

22-75

8

Department of Computer Science & Engineering

Begum Rokeya University, Rangpur

1st Year 2nd Semester Final Examination – 2012 (Session: 2011-12)

Course Code: CSE 1201

Course Title: Structured Programming Language

Full Marks: 50

Time: 03:00 hrs

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

4. (a) With the help of an example, explain the relationship between array and pointer.

- (b) Mention the advantages and disadvantages of using array.

- (c) What will the following C code fragment print?

```
char a[100] = "Hello", b[] = "Its Me", *p, *q;      do { *p++ = *q-- ; } while(m--);  
int l = strlen(a); int m = strlen(b);          *p = '\0'; printf("%s\t%s", a, q);  
p = a; q = b; p+=l; q+=m-1;
```

- (d) Does C check if array indices going out of bounds during compile time? Explain with an example. 2

5. (a) What is the necessity of the *return* statement? When is it necessary and when is it a must in a function? 2

- (b) Write the prototype of a function named *search* that takes an integer value and an integer type array as arguments and returns the array index where the value is first found. 2

- (c) Discuss *call-by-value* and *call-by-reference* function calling in C. 4

- (d) Define *formal parameter* and *argument* for a function in C. 2

6. (a) Define a structure called *cricket* that will describe the following information Player name, Team name, Batting average. Using *cricket*, declare an array called *player* with 10 elements and write a program to read the information about all the 10 players and print a team wise list containing names of players with their batting averages. 3

- (b) Give the output of the following C code fragment? 3

```
char arr[] = "Too Easy or Too Difficult";      f+=3;  
float *f = (float *)arr;                      printf("\n%s", ++f);
```

- (c) Using pointers, write a function that receives a character string and a character as arguments and deletes all occurrences of this character in the string. The function should return the corrected string with no holes. 4

7. (a) What would be the output of the following C code fragment? 3

```
struct soldier  
{ char *name;  
  char *rank;  
  int serial_number;  
};  
struct soldier soldier1, soldier2, soldier3, *ptr;  
  
ptr = &soldier3;  
soldier3.name = "Mr. X";  
printf("\n%s", (*ptr).name);  
printf("\n%c", *ptr->name);  
printf("\n%c", *soldier3.name);  
printf("\n%c", *(ptr->name + 4));
```

- (b) What is a file in C? Mention all file opening modes available in C. 1+2=3

- (c) Write a program in C to open a file from the current directory, store some information there and finally display the contents of the file on the monitor. 4

Department of Computer Science & Engineering

Begum Rokeya University, Rangpur

1st Year 2nd Semester Final Examination – 2012 (Session: 2011-2012)

Course Code: CSE 1203 Course Title: Semiconductor Devices & Circuits

Full Marks: 50

Time: 03:00 hrs

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

1. (a) Explain the energy band diagram of metal, insulator and semiconductor. 3
 (b) Sketch the atomic structure of germanium and insert an impurity of arsenic and explain the merit of such doping. 4
 (c) Write down the differences between extrinsic and intrinsic semiconductors. 3

2. (a) Explain the different biasing of the PN junction and draw the characteristic curve. 5
 (b) Explain DC load line analysis PN junction with proper circuit diagram. 5

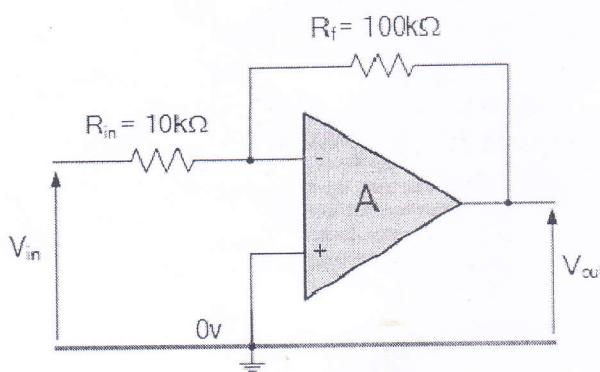
3. (a) With a neat sketch, explain the working of a full wave rectifier. 1+5=6
 (b) An ac voltage of peak value 15V is connected in series with a silicon diode and load resistance of 470Ω . If the forward resistance of the diode is 22Ω , calculate (i) peak current through diode, (ii) peak output voltage.

4. (a) Why Zener diode is used as a voltage regulator? 3
 (b) Explain why collector current is slightly less than emitter current? 4
 (c) Explain the operation of transistor as an amplifier. 3

5. (a) What is biasing? Why do we need to bias a transistor? 1+2=3
 (b) Draw the input and output characteristics of a common emitter transistor configuration and explain its different regions. 2+2=4
 (c) Define α , β and γ . 3

6. (a) What is FET? Write the differences between FET and BJT. 3
 (b) Explain the construction and working of an enhancement MOSFET. 6
 (c) Define the pinch off voltage. 1

7. (a) What is Op-Amp? Write down the idealized characteristics of an Op-Amp. 1+2=3
 (b) Explain the Op-Amp inverting amplifier with proper circuit diagram. 4
 (c) Calculate the close loop gain of the following inverting amplifier circuit. 3



~~X~~
Presented below is information related to Robbins real estate agency.

Oct. 1	Lynn Robbins begins business as a real estate agent with a cash investment of Tk.20,000.
Oct. 2	Hires an administrative assistant.
Oct. 3	Purchase office furniture of Tk. 1900 on account.
Oct. 6	Sell a house and lot for B. Kidman Tk.3200 for realty service provided.
Oct. 27	Pays Tk. 700 on the balance related to the transaction of October 3.
Oct. 30	Pays administrative assistant Tk.2000 for October.

Prepare the debit credit analysis for each transaction.

4. (a) What do you understand by adjusting entry? What are the types of adjusting entry?
Discuss with example. 4

- (b) Terry Tomas opens the Green Thumb Lawn Care Company on April 01. At April 30 the trial balance shows the following balances for selected accounts. 6

Prepaid insurance	Tk.3600
Equipment	28000
Notes Payable	20000
Unearned Revenue	4200
Service Revenue	1800

Analysis reveals the following additional data:

- i. Prepaid insurance is the cost of a 2-year insurance policy, effective on April 1.
- ii. Depreciation on the equipment is Tk.500 per month.
- iii. The note payable is dated April 1. It is a 6-month, 12% notes.
- iv. Seven customers paid for the company's 6 months lawn service package of Tk.600 beginning in April. These were serviced in April
- v. Lawn services provided other customers but not recorded at April 30 totaled Tk.1500.

Required:

Prepare the adjusting entries for the month of April. Show computations.

5. (a) What is a trial balance? What are the objectives of trial balance? 2

M

Department of Computer Science & Engineering

Begum Rokeya University, Rangpur

1st Year 2nd Semester Final Examination – 2012 (Session: 2011-12)

Course Code: CSE 1205 Course Title: Financial Accounting

Full Marks: 50

Time: 03:00 hrs

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

1. (a) "The term debit and credit means increase and decrease, respectively." Do you agree? Explain. 4
- (b) Who are the users of accounting information? Distinguish between bookkeeping and accounting. 3
- (c) Can a business enter into a transaction in which only the left side of the basic accounting equation is affected? If so, give an example. 3
2. (a) Pat Donahue started his own delivery service. Donahue deliveries on June 1, 2011. The following transaction occurred during the month June. 10

June 1	Pat invested Tk. 10,000 cash in the business
June 2	Purchased a used van for deliveries for Tk. 10,000. Pat paid Tk. 2,000 cash and signed a note payable for the remaining balance.
June 3	Paid Tk. 500 for office rent for the month.
June 5	Performed Tk. 2,400 for service in account.
June 9	Withdraw Tk. 200 cash for personal use.
June 12	Purchase supplies for Tk. 150 on account.
June 15	Received a cash payment of Tk.750 for service provided on June 5.
June 17	Purchase a gasoline for Tk.100 on account.
June 20	Received a cash payment of Tk.1,500 for service provided.
June 23	Made cash payment of Tk.500 on the notes payable.
June 26	Paid Tk.250 for utilities.
June 29	Paid for the gasoline purchased on account on June 17.
June 30	Paid Tk.1,000 for employees salaries.

Requirement:

Show the effects of the previous transaction on the accounting equation using the following head of accounts. Assets as cash, Accounts Receivable, supplies, delivery van; Liabilities are notes payable, Accounts Payable and owners Equity as P. Donahue Capital, P. Donahue Drawing, Revenue and Expenses.

- 3 (a) Selected transactions for H. Burns an interior decorator, in her first month of business are as follows: 5

Jan 1	Invested Tk. 15, 0000 cash in business.
Jan 3	Purchased used car for Tk.4000 for car use in business.
Jan 9	Purchased supplies on account for Tk.500
Jan 11	Billed customers to Tk.1800 for service performed.
Jan 16	Paid Tk. 200 cash for advertising.
Jan 20	Received Tk.700 cash from customers billed on January 11.
Jan 25	Paid creditors Tk.300 cash own balance owed.
Jan 29	Withdraw Tk.2000 cash for personal use of owner.

Prepare journal entries with explanations.

The trial balance of Need Store owned by Mr. Prince as of 31 December, 2012 as follows:

Need Store
Trial Balance
As of 31 December, 2012

Accounts Title	Debit (Tk.)	Credit(Tk.)
Cash	14,000	
Accounts Receivable	1,000	
Merchandise Inventory	20,000	
Supplies	2,900	
Prepaid Insurance	500	
Store Equipment	9,500	
Accumulated Description		1,800
Notes Payable		1,200
Accounts Payable		4,000
Bond Payable		1,900
Prince's capital		23,000
Prince's Drawing	1,200	
Sales Revenue		65,000
Interest Revenue		500
Cost of Goods Sold	40,000	
Advertising Expense	200	
Salaries expense	5,000	
Utilities expense	1,000	
Rent Expense	2,000	
Depreciation expense	1,000	
	<hr/>	<hr/>
	98,300	98,300

Adjustment data:

- i. Merchandise inventory actually on hand is Tk. 19,500.
- ii. Depreciation is Tk. 900 on the store equipment.
- iii. Interest of Tk.300 is accrued on notes payable
- iv. Store supplies on hand Tk. 2,500.
- v. Accrued salaries expense Tk. 5,000.

Requirement:

Enter the trial balance on a work sheet and complete the work sheet.

6. (a) Sherlock Holmes began operation as a private investigator on January 01, 2005. The trial balance columns of the work sheet for Sherlock Holmes P.I. at March 31 as follows:

X
 Sherlock Holmes P.I.
 Trial Balance
 For the quarter ended March 31, 2005.

Accounts Title	Trial Balance	
	Dr.(Tk.)	Cr.(Tk.)
Cash	11,400	
Accounts Receivable	5,620	
Supplies	1,050	
Prepaid insurance	2,400	
Equipment	30,000	
		10,000
Notes Payable		12,350
Accounts Payable		20,000
S. Holmes capital	600	
S. Holmes drawings		13,620
Service revenue	2,200	
Salaries expense	1,300	
Travel expense	1,200	
Rent expense	200	
Miscellaneous expense		55,970
		55,970

Other data:

- i. Supplies on hand total Tk. 680
- ii. Depreciation is Tk. 1,000 per quarter.
- iii. Interest accrues up to March 31, 2005 is Tk.300.
- iv. Insurance expires at the rate of Tk. 200 per month.
- v. Service provided but unbilled at March 31 total Tk.830.

Requirements:

- a) Enter trial balance on a work sheet and complete the work sheet.
- b) Journalize the adjusting entries from the adjustment columns of the work sheet.

Journalize the closing entries from the financial statement columns of the work sheet.

7

Write Short notes on following topics:

- a) Economic entry assumption
- b) Describe the parts of a T account
- c) Errors of trial balance
- d) Steps in recoding process

Department of Computer Science & Engineering

Begum Rokeya University, Rangpur

1st Year 2nd Semester Final Examination – 2012 (Session: 2011-12)

Course Code: CSE 1206

Course Title: Integral and Differential Calculus

Full Marks: 50

Time: 03:00 hrs

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

1. (a) Define continuity and differentiability of a function.

$$\text{Given } f(x) = \begin{cases} 5x - 4 & \text{for } 0 < x \leq 1 \\ 4x^2 - 3x & \text{for } 1 < x \leq 2 \\ 3x + 4 & \text{for } x \geq 2 \end{cases}$$

Discuss the continuity of $f(x)$ for $x=1$ and $x=2$ and execute of $f'(x)$ for these values.

- (b) By first principle root find the differentiation of $f(x) = \cos 3x$.

2. (a) A function is defined as follows:

$$f(x) = x \sin \frac{1}{x} \text{ for } x \neq 0, f(0) = 0. \text{ Show that } f'(0) \text{ does not exist.}$$

- (b) State Leibnitz's theorem.

$$\text{If } y = (\sin^{-1} x)^2 \text{ then show that } (1 - x^2)y_{n+2} - (2n+1)xy_{n+1} - n^2y_n = 0$$

3. (a) State and Prove Rolle's theorem.

$$(b) \text{ Given, } \frac{x}{2} + \frac{y}{3} = 1, \text{ find the maximum value of } xy \text{ and minimum value of } x^2 + y^2.$$

4. (a) Find the tangent and normal of the curve $y(x-2)(x-3)-x+7=0$ at point where it cuts the x-axis.

$$(b) \text{ Show that, } \sqrt{3} \sin x + 3 \cos x \text{ is a maximum for } x = \frac{\pi}{6}$$

5. (a) Integrate the following (any three):

$$(i) \int \frac{\sin 2x}{a \sin^2 x} dx$$

$$(ii) \int \frac{e^x}{e^{2x} + 2e^x + 5} dx$$

$$(iii) \int \sqrt{(x-\alpha)(x-\beta)} dx$$

$$(iv) \int \frac{dx}{x\sqrt{1+x^3}}$$

10

5

5

5

5

6. (a) Evaluate $\int_0^{\frac{\pi}{2}} \frac{dx}{5+3 \cos x}$

- (b) Show that,

$$\int_0^1 \frac{\log(1+x)}{1+x^2} dx = \frac{\pi}{8} \log 2$$

7. (a) If $I_n = \int_0^{\frac{\pi}{4}} \tan \theta d\theta$ then show that $I_n = \frac{1}{n-1} - I_{n-2}$. Hence, find the value of $\int_0^{\frac{\pi}{4}} \tan^6 x dx$.

- (b) Find the area of the segment of the parabola $y = (x-1)(4-x)$ cut off by the x-axis.

Department of Computer Science & Engineering

Begum Rokeya University, Rangpur

1st Year 2nd Semester Final Examination – 2012 (Session: 2011-12)

Course Code: CSE 1207

Course Title: Basic Statistics & Probability

Full Marks: 50

Time: 03:00 hrs

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

1. (a) Define Statistics. Distinguish between Descriptive Statistics and Inferential Statistics. Briefly describe the role of sampling in statistical investigations. 4
- (b) Define variable. What are the kinds of variable? Describe each with examples. 3
- (c) Explain the presentation of data. 3
2. (a) What do you mean by central tendency? Compare and contrast between the measures of central tendency. 5
- (b) If x_1 and x_2 are two variables, then show that $AM \geq GM \geq HM$. Also show the condition for which $AM = GM = HM$. 5
- 3 (a) What is dispersion? Explain absolute measures of dispersion. 5
- (b) Calculate mean deviation from mean and mean deviation from median from the following frequency distribution. 5
- | | | | | | | | | |
|-------|-----|------|-------|-------|-------|-------|-------|-------|
| Class | 1-5 | 6-10 | 11-15 | 16-20 | 21-25 | 26-30 | 31-35 | 36-40 |
| Fre. | 2 | 5 | 7 | 13 | 21 | 16 | 8 | 3 |
4. (a) What do you mean by probability? Prove that the value of probability lies between 0 and 1. 4
- (b) A bag contains 15 identical balls of which 5 are white and the rest are black. Two balls are drawn at random from the bag. What is the probability that both balls are white? 3
- (c) State the addition law of probability and Bayes theorem. 3
5. (a) Define probability density function and probability distribution function. Write some properties of probability distribution function. 3
- (b) A random variable x has the probability density function $f(x) = C(x)(2-x)$; $0 \leq x \leq 2$, calculate C and find $P(0 \leq x \leq 1)$. 3
- (c) If $f(x) = 1/50x$; $0 \leq x \leq 10$, then prove that $f(x)$ is pdf. 4
6. (a) What is mathematical expectation of random variable? Describe the additive law of mathematical expectation. 3
- (b) Find $E(x)$ and $E(x^2)$ from the following probability distribution. 4

No. of head	-1	0	1	2	3
Frequency	0.2	0.1	0.3	0.3	0.1

X

(c) if $P(x) = a + bx$, $x=0, 1, 2$ and $E(x) = 2$, then find the value of a.

7. (a) Define Binomial distribution. Write some properties of Binomial distribution. 3

(b) Derive the pdf of Binomial distribution and find the mean and variance. 3

(c) Seven coins are tossed at a time and the number head are noted. The experiment is repeated 128 times and the distribution is as follows: 4

No. of head	0	1	2	3	4	5	6	7
Frequency	7	6	19	35	30	23	7	1

Fit a Binomial distribution to the above data, where $p = q = 1/2$.