back next summer.
d) This is a story about an invalid who (spend) most of the day in bed.
e) Rumana went to Super Market with a view to (buy) a new shirt.
f) Hisham worked hard lest he (fail) in the examination.
g) Raina did nothing but (sing) all the day.

3. Fill in the gaps with appropriate prepositions (any five).

a) Mother blessed me _____ heart.
b) I will pay you _____ what you have done.
c) The old man fell _____ a deep sleep.
d) The dog lay close _____ him.
e) Della stood _____ the glass.
f) The teacher was taking _____ students reading habit.
g) A strong wind blow _____ icy waters.

4. Make sentences with the following structures (two sentences per structure). 5

a) Subject + LV + Complement + Adverb
b) Subject + VT + Indirect Object + Direct Object + Adverb
c) Subject + VI + Adverb or Adverbial
d) Subject + LV + Complement (Adjective or Adverb)
e) Subject + VT + Direct Object + Object Complement

5. Write Wh-questions for the following statements (any five). 5

a) The bus will leave at 5pm.
b) Of the two bags, I prefer the white one.
c) Mr. Zamil teaches us Mathematics
d) Zeba went to Sundarban last year.
e) Nila has two sisters.
f) Lina has come home for staying.

6. Change the voice of the following sentences (any five). 5

a) We never saw him in the dining-room.
b) A maid took all his meals up to him.
c) They are demolishing the entire block.
d) The police shouldn't allow people to park there.
e) A lorry knocked him down.
f) Did his conduct annoy you?

7. Write five sentences to express each of the following using modal auxiliaries (any five). 5

a) a past habit
b) a logical deduction about the present
c) something that you could do in the past
d) a polite request
e) an action that you has an opportunity to perform but you did not
f) a guess about the past

8 Make sentences with the following phrases and idioms (any five). 5

off and on, nip in the bud, put an end to, French leave, go to the dogs, all and sundry, in a fix

9. Write a paragraph on any one of the following topics. 10

a) Natural Disasters in Bangladesh
b) Electronics Media and its Impact on Students

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Course Code: **CSE 1107** Course Title: **Linear Algebra and Geometry**

Full Marks: **50** Time: **03:00 hrs**

(Answer any Five. Figures in the right margin indicate full marks.)

1. (a) Define Transformation of coordinates. Find the condition to remove the xy-term from the expression $ax^2+2hxy+by^2$. **5**

(b) The equation $3x^2+2xy+3y^2-18x-22y+50 = 0$ is transformed to $4x^2+2y^2 = 1$ when referred to the rectangular axes through the point (2, 3). Find the inclination of the latter axes to the former. **5**

2. (a) Show that the homogeneous quadratic equation $ax^2+2hxy+by^2 = 0$ represents a pair of straight lines. Hence, find the angle between the two lines. **5**

(b) If the equation $ax^2+2hxy+by^2+2gx+2fy+c = 0$ represents a pair of straight lines equidistant from the origin , show that $h(g^2-f^2) = fg(a-b)$ **5**

3. (a) What do you mean by a conic? Reduce the equation $18x^2+4xy+5y^2-16x-14y+13 = 0$ to the standard form. **5**

(b) Prove that the length of the common chord of the two circles $x^2+y^2+2\lambda x+c = 0$ and $x^2+y^2+2\mu y-c = 0$ is $2\sqrt{\frac{(\lambda^2-c)(\mu^2+c)}{(\lambda^2+\mu^2)}}$. **5**

4 (a) Define hemitian and skew-hermitian matrices. Show that every square matrix can be expressed as the sum of hemitian and skew-hermitian matrices. **5**

(b) What are orthogonal and diagonal matrices? Suppose A and B are orthogonal matrices. Show that A^T, A^{-1} and AB are also orthogonal. **5**

5. (a) Define invertible matrix. Find the inverse of the matrix $p = \begin{bmatrix} 3 & 2 & -4 \\ 4 & -5 & 7 \\ -1 & 6 & 8 \end{bmatrix}$ **5**

(b) Define consistency and inconsistency of system of linear equations. Solve the system $x-3y-2z = 6$, $2x-4y-3z = 8$, $-3x+6y+8z = -5$ by matrix method. **5**

6. (a) Define vector space and sub-space over a field. Let V be the vector space over K. Let W be the sub-space of symmetric matrices. Show that dimW=3 by finding a basis of W. Notice that V is of 2×2 matrices over the field k. **5**

(b) Define basis and dimension. If U and W be two subspaces of a vector space V over a field K, show that $\dim(U+W) = \dim U + \dim W - \dim(U \cap W)$. **5**

7. (a) Find the eigen values and eigen vectors of the matrix $\begin{bmatrix} 4 & 1 & -1 \\ 2 & 5 & -2 \\ 1 & 1 & 2 \end{bmatrix}$ **5**

(b) State and prove Cayley-Hamilton theorem. **5**