

Begum Rokeya University, Rangpur**Department of Computer Science & Engineering**1st Year 2nd Semester Final Examination – 2010 (Session: 2009-10)

Course Code: CSE 1201

Course Title: Structured Programming Language

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

1. (a) Justify - "C is a structured as well as mid-level language". 2
- (b) Describe the four basic data types. How could we extend the range of values they represent? 2
- (c) What is the difference between $x++$ & $++x$ when they are used in an expression? 2
- (d) How register variable can expedite program execution? What is wrong with the following declaration statement? 2
register float fast;
- (e) Write the differences between static and auto variables. 2
2. (a) Which of the following variable names are valid and which invalid? Why? 4
(i) aXeX (ii) cse.brur (iii) x+y (iv) &name (v) doubles (vi) 3rd_row (vii) n\$
(viii) Row1 (ix) float (x)Sum Total (xi) row* (xii) column-total
- (b) Find errors, if any, in the following declaration statements. 3
(i) Int x; (ii) Float letter,digit; (iii) double=p,q (iv) m,n,z:INTEGER
(v)short char c; (vi) long float temp;
- (c) Differentiate between "break" and "continue" statements. What will the following code fragment output? 1+2=3

```
int a = 1, c = 0;
do{
    if(a%2 == 0) { c++; a++; }
    if(c == 30) break;
}while(a<=100);
printf("c is : %d", c);
```
3. (a) Write a program to do the following: 2
 i) Declare x and y as integer variables and z as a short integer variable
 ii) Assign two 6 digit numbers to x and y
 iii) Assign the sum of x and y to z
 iv) Output the values of x,y and z
 Comment on the output.
- (b) Convert the following for loops to while loops. 2
 (i) `for(m=1;m<10;m=m+1)` (ii) `for(; scanf("%d",&m)!=-1;)`
`printf(m);` `printf(m);`
- (c) The numbers in the sequence "1 1 2 3 5 8 13 21....." are called fibonacci numbers. Write a program using a do...while loop to calculate and print the first m 2

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fibonacci numbers.

- (d) Compare, in terms of their functions, the following pairs of statements. 3
- i) while and do...while
 - ii) while and for
 - iii) break and goto
- (e) When do we use the following statement? 1
For(; ;)
4. (a) What happens when an array with a specified size is assigned - 2
- i) with values fewer than the specified size; and
 - ii) with values more than the specified size.
- (b) Find out the error(s) in the following code fragments? 2
- i) main()
{ int x; float[];
.....
}
 - ii) Assuming that the array B is declared as follows:
float B[4]
for (i=1; i<4;i++)
scanf("%f",B[i]);
- (c) Identify errors, if any, in each of the following array declaration statements, 3
assuming that ROW and COLUMN are declared as symbolic constants.
- i) int score(100);
 - ii) float values[10,15];
 - iii) float average [ROW],[COLUMN];
 - iv) char name[15];
 - v) int sum[];
 - vi) double salary[i+ROW]
 - vii) long int number[ROW]
 - viii) int array x[COLUMN];
 - ix) integer ar x[7];
- (d) Write a program that displays the following. 3
- *

5. (a) What is the difference between call by value and call by reference? Describe with 3+2=5
proper examples. Which process is more speedy and why?
- (b) Write a function (using pointer parameter) that reverses the elements of a given 3
array.

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(c) What will be the output of the following code fragment?

```

void main()           int f1(int a)           int f2(int a)
{
    printf("%d", f1(10));   {
                            int b = a * a;   {
                            return f2(b);   }
}
}

```

6. (a) Distinguish between the following pair of functions.

- i) getc & getchar.
- ii) printf & fprintf
- iii) feof & ferror.

(b) What does the following statements do?

- a) while((c=getchar())!=EOF) putc(c, f1);
- b) while((m=getw(f1))!=EOF)
printf("%d", m);

(c) What is the significance of EOF?

(d) Explain the general format of fseek() function.

(e) What will the following code fragment print?

```

int p, *q, *r;
p = 10; q= &p; r = q;
*q = p * (*q) * (*r);
*r = p * (*r);
printf("%d, %d, %d", p, *q, *r);

```

7. Describe each of the following terms with an example:

- i) Bitwise logical operator
- ii) Pointer flexibility
- iii) One's complement operator
- iv) Masking
- v) Array of structures
- vi) Array within structures
- vii) Structures within structures
- viii) Structures and functions

Department of Computer Science & Engineering
 Begum Rokeya University, Rangpur

Semester Final Examination-2010 1st year 2nd Semester Session: 2009-2010
 Course Title: Semiconductor Devices & Circuits Course Code: CSE 1203
 Time: 3.0 Hours Full Marks: 50

[N.B. Answer any Five (5) Questions, Number of each question is indicated to the right]

1. (a) Differentiate energy level and energy bands. 2
- (b) How dose conductivity of a semiconductor change with rise in its temperature? 2
- (c) Prove that $\vec{\nabla} \cdot \vec{J} = -\frac{\partial \rho}{\partial t}$. 3
- (d) What is meant by intrinsic semiconductor?
How P and N type of semiconductor are formed? Explain. 3
2. (a) Define (i) Knee voltage; (ii) Breakdown voltage; (iii) Peak inverse voltage. 3
- (b) Explain the working principle of a bridge rectifier with circuit diagram. 4
- (c) A half wave rectifier is used to supply 24V dc to a resistive load $1k\Omega$. The diode has a resistance of 22Ω . Calculate the supplied ac voltage. 3
3. (a) What is transistor? Draw the output characteristic of a common base transistor configuration and explain its different regions. $1+2+2=5$
- (b) What is forward and reverse biased PN junction? Explain V-I characteristics with suitable circuit. 5
4. (a) What is operating point of a transistor? Write the name of different biasing technique. $1+2=3$
- (b) Explain the emitter stabilized biasing technique with proper circuit diagram. 5
- (c) Why transistor amplifiers always operated above knee voltage region? 2
5. (a) How JFET differ from bipolar transistor? 2
- (b) Explain the construction and operation of n channel JFET. 6
- (c) Mention the applications of JFET. 2
6. (a) Define Oscillator. What are the different types of oscillators? $1+2=3$
- (b) Explain the Barkhausen criterion for oscillator. 2
- (c) Draw the circuit diagram of Colpitt's oscillator and explain its working principle. $1+4=5$
7. (a) Give the basic characteristics of an operational amplifier (OP-AMP). 2
- (b) How an OP-AMP used as an inverting and non-inverting amplifier. 4
- (c) Explain how OP-AMP used as (i) Integrator; (ii) Differentiator. 4

Begum Rokeya University, Rangpur
Department of Computer Science & Engineering
 1st Year 2nd Semester Final Examination – 2010 (Session: 2009-10)
Course Code: CSE 1205 **Course Title:** Financial Accounting

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

1. (a) What are sources of accounting information?
- (b) Pochu Manufacturing Company was started on December 01, 2010 by Mr. Md. Monsur Ali. The following selected events and transaction occurred during December.

December 01	Md. Monsur Ali starts his business with cash TK. 20,00,000 furniture TK. 50,000, and a Land for TK. 1,00,000
December 04	Purchase goods for TK. 50,000
December 10	Appoint a manager with a salary for TK. 20,000
December 11	Sales TK. 60,000 of which TK. 15,000 is on credit
December 14	Purchase a machine from Khan and Co. for TK. 15,000
December 15	Paid office rent TK. 4,000
December 18	Bank service charge charged TK. 250
December 20	Bring additional capital for TK. 20,000
December 22	Paid salary to the manager for the month of December
December 25	Invest TK 10,000 to the Grameen Phone Limited
December 26	Drawing TK. 15,000
December 30	Paid repairing cost TK. 2000

Instructions:

- a) Journalise the transaction for the month of December 2010
- b) Prepare the Cash Account of the company.

2. (a) Define depreciation. What are the factors to be considered in computation of depreciation?
- (b) On 01 January 2010, Pronga Cosmetics Limited purchases a new machine for TK. 1,00,000. The following expenses have been incurred:
 Labor - TK 5,000
 Replacement - TK. 2,500
 Import duty- TK. 2% of the cost
 The Machine is estimated to have a 10 year life with a salvage value of TK. 5000. The total unit of activity of the machine is 9500 units.

Instructions:

- 1) Prepare depreciation schedule for the following methods
 - a) Straight line b) Unit of activity c) Declining balance method using double the straight line rate

3. (a) What are the causes behind the difference between balance per book and balance per bank?

- X
- (b) The Bank Statement of Shimu Lubricant Company shows a balance per bank of TK 15,90,745 on April 30, 2010. On this date the balance of cash per book is TK. 11,58,945. The following errors have been identified from the analysis of two books.

Deposit on April 30 but the bank received on May 01 TK. 2,20,140

Outstanding checks:

Check No 453	3,00,000
Check No 457	1,40,130
Check No 460	1,50,270

Shimu wrote check no 443 for TK. 1,22,600 and the bank correctly paid that amount. However, Shimu recorded the check as TK. 1,26,200

NSF check from J.R. Baron for TK. 42,560

Charge for printing company checks TK. 3,000

Collection of note receivable for TK. 1,00,000 plus interest earned TK. 5,000, less bank collection fee TK. 1,500

Prepare the bank reconciliation for Shimu Lubricant Company and pass the journal entries if necessary.

4. The Elston Motel opened a business on May 1, 2008. Its Trial Balance before adjustment on May 31 is as follows.

ELSTON MOTEL
Trial Balance
May 31, 2008

Particulars	Debit (TK)	Credit (TK)
Cash	2500	
Supplies	1900	
Prepaid insurance	2400	
Land	15000	
Lodge	70000	
Furniture	16800	
Accounts Payable		5300
Unearned rent		3600
Mortgage payable		40000
Capital		55000
Rent revenue		9200
Advertising expenses	500	
Salaries expenses	3000	
Utility expenses	1000	
	TK113100	TK113100

Other data:

1. Insurance expires at the rate of TK200 per month.
2. Account of supplies shows TK 500 of unused supplies on May 31.
3. Annual depreciation of Tk3600.
4. The mortgage interest is 12%
5. Unearnwd rent of TK 2500has been earned.
6. salaries of Tk 800 are accrued at May 31.

Instructions: Prepare a 10 Column work sheet.

5. The comparative statement of Protty Company is presented below.

~~X~~
Protty Company Limited
 Income Statement
 For the year ended December 31, 2010 & 2009

	(TK) 2010	(TK) 2009
Net Sales	600000	520000
Expenses		
Cost of goods sold	415000	354000
Selling and administrative expense	120800	114800
Interest expense	7800	6000
Income Tax expenses	18000	14000
Total expenses	561600	488800
Net Income	38400	31200

Protty Company Limited
 Balance Sheet
 As on December 31, 2010 & 2009

	(TK) 2010	(TK) 2009
		<i>Assets</i>
		<i>Current Assets</i>
Cash	21000	18000
Short-term investment	18000	15000
Net Account Receivable	86000	74000
Inventory	90000	70000
Total Current Assets	215000	177000
Plan assets (net)	423000	383000
Total assets	638000	560000
Liabilities and stockholder's equity		
		<i>Current liabilities</i>
Accounts Payable	122000	110000
Income taxes payable	23000	20000
Total Current liabilities	145000	130000
Long-term liabilities		
Bond payable	120000	80000
Total Liability	265000	210000
Stockholder's equity		
Common Stock (5 Per), market price is TK. 19.50 per share	150000	150000
Retained earnings	223000	200000
Total Stockholder's equity	373000	350000
Total Liability and Stockholder's equity	638000	560000

Instructions:

Compute the following ratios for 2010

- a) Liquidity Ratios
- b) Profitability Ratios
- c) Solvency Ratios

- 6.** (a) T J Carlin opened his business on September 1, 2008. During the first month of operations the following occurred.

September

- 1. Invested TK 20000 cash in the business.
- 2. Paid TK 1500 cash for store rent for this month.
- 3. Purchased goods for total TK 25000, paying TK 10000 in cash and remaining on credit.
- 4. Paid TK 1200 a one year insurance policy.
- 10. Paid cash for advertising expenses TK 750
- 20. Withdraw TK 748 in cash for personal use.
- 30. Received for service revenue TK 245.

Journalize the above transactions, post them in the ledger, and prepare a trial balance with the help of ledger balances.

- 7.** (a) How inventory valuation method affects the result of the company?
- (b) Samontee Company Limited has the following inventory, purchase and sales data for the month of March, 2010.

Inventory	March 01	200 units @ TK. 4.00	TK. 800
Purchase	March 10	500 units @ TK. 4.50	TK. 2250
	March 20	400 units @ TK. 4.75	TK. 1900
	March 30	300 units @ TK. 5.00	TK. 1500
Sales	March 15	500 units	
	March 25	400 units	

The physical inventory count on March 31 shows 500 units on hand.

Instructions:

Under periodic inventory systems, determine the cost of inventory on hand at March 31 and the cost of goods sold in March under –

- a) FIFO
- b) LIFO
- c) Average-cost


 Begum Rokeya University, Rangpur
Department of Computer Science & Engineering
 1st Year 2nd Semester Final Examination – 2010 (Session: 2008-09)
 Course Code: CSE 124 Course Title: Linear Algebra & Geometry

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

1. a) Find the angle between the pair of straight lines represented by $ax^2 + 2hxy + by^2 + 2gx + 2fy + c = 0$. Also find its intersecting point. 5
- b) Show that the distance from the origin to the orthocenter of the triangle formed by the lines $ax^2 + 2hxy + by^2 = 0$ and $\frac{x}{\alpha} + \frac{y}{\beta} = 1$ is $\frac{(a+b)\alpha\beta\sqrt{(\alpha^2 + \beta^2)}}{a\alpha^2 + 2ha\beta + b\beta^2}$. 5
2. (a) Define pole and polar of a circle. Prove that the polar of the point (p, q) with respect to the circle $x^2 + y^2 = a^2$ touches $(x - c)^2 + (y - d)^2 = b^2$ if $b^2(p^2 + q^2) = (a^2 - cp - dq)^2$. 1+4
- b) Define radical axis. Show that the radical axis of two circles is perpendicular to the line joining the centres. 1+4
3. a) State invariant laws. Prove that the transformation of rectangular axes which convert $\frac{X^2}{p} + \frac{Y^2}{q}$ into $ax^2 + by^2 + 2hxy$ will convert $\frac{X^2}{p-\lambda} + \frac{Y^2}{q-\lambda}$ into $\frac{ax^2 + by^2 + 2hxy - \lambda(ab-h^2)(x^2 + y^2)}{1 - (a+b)\lambda + \lambda^2(ab-h^2)}$. 5
- b) Show that the pair of straight lines $ax^2 + 2hxy + by^2 = 0$ and $a'x^2 + 2h'xy + b'y^2 = 0$ should have one line in common if $4(ah' - a'h)(hb' - h'b) = (ab' - a'b)^2$. 5
4. (a) Define limiting points. Find the coordinates of the limiting points of the circles $x^2 + y^2 - 2x + 8y + 11 = 0$ and $x^2 + y^2 + 4x + 2y + 5 = 0$. 1+4
- (b) Reduce the equation $x^2 - 2xy + y^2 + 6x + 2y - 19 = 0$ to the standard form and identify the conic. Also find its centre. 2+1+2
5. Solve the following systems of linear equations. 5+5

(a) $\begin{array}{l} x + 2y - z = 3 \\ x + 3y + z = 5 \\ 3x + 8y + 4z = 17 \end{array}$	(b) $\begin{array}{l} x - 2y + 4z = 2 \\ 2x - 3y + 5z = 3 \\ 3x - 4y + 6z = 7 \end{array}$
--	--

~~QUESTION PAPER~~

6. (a) Express $v = (2, -5, 3)$ in \mathbb{R}^3 as a linear combination of the vectors s .
 $u_1 = (1, -3, 2), u_2 = (2, -4, -1), u_3 = (1, -5, 7)$

(b) Determine whether or not the vectors $u = (1, 1, 2), v = (2, 3, 1), w = (4, 5, 5)$ in \mathbb{R}^3 are linearly dependent.

7. (a) Define (i) Vector Space (ii) Spanning Set (iii) Basis of a vector Space.
(b) Show that $L(s) = \{v \in V \mid v = a_1u_1 + a_2u_2 + a_3u_3 + \dots + a_nu_n, u_i \in S\}$ is a subspace of V .

Department of Computer Science & Engineering

1st ~~2nd~~ Year Semester Examination – 2010 (Session 2009-10)

Course Code: CSE 2107 Course Title: Statistics & Probability

Total Time: 03 hours Total Credit: 03 Total Marks: 50

(Answer any five)

1. Define Parameter and Statistic with example. What do you mean by population and sample? What are the difference between cluster sampling and stratified sampling? What is frequency distribution? Draw histogram, frequency polygon and ogive form the following data:

Class Interval	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90
Frequency	8	12	14	20	12	8	4	2

Also find the mode graphically from the above data.

2
+1
+2
+1
+3
+1
= 10

2. What is mean by central tendency? Is arithmetic mean a good measure? Justify your answer. Show that $AM \geq GM \geq HM$ for two variables. Calculate geometric mean and harmonic mean from aforesaid data. Also comment on your findings.

1
+2
+3
+3
+1
= 10

3. What is Dispersion? What are the measures of dispersion? Calculate standard deviation and coefficient of variation from the above data. Why coefficient of variation is preferred instead of standard deviation. Also find mean deviation about mean and standard deviation of the A.P. series $a, a+d, a+2d, \dots, a+2nd$

1
+1
+3
+1
+4
= 10

4. a) What is kurtosis? What does it measure? How does the measure of kurtosis help in understanding a frequency distribution? Establish the relation between general moments and central moments.

1
+1
+2
+6
= 10

5. a) What are the differences between correlation and regression? Derive the formula for the rank correlation coefficient. Let X be the measurement of heights and Y be the measurement of weights. The observations are shown as follows:

3
+3
+4
= 10

X	60	60	60	62	62	62	64	64	64	66	66	66	68	68	68
Y	115	120	13	13	14	12	13	13	14	17	14	15	15	16	17

Fit a least square line to the data with X as the independent variable. If the height of a student were 67 inches, what would be his predicated weight?

$$\rightarrow P(A \cup B)$$

6. Define experiment, outcome, favorable cases, axiomatic probability and conditional probability. What is the difference between probability and possibility? For two events A and B prove that $P(A \cup B) = P(A) + P(B) - P(A \cap B)$, if A and B are not mutually exclusive events. State the Bayes theorem. Two unbiased dice are thrown. Find the probability that (i) either first die shows 4 or sum of the upper faces is 9 or more. (ii) sum of the upper faces of dice are 9 given that first die shows 5.
- 3
+1
+2
+1
+3
= 10
7. a) What is Binomial probability distribution? Find the mean and variance of binomial probability distribution. 4
 b) Eight unbiased coins are tossed. Find the probability of getting (i) at least 2 heads (ii) at best 3 heads. 3
 c) If 2 percent fuses produced by a company are usually found defective, what is the probability that in a box of 200 fuses there will be (i) no defective fuse, (ii) 1 defective fuse (iii) 2 defective fuses. 3