

## L2S1 Semester Final Questions

AIS-211 Accounting and Management

CCE-211 Data Communication

CIT-211 Data Structures and Algorithms

EEE-211 Electrical Technology

MAT-211 Mathematics 3

CIT-213 Software Engineering

Department of Accounting and Information Systems

Patuakhali Science and Technology University

B.Sc. Engg. in CSE Third Semester Final Examination 2015 (January-June)

Course code: AIS 211; Course Title: Accounting and Management

Time: 3 Hours

Credit Hour: 3.0

Full Marks: 70

[Answer any **FIVE** of the following questions. Figures in the right margin indicate full marks. Examiner will take account of the quality of language and of the way in which the answer is presented. Different parts if any, of the same question must be answered in one place in order of sequence.]

1. (a) The following are users of financial statements.

- |                                |  |
|--------------------------------|--|
| i. Customers'                  | ii. Securities and Exchange Commission |
| iii. National Board of Revenue | iv. Investors                          |
| v. Factory manager             | vi. Suppliers                          |
| vii. Labor unions              | viii. Human resource worker            |
| ix. Vice-president of Finance  |  |

*You are required to identify and explain the users as being either external users or internal users.*

5

(b) Selected transactions for T. Carter, an interior decorator, in her first month of business, are as follows.

Jan. 2: Invested Tk20,000 cash in business.

$$A = L + E$$

3: Paid Tk500 cash for advertising.

9: Purchased equipment for Tk7,000 cash.

11: Billed customers Tk2,300 for services performed.

16: Purchased supplies on account for Tk700.

20: Received Tk1,100 cash from customers billed on January 11.

23: Paid creditor Tk400 cash on balance owed.

28: Withdrew Tk1,200 cash for personal use by owner.

*You are required to show the effects of the above transactions on the accounting equation.*

9

2. Refer to data in question number 1(b), you are required to prepare;

(a) Journal entries for the month. *Date, Explanation, Debit, credit*

6

(b) Necessary ledger accounts and

6

(c) A trial balance on January 31. *S/L, Account titles, debit, credit*

2

3. The adjusted trial balance columns of the worksheet for Taj Company, owned by Gabby Taj, are as follows.

TAJ COMPANY

Worksheet

For the Year Ended December 31, 2012

<u>Account Titles</u>	<u>Adjusted Normal Balances</u>	
	Debit (Tk)	Credit (Tk)
Cash	5,300	
Accounts Receivable	10,800	
Supplies	1,500	

Prepaid Insurance	2,000
Equipment	27,000
Accumulated Depreciation—Equipment	5,600
Notes Payable	15,000
Accounts Payable	6,100
Salaries and Wages Payable	2,400
Interest Payable	600
Owner's Capital	13,000
Owner's Drawings	7,000
Service Revenue	61,000
Advertising Expense	8,400
Supplies Expense	4,000
Depreciation Expense	5,600
Insurance Expense	3,500
Salaries and Wages Expense	28,000
Interest Expense	600

You are required to prepare;

- (a) An income statement for year ended December 31, 2012 5
- (b) An owner's equity statement for year ended December 31, 2012 and 2
- (c) A balance sheet on December 31, 2012. 7
- ✓ 4. (a) Define management. 2
- (b) What do you understand by the term "Levels of Management"? Explain with various managerial skills that are required at each level. I, P, M, O, W, E, G, R, Growth 7
- (c) "There is no important area of human activity than management since its task is that of getting things done by people". Discuss. 5
5. (a) What do you mean by Contract? 3
- (b) "All agreements are not contracts, but all contracts are agreement". Discuss the statement explaining essential elements of a valid contract. 9
- (c) "A" offers to sell "B" his horse for Tk. 1000 and tells "B", "This offer will remain open one week." The following day "B" rejects the offer. Within the week "B" changes his mind and notifies "A" that he accepts the offer. Is there a contract? Give arguments. 2
6. (a) Define the term of acceptance. What are the essential of a valid acceptance? *continuity void within 3*
- (b) "A" proposes by a letter sent by a post, to sell his house to "B". "B" accepts the proposal by a letter sent by a post. When "A" revokes his proposal or "B" his acceptance. 2
- (c) Define consideration. Critically discuss the essentials elements of consideration. *present past* 9

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*Aspect*

**Patuakhali Science and Technology University**

**3<sup>rd</sup> Semester (L-2, S-1) Final Examination of B.Sc. Engg. in CSE January-June 2017**

**Course Code: AIS 211; Course Title: Accounting and Management**

**Time: 3 hours**

**Credit Hour: 3.0**

**Full Marks: 70**

*[Answer any FIVE of the following questions. Figures in the right margin indicate full marks. Examiner will take account of the quality of language and of the manner in which the answers are presented. Different parts, if any, of the same question must be answered in one place in order of given sequence.]*

1. a) What is an accounting information system? "An accounting information system applies only to a manual system." Do you agree? Explain with suitable example. 8.0
- b) What are common features of computerized accounting packages beyond recording transactions and preparing financial statements? 6.0
2. a) Threet's Repair Shop was started on May 1 by Erica Threet. A summary of May transactions is presented below.
  1. Invested Tk 10,000 cash to start the repair shop.
  2. Purchased equipment for Tk 5,000 cash.
  3. Paid Tk 400 cash for May office rent.
  4. Paid Tk 500 cash for supplies.
  5. Incurred Tk 250 of advertising costs in the Beacon News on account.
  6. Received Tk 6,100 in cash from customers for repair service.
  7. Withdrew Tk 1,000 cash for personal use.
  8. Paid part-time employee salaries Tk 2,000.
  9. Paid utility bills Tk 170.
  10. Provided repair service on account to customers Tk 750.
  11. Collected cash of Tk 120 for services billed in transaction (10).You are required to prepare a tabular analysis of the transactions in good form, using the following column headings: Cash, Accounts Receivable, Supplies, Equipment, Accounts Payable, Owner's Capital, Owner's Drawings, Revenues, and Expenses. 7.0  
b) Refer to data in question no. (a) above, prepare journal entries. 7.0
3. a) Refer to data in question no. 2(b) above, prepare necessary ledger accounts. 5.0  
b) Refer to data in question no. (a) above, prepare a trial balance. 2.0  
c) Refer to data in question no. (b) above, prepare financial statements. 7.0
4. a) What do you mean by management and manager? Discuss different kinds of managers 3.0 considering both level and area.  
b) Diagrammatically show the management in organization and management process. State the 3.0 skills of a good manager.  
c) Explain Henry Fayol's 14 principles of management and distinguish between: 8.0  
i) Unity of command and unity of direction ii) Centralization and decentralization.
5. a) Define leadership and leader. Classify leader according to power and authority. 3.0  
b) Write down different theories of leadership. 3.0  
c) Discuss any one theory from behavioral approach and another from situational approach. 8.0
6. a) What is planning? Write down the importance of planning. 3.0  
b) Write down the strategies that you can formulate at both business and corporate levels. 3.0  
c) Explain the Porter's generic strategy and BCG matrix with appropriate conclusion. 8.0

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3rd

2013

## Patuakhali Science and Technology University

B.Sc. Engg. (CSE) Level: 2 Semester: I Final Examination of Session 2011-12	
Course Code: CCE 211	Course Title: Data Communication and Engineering
Credit Hour: 03	Full Marks: 70 Duration: 03 Hours

[Figures in the right margin indicate full marks. Split answering of any question is not recommended. Write the full question number e.g. i(A) before the answer paragraph]

Answer any 5 of the following questions

Back

Question No.

- 1 A ✓ Describe the key elements of a simplified communications model with example. 7  
S-1, G-9
- 1 B What are the key features of a protocol? Compare the characteristics of LAN, MAN and WAN. 7  
S-2, 6
- 2 A How computers or processes can communicate over a network with respect to OSI model. Describe each layer with a suitable example. 7  
S-2, 38
- 2 B Has any implementation of OSI model? Make comparison between the OSI Model with the TCP/IP Model. 7  
Mid
- 3 A What are guided and unguided media? Define simplex, half-duplex and full-duplex transmission with example. 7  
CH-2, 12
- 3 B What are the most significant transmission impairments? Illustrate each of them with proper example. Mid 7  
Page XX
- 4 A Explain attenuation of typical guided media with necessary graph. 7  
S-4, 26
- 4 B Describe digital signal encoding format with figure. 7  
Page 98
- 5 A Describe the structure of each guided media commonly used for data transmission with figure. 7
- 5 B Illustrate ASK, FSK, PSK, QPSK showing transmitted signal for one bit. 7
- 6 A Define asynchronous and synchronous transmission. "For  $a > 1$ , the line is always underutilized and even for  $a < 1$  the line is inefficiently utilized in case of Stop-and-Wait Flow Control"—Justify the statement. 7
- 6 B How Sliding-Window Flow Control works? Explain with an example. 7

Patuakhali Science and Technology University

3<sup>rd</sup> Semester (L-2, S-1), Final Exam. of B. Sc. Engg. (CSE), January-June, 2015

Course Code: CCE-211 Course Title: Data Communication and Engineering

Credit Hour: 3.0 Full Marks: 70 Duration: 3 hours

[Figures in the right margin indicate full marks. Split answering of any question is not recommended]

Give the answers of any 5 questions from the given questions:

- |       |   |    |
|-------|---|----|
| Q. 1. | (a). How can a composite signal be decomposed into its individual frequencies? What are the differences between low pass and band-pass channel? | 6  |
|       | (b). What is Nyquist bit rate? Why it is used in digital transmission?  | 6  |
|       | (c). Consider a noiseless channel with a bandwidth of 3000 hz transmitting a signal with eight signal level. Calculate the maximum bit rate.    | 2  |
| 2.    | (a). For the bit stream of 00101101110011, show the Manchester, <u>bipolar</u> and MLT-3 encoding.  | 6  |
|       | (b). Write down the short notes on (i) 8B/6T block codes (ii) PCM (iii) PAM (iv) 2B1Q   | 8  |
| 3.    | (a). What are the limitations of NRZ encoding? How these limitations can be solved?   | 4  |
|       | (b). Why 4-PSK method is more efficient than 2-PSK method? Compute the bit rate for a 1000 baud 32-QAM signal.                                  | 4  |
|       | (c). Draw the constellation diagram of 8 PSK, 8-QAM, 16-QAM.  | 6  |
| 4.    | (a). How is CDMA superior to TDMA and FDMA?   | 3  |
|       | (b). Show the multiplexing and de-multiplexing steps in CDMA technique.   | 8  |
|       | (c). What are the properties of orthogonal sequences?   | 3  |
| 5.    | (a). How the receiver confirms the error on the word "world"?   | 3  |
|       | (b). Why two-dimensional parity check bit is used? What are the limitations of parity check bit?  | 4  |
|       | (c). How CRC generator works for error detections?  | 7  |
| 6.    | (a). What are the purposes of using of hamming code in data transmission?   | 4  |
|       | (b). Show the error detection and correction technique using hamming code when the data 1001101 has been corrupted to 1000101.                  | 10 |

$$\begin{array}{cccc} \textcircled{A} & +1 & -1 & +1 \\ \textcircled{B} & +1 & -1 & +1 \\ \textcircled{C} & & & \end{array} \quad \begin{array}{cccc} -3 & -1 & -3 & -1 \\ -1 & -1 & -3 & 1 \\ 3 & 1 & 3 & 1 \end{array}$$

# Patuakhali Science and Technology University

B.Sc. Engg. (CSE) Level-2, Semester-I, Final Examination Jan-Jun/15, Session: 2013-14

Course code: CIT-211

Course Title: Data Structures and Algorithm

Credit hours: 3.00

Full marks: 70

Duration: 3 hours

[Figures in the right margin indicate full marks.]

Answer any 7 of the following questions. Split answering is not recommended.

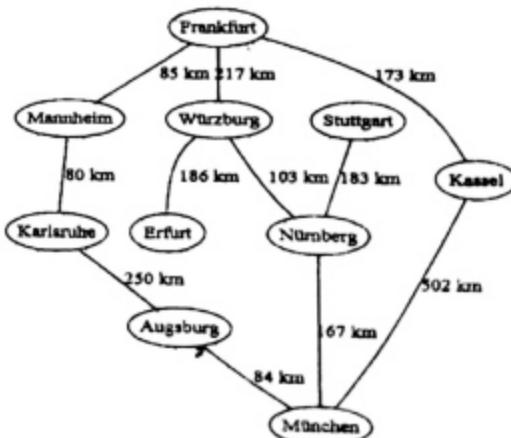
1. a. Demonstrate insertion and deletion of an item into an array. (Algorithm) 6  
b. If you have an array with length  $n$  and you want to insert a value at position  $p$ , how many times you have to move the data of the current array? Similarly, how many times you have to move the data of the array with length  $n$  if you want to delete the element at position  $p$ ? (Code) 4
2. a. What are the fundamental characteristics of arrays and linked lists? 5  
b. Discuss with example how you can insert an item in sorted order into a linked list. 5
3. a. Provide two examples of each of the applications of queues and stacks. 4  
b. What are the operations on Queues? Discuss with example in short. 6
4. a. When is binary search better than linear search and when is linear search better than binary search? Explain with example. 5  
b. Apply binary search on the following list to search 13. 5

1 2 5 8 9 10 13 15 17 ✓

5. a. Draw the graph for the given adjacency matrix. 4  
b. Apply BFS and DFS on the graph you get in the answer to the question no. 5.a. Start from node A and stop when you find node E. Show step-by-step demonstration of BFS and DFS. 6

0	5	3	0	0	0	6
5	0	0	6	0	7	0
3	0	0	0	8	6	0
0	6	0	0	0	0	7
0	8	0	0	0	3	0
0	7	6	0	3	0	0
6	0	7	0	0	0	0

6. a. What are the characteristics of a Binary Search Tree (BST)? 2  
b. Construct a BST with the following data. Show each step 5  
10 13 8 5 3 18 20 1 6 16 25  
c. How can you achieve sorted output from a Binary Search Tree? Explain with example. 3
7. a. Construct the adjacency matrix for the graph given. 2  
b. Apply Dijkstra's algorithm on the same graph of question 7.a. with Frankfurt being the start node. Show step-by-step demonstration of the algorithm. 8



8. Demonstrate how bubble sort works on the following data set. Show each iteration with sub-iterations. 10  
5 1 4 2 8

9. Show the generation of the Huffman tree using Huffman encoding algorithm on the following text and then encode the text. 10  
WAS IT A CAR OR A CAT I SAW? ?

**Patuakhali Science and Technology University**

B.Sc. Engg. (CSE) Level-2 Semester-I Final Examination-2017 (January-June)

Credit Hour : 3.00 Full Marks:70 Duration: 3 Hours

Course Code: CIT-211 Course Title : Data Structure and Algorithm

[Figure in the right margin indicates full marks. Split answering of any question is not recommended.]  
Answer any 5 of the following questions.

- a) What are the applications of Huffman Algorithm? Encode following input string using Huffman algorithm and compare the result with ASCII encoding. [2+5]

InputString: "ComputerScienceandEngineering"

- b) Consider the following graph G in Figure 1. Suppose the nodes X,Y,Z,W are stored in memory in an array DATA as follow: [1+5+1]

DATA: X,Y,Z,W

- i) Find the adjacency matrix A of the graph G. ii) Find the path matrix P of G using warshall algorithm. iii) Is G strongly connected?

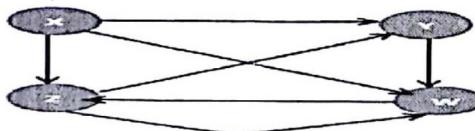


Figure 1

- 3 a) Suppose a weighted directed graph G is maintained in memory by a node array DATA and weight matrix W as follow: [1+6]

DATA: V1,V2,V3,V4

$$W = \begin{pmatrix} 0 & 0 & 3 & 0 \\ 5 & 0 & 1 & 7 \\ 2 & 0 & 0 & 4 \\ 0 & 6 & 8 & 0 \end{pmatrix}$$

Draw a picture of G and traverse G using Depth First Search algorithm with pseudocode.

Write the steps of algorithm that will traverse a binary tree in postorder traversal using stack. Discuss the algorithm using example. ✓ [3.5+3.5]

- 3 a) Translate each infix expression into its equivalent postfix expression and evaluate postfix expression of question iii using stack. [4+3]

~~(A-B)\*(D-E) ✓ A\*(B-D) ✓ E-F\*(G+H/K) iii) 10\*(7-3)-48/(1+5)+4 X 10, ✓~~

What are the properties of binary search tree? Build a max heap considering following list of numbers and write the procedure of sorting these numbers in descending order using heap sort. ✓ [1+2+4]

List of numbers: 44,30,50,22,60,55,77,55

- 4 a) Define recursion with example. Write a recursive solution with algorithm steps to the Towers of Hanoi problem for 3 disks. ✓ [2+5]

- b) Given an Integer K, write an algorithm which deletes the Kth element from linked list and also calculate the complexity of your proposed algorithm. ✓ [5+2]

- 5 a) What are the differences between stack and queue? Write the pseudocode of insert and delete in linear queue. State the limitation of linear queue. [2+4+1]

- b) Calculate the complexity of bubble sort algorithm. Sort following list of numbers using bubble sort algorithm. ✓ [2+5]

List of numbers: 32,51,27,85,66,23,13,57 ✓

- 6 a) "Adjacency matrix is better than adjacency list to represent graph in memory"-Justify the statement [3]

- b) Draw a BST using following list of numbers [3+4]

List of numbers: 60,25,15,50,33,44,75,66

State the rules of deletion of a node from BST and delete node 44, 75 and 25 from tree built using above list of numbers. X ✓

Write short note on i) 2-tree ii) path iii) space complexity iv) time complexity

[4]

# Faculty of Computer Science and Engineering Patuakhali Science and Technology University

Final Examination of B.Sc. Engineering in CSE Level: 2 Semester: 1 Session: 2015-16

Course Code	Course Title	January-June	Credit: 1.5
CIT 212	Data Structure and Algorithm Sessional	2017	Time: 03 Hr Marks: 70

You can solve question number 2 using any programming language.

 A Fill in the blanks of following questions. Answer may be more than one word.

1\*20=20

1. Linear array is a list of finite number of ..... Data elements.
2. The elements of array are referenced by an ..... number.
3. The elements of array are stored respectively in .... memory location.
4. .... refers to the operation of adding another element in a collection.
5. The time complexity of bubble sort is .....
6. The time complexity of binary search is .....
7. List must be ..... in case of binary search.
8. The syntax to declare a two dimensional array is .....
9. Linked list is a linear collection of data elements, called .....
10. The pointer of the last node contains a special value, called the .....
11. The reference of first node will hold by another node, called .....
12. The operation to visit each node of linked list is, called .....
13. An element is inserted or deleted only at ..... end of a stack.
14. Stack can be represented in memory using .....
15. ..... queue is better than linear queue.
16. Elements is deleted from ..... end of queue.
17. Two trees are said to be ..... if they have same structure.
18. If search item is greater than root in case of a binary search tree then proceed to ... of root.
19. If node has two children then you have to find successor.
20. A graph G consists of ..... things.

 B Write shortnotes on the following topics

2\*5= 10

- 1. Heap
- 2. Time complexity
- 3. Linkedlist
- 4. Warshall's algorithm
- 5. 2-Tree

 A Implement stack with function push, pop, empty, size and top.

10

2 B Delete Kth node from linked list.

15

Input: Value of K  
Output: Show Linked list elements after deletion

3 Vivavoce.

15

# Patuakhali Science and Technology University

<sup>rd</sup> Semester (L-2, S-1) Final Examination of B.Sc. Engg. (CSE)-2014 (Jan-June), Session: 2012-13  
 Course Code: EEE-211      Course Title: Electrical Technology  
 Credit Hour: 3.0      Full Marks: 70      Duration: 3 hours

[Figures in the right margin indicate full marks. Split answering of any question is not recommended]  
 [Use figures where necessary]

Answer any 5 of the following questions:

1. (a). What is the basic difference between generator and alternator? 1  
 (b). Derive the relationship between line and phase voltages and currents in a 3-phase, 4-wire system. 6  
 (c). Show that  $Z_{\Delta} = 3Z_Y$ , where the symbols having usual meanings. 3  
 (d). A 240-v, 3-phase voltage is applied to a balanced delta connected 3-phase load of phase impedance  $(8+j6)\Omega$ .  
 a). Find the phasor current in each line. 4  
 b). What is the power consumed in three phase. 5  
 c). What is the phasor sum of three line currents? Why does it have this value?
  
2. (a) What are the functions of Brushes in D.C. generator? Write down the significance of brush pressure in D.C. generator. 3  
 (b). Show that  $T_a \propto I_a^2$ . where the symbols having usual meanings. 5  
 (c). "The mechanical power developed by the motor is maximum when back E.M.F. is equal to half the applied voltage". Prove the statement with usual meaningful symbols.  
 Is it possible to achieve maximum power in D.C. motor? Explain your answer. 4  
 (d). Show that  $\eta_c = \eta_m \times \eta_e$  for D.C. generator where the symbols having usual meanings. 2
  
3. (a). What is back E.M.F.? Write down the significance of back E.M.F. for D.C. Motor. 4  
 (b). "The efficiency of a D.C. generator will be maximum when the load current is such that Variable loss is equal to the Constant loss". Explain this statement with usual meaningful symbols. 4  
 (c). Define thyristor. Explain the switching characteristics of a thyristor. 4  
 (d). What do you mean by transducers? What are the functions of transducers? 2
  
4. (a). Define electrical transducer. Write down the parameters of the electrical transducers. 4  
 (b). What are Stray losses? Describe stray losses in brief. 4  
 (c). Describe the factors for selecting a transducer. 4  
 (d). What are the applications of oscilloscope? 2
  
5. (a). Define and categories logic analyzer. Write down the key characteristics of logic analyzer. 5  
 (b). What is photovoltaic cell? Describe the working principle of photovoltaic cell. 5  
 (c). Differentiate between photoemissive, photoconductive and photovoltaic transducers. 4
  
6. (a). Analyze the electrical characteristics of three types of D.C. motor in terms of characteristic curves. 3  
 Or  
 Compare three types of D.C. motor in terms of characteristic curves.  
 (b). Define and classify scan technique. Write down the advantages and disadvantages of different types of scan techniques. 5  
 (c). What is LVDT? Describe the working principle of LVDT. Where it is used? 4  
 (d). Write down the applications of synchronous motor. 2

[Figures in the right margin indicate full marks. Split answering of any question is not recommended]  
*Answer any 5 of the following questions*

- (1) a. Define electric generator. Describe construction and working of a simple loop generator. 05  
 b. Sketch and identify different parts of a practical generator. 03  
 c. In a long shunt compound generator, the terminal voltage is 230V when generator delivers 150A. Determine (i) induced emf (ii) total power generated and (iii) distribution of this power. Given that shunt field, series field, divisor and armature resistance are  $92\Omega$ ,  $0.015\Omega$ ,  $0.03\Omega$  and  $0.3\Omega$  respectively. 03  
 d. A 10kW, 250V, d.c, 6 pole shunt generator runs at 1000 rpm when delivering full load. The armature has 534 lap connected conductors. Full load Cu loss is 0.64 kW. The total brush drop is 1 volt. Determine the flux per pole. Neglect shunt current. 03
- [2] a. Explain the commutation phenomena of a D.C generator. 04  
 b. Discuss the advantages of parallel operation of shunt generators. 03  
 c. Two shunt generators operating in parallel deliver a load current of 250A. One of the generators is rated 50kW and the other 100kW. The voltage rating of both machines is 500V and have regulations of 6 percent and 4 percent. Assuming linear characteristics, determine (a) the current delivered by each machine (b) terminal voltage. 03  
 d. Define electric motor. Show the comparison between generator and motor action. What are the significance of back emf? 04
- [3] a. Drive the emf equation of a transformer. 04  
 b. Draw the equivalent circuit of a transformer. 02  
 c. The parameters of a 2300/230 V, 50Hz transformer are given below: 05  
 $R_1=0.286 \Omega$        $R_2'=0.319\Omega$        $R_0=150 \Omega$   
 $X_1=0.73 \Omega$        $X_2'=0.73 \Omega$        $X_0=1050 \Omega$
- The secondary load impedance  $Z_L=0.387+j0.29$ . Solve the exact equivalent circuit with normal voltage across the primary to find input power factor, power input, power output, primary Cu loss, secondary Cu loss, efficiency and regulation.
- d. Define alternator. What are the advantages of stationary armature? 03
- (4) a. Find the all-day efficiency of 500-kVA distribution transformer whose copper loss and iron loss at full load are 4.5 kW and 3.5kW respectively. During a day of 24 hours, it is loaded as under: 04

No. of hours	Loading in KW	Power factor
6	450	0.9
5	300	0.8
5	250	0.85
4	100	0.75
4	0	

- b. What are the main parameters of a transformer? Describe transformer tests to find out those parameters. 05  
 c. Show the advantages and disadvantages of induction motor. 03  
 d. Draw different three-phase transformer connections. 02

- Ques. No. 1. Answer any four questions. Each question carries 10 marks.
- [5] a. Define stepper motor. Classify stepper motor. 02  
b. Describe construction and modes of operation of variable reluctance stepper motor. 06  
c. What is servomotor? What are the features of application of servomotor? Explain DC servomotor. 04  
d. Define speed regulation of a motor. 02
- [6] a. Describe construction and working of permanent magnet stepping motor. 06  
b. Explain construction, working, performance, speed control, advantages, disadvantages and applications of permanent magnet dc motor. 02  
c. Define synchros. Write down the types of synchros. 02  
d. Make a comparison between VR stepper motor and SR motor. 02

**Patuakhali Science and Technology University**

B.Sc. Engg. (CSE) Level-2 Semester-1 Final Examination-2017 (January- June)

Course Code: EEE 211 Course Title: Electrical Technology

Credit Hour: 3.0 Full Marks: 70 Duration: 3 Hours

[Figures in the right margin indicate full marks. Split answering of any question is not recommended.]

***Answer any 5 of the following questions***

1. (a). Show the significance of back e.m.f. in motor action. 3  
 (b). Justify the condition for maximum power of a motor with electric theories. 4  
 (c). Compare the operating principle of generator and motor in applications. 3  
 (d). A 20 kW, 250 V d.c. shunt generator has armature and field resistance of  $0.04 \Omega$  and  $200 \Omega$  respectively. Determine the total armature power developed when working as a motor taking 25 kW input. 4
  
2. (a). Show the comparison between series motor and shunt motor based on the characteristics and applications. 4  
 (b). Show the characteristics curves of  $T_o/I_a$ ,  $N/I_a$  for series motor with proper justifications. 4  
 (c). Prove that the relationship as  $N \propto \frac{E_b}{\phi}$ . 3  
 (d). A d.c. motor takes an armature current of 120 A at 460 V. The armature circuit resistance is  $0.1 \Omega$ . The machine has 4-poles and the armature is lap connected with 846 conductors. The flux per pole is 0.05 Wb. Calculate the speed and armature torque for the motor. 3
  
3. (a). How speed can be controlled of a shunt motor? 3  
 (b). Define electric generator. Describe construction and working of a simple loop generator. 4  
 (c). Define simplex lap winding and wave winding. 2  
 (d). Describe the reasons of parallel operation of shunt generators. 3  
 (e). What are the differences between dc generator and alternator? 2
  
4. (a). Explain different transformer tests for finding parameters. 5  
 (b). Derive the E.M.F. equation of a transformer. 3  
 (c). Draw different three-phase transformer connections. 3  
 (d). A 50 kVA, 2200/110-V, 50 Hz transformer has a high voltage winding resistance of  $0.1 \Omega$  and a leakage reactance of  $0.22 \Omega$ . The low voltage winding resistance is  $0.035 \Omega$  and the leakage reactance is  $0.012 \Omega$ . Find the equivalent winding resistance, reactance and impedance referred to the (i) high voltage side and (ii) the low voltage side. 3
  
5. (a). A 800-kVA, 3 phase, 50 Hz transformer has a voltage ratio of 33/11 kV and is delta/star connected. The resistances per phase are: high voltage  $35 \Omega$ , low voltage  $0.876 \Omega$  and the iron loss is 3000 W. Calculate the value of efficiency at full load and one-half of full load respectively (i) at unity p.f and (ii) 0.7 p.f. 4  
 (b). Sketch the detailed construction of alternator. Write down the advantages of stationary armature. 4  
 (c). Explain construction, working, performance, speed control, advantages, disadvantages and applications of permanent magnet dc motor. 6
  
6. (a). Describe construction and modes of operation of variable reluctance stepper motor. 4  
 (b). What is servomotor? What are the features of application of servomotor? Explain AC servomotor. 4  
 (c). A shunt generator delivers 195 A at terminal voltage of 250 V. The armature resistance and shunt field resistance are  $0.02 \Omega$  and  $50 \Omega$  respectively. The iron and friction losses equal 950 W. Find: (a) EMF generated (b) Cu losses (c) Output of the prime mover (d) commercial, mechanical and electrical efficiencies. 4  
 (d). Draw the equivalent circuit of a transformer. 2

**Patuakhali Science and Technology University**

3<sup>rd</sup> semester (L-2, S-I) Final Examination of B.Sc. in Engg. (CSE), Jan-June-2015

Session: 2013-14, Course Code: MAT-211, Course Title: Mathematics-III

Marks-70, Time: 3 hours, Credit: 3.00

[Figure in the right margin indicates full marks. Split answering of any question is not recommended.]

*Answer any 5 of the following questions.*

1. a) Define Ordinary differential equation, Partial differential equation and Homogeneous differential equation. 5
- b) Solve the following differential equation 9
- (i)  $(x^2 + y^2)dx - 2xydy = 0$
- (ii)  $(x + 2y - 3)dx - (2x + y - 3)dy = 0$
- (iii)  $(x^2 + y^2)dx + 2xydy = 0$
2. a) State the necessary and sufficient condition for a differential equation  $Mdx + Ndy = 0$  to be exact. 6
- b) Solve the differential equation 8
- (i)  $(x^2 - 2xy + 3y^2)dx + (4y^3 + 6xy - x^2)dy = 0$
- (ii)  $(x - 2e^y)dy + (y + x\sin x)dx = 0$
3. a) Define Integrating factor. 2
- b) Solve the linear differential equation:  $\frac{dy}{dx} + Py = Q$ , where  $P$  and  $Q$  are the function of  $x$  or constant 4
- c) Solve the following 8
- (i)  $\frac{dy}{dx} + \frac{2}{x}y = \frac{y^3}{x^3}$
- (ii)  $(D^2 - 4D + 4)y = x^2 + x + 1$
4. a) What do you understand by statistics? Discuss with example its importance. 4
- b) What do you mean by frequency distribution? Distinguish between variable and attribute. 6
- Marks obtained by 50 students of CSE 3<sup>rd</sup> semester in Mathematics are given below:
- 46, 38, 26, 51, 32, 41, 56, 33, 49, 10, 68, 34, 24, 35, 39, 50, 15, 40, 37, 21, 38, 43, 31, 29, 19, 44, 32, 55, 11, 34, 40, 36, 36, 39, 27, 44, 48, 19, 15, 36, 45, 48, 38, 19, 52, 22, 33, 39, 49, 45
- Present the data in the form of a frequency table using the class interval of 10 marks.
- c) What are the different methods of data collection? 4

- (5) a) What is central tendency? What are the usual measures of central tendency?  
b) Find out the mean, median and mode from the following data:

80-89	1
70-79	1
60-69	3
50-59	10
40-49	28
30-39	20
20-29	21
10-19	16

- c) What are the various measures of dispersion? Find the standard deviation of the following distribution

5-10	5
10-15	12
15-20	19
20-25	21
25-30	18
30-35	15
35-40	7
40-45	5

- (6) a) Explain the idea of correlation and regression. Fit the regression line of Y on X to the following data:

X: 10	12	15	22	24	28	32
Y: 207	222	218	228	230	24	235

- b) Discuss the different techniques of sampling. What is pilot survey?

- c) What do you understand by the term "test of significance"? What are the different uses of "t" test?

6

6

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4

**Patuakhali Science and Technology University**

**3<sup>rd</sup> semester (L-2, S-I) Final Examination of B.Sc. in Engg. (CSE), Jan-June-2017**

**Session: 2015-16, Course Code: MAT-211, Course Title: Mathematics-III**

**Marks-70, Time: 3 hours, Credit: 3.00**

[Figure in the right margin indicates full marks. Split answering of any question is not recommended]

**Answer any 5 of the following questions.**

1. a) State the order of each differential equation and determine whether the differential equation under consideration is linear or nonlinear 6

(i)  $\frac{d^4y}{dx^4} + 3\left(\frac{d^2y}{dx^2}\right)^5 + 5y = 0$     (ii)  $\frac{d^2y}{dx^2} + x \sin y = 0$     (iii)  $\frac{d^3y}{dx^3} + \frac{dy}{dx} + y \sin x = 0$

- b) Form the differential equation of the following function: 4

$Ax^2 + By^2 = 1$

- c) Solve the differential equation  $\sin^{-1}\left(\frac{dy}{dx}\right) = x + y$  4

2. a) Define homogeneous differential equation with example 2

b) Solve the differential equation  $\left(x \sin \frac{y}{x} - y \cos \frac{y}{x}\right)dx + x \cos \frac{y}{x} dy = 0$  5

- c) Explain the integrating factor of a differential equation. 2

d) Solve the differential equation  $y \log y dx + (x - \log y) dy = 0$  5

3. a) Write down the form of linear differential equation and Bernoulli's equation 2

b) Solve the differential equation  $\frac{dy}{dx} + \frac{1}{x} \sin 2y = x^3 \cos^2 y$  5

- c) Give the definition of auxiliary equation of a differential equation 2

- d) Solve the differential equation  $(D^2 - 2D + 1)y = x \sin x$  5

4. a) Discuss about statistics. Write down the functions of statistics 4

- b) Marks obtained by 3<sup>rd</sup> semester CSE students in Mathematics out of 70 are given below: 5

Marks	No. of students
20-25	05
25-30	10
30-35	15
35-40	20
40-45	08
45-50	04
50-55	02

Present the data by Histogram and frequency curve.

- c) What are the usual measures of central tendency? 2

- d) For two non-zero positive observations, prove that (i)  $A > G > H$  (ii)  $AH = G^2$  where  
A=Arithmetic mean, H=Harmonic mean, G=geometric mean 4

5. a) Write down the various methods of absolute measures of dispersion 3

- b) Prove that the standard deviation is independent of change of origin but not of scale 5

- c) Find out the coefficient of variation from the following frequency distribution 6

Weights	No. of tomato
50-60	5
60-70	9
70-80	13
80-90	20
90-100	19
100-110	9
110-120	5

6. a) Explain the terms skewness and kurtosis. 2

- b) A card is randomly drawn from a well shuffled pack. What is the probability that the card will be either an Ace or the Queen of diamond? 3

- c) Write down some properties of correlation coefficient 3

- d) Per week weight(in pounds) of a calf from its birth is given below: 6

Age in week (x)	1	2	3	4	5	6	7	8	9	10
Weight (g)	52.5	58.7	65.0	70.2	75.4	81.1	87.2	95.5	102.2	108.0

Estimate the least square regression of weight on age and also estimate the weight when the age in 9.5 weeks.

**Patuakhali Science and Technology University**

B. Sc. Engg. (CSE) Level-2, Semester I Final Examination-2013 (January-June), Session -2011-2012

Course Code: CIT 213, Course Title: Software engineering

Credit Hour: 03

Full Marks 70

Duration: 3 Hours

[Figure in the right margin indicates full marks. Split answering of any questions is not recommended.]

Answer any 5 of the following questions.

- 1.** a) Define Software Engineering. Distinguish between Computer Science and System Engineering. 6  
 b) In the 21<sup>st</sup> century, which kind of key challenges are facing in the Software Engineering field? 3  
 c) What are the five generic process frame work activities? 5
- 2.** a) What is software process model? 3  
 b) Explain how both the waterfall model of the software process and the prototyping model can be accommodated in the spiral process model. 6  
 c) What does a system engineering model accomplish? 5
- 3.** a) Briefly describe requirement of engineering process that is accomplished through the execution of six distinct functions. 12  
 b) Write short note on object aggregation of software engineering. 2
- 4.** a) Illustrate on Quality Function Development (QFD). 3  
 b) What are the difference between generic software product development and customer software development? 3  
 c) Draw a sequence diagram (partial) for safe home security function and illustrate it. 8
- 5.** a) What do you mean by design classes? 3  
 b) Briefly write down a "well formed" "design class." 8  
 c) Describe the difference between verification and validation in respect of Software Engineering. 3
- 6.** a) What is the overall strategy for software testing? 3  
 b) Draw a figure of testing strategy. 2  
 c) What are the step for top-down integration, bottom-up integration and regression testing? 6  
 d) How do you complete the black-box and white-box testing? 3

**Patuakhali Science and Technology University**

**B. Sc. Engg. (CSE) Level-2, Semester-I Final Examination-2014 (January-June), Session 2012-2013**

**Course Code: CIT 213, Course Title: Software Engineering**

**Credit Hour: 03**

**Full Marks: 70**

**Duration: 3 Hours**

[Figure in the right margin indicates full marks. Split answering of any questions is not recommended.]

**Answer any 5 of the following questions.**

1. a) Define software Engineering. Distinguish between Computer Science and System Engineering. 6  
b) Which kind of key challenges are being faced in the software Engineering field presently? 3  
q c) Explain why system testing costs are particularly high for generic software products which are sold to a very wide market. 5
2. description a) What are the differences between a software process model and a software process? 4  
b) Explain how both the waterfall model of the software process and the prototyping model can be accommodated in the spiral process model. 6  
c) Design a process model for running system tests and recording their results. 4
3. a) What do you mean by design Classes? 3  
b) Briefly write down a "well formed" design class. 8  
q c) Describe the difference between verification and validation in respect of software Engineering. 3
4. a) What is the overall strategy for software testing? 2  
b) Draw a figure of testing strategy. 2  
c) What are the steps for top-down integration, bottom-up integration and regression testing? 6  
d) Explain why it may be necessary to design the system architecture before the specifications are written. 4
5. a) Briefly describe requirement of engineering process that is accomplished through the execution of six distinct functions. 12  
b) Write short note on object aggregation of software engineering. 2
6. a) Illustrate on Quality Function Development (QFD). 3  
b) Briefly explain generic software product development and customer software development. 4  
c) Draw a sequence diagram (partial) for safe home security function and illustrate it. 7

Patuakhali Science and Technology University  
B.Sc. Engg. (CSE) 3<sup>rd</sup> Semester (L-2, S- I) Final Examination  
January-June- 2015, Session-2013-2014  
Course Code: CIT 213 Course Title: Software Engineering  
Credit Hour: 03 Full Marks: 70 Duration: 03 Hours

[Figures in the right margin indicate full marks. Split answering of any question is not recommended. Write the full question number e.g. 1(A) before the answer paragraph]

*Answer any 5 of the following questions:*

- 1 A Write short note on software engineering, computer science and system engineering. 6
- 1 B What are the attributes of good software? Write down the key challenges facing by software engineering in 21 century? 8
- 2 A Describe five generic process framework activities. 5
- 2 B Explain with figure the mentioned process model Incremental Model, RAD Model, Spiral Model. 9
- 3 A What does a system engineering model accomplish? 6
- 3 B Briefly describe the function of Business Process Engineering (BPE) and Product Engineering. 8
- 4 A What is the overall strategy for software testing? Draw a figure of testing strategy. 4
- 4 B Explain why it may be necessary to design the system architecture before the specifications are written. 4
- 4 C What are the steps for top-down integration, bottom -up integration and regression testing? 6
- 5 A What do you mean by design classes? 3
- 5 B Briefly write down a "well formed" design class 8
- 5 C Describe the difference between verification and validation in respect of software engineering. 3
- 6 A What are the seven distinct functions for requirement engineering process in software engineering? Explain briefly. 14

Patuakhali Scienceand Technology University

Final Examination ofB.Sc. Engg (CSE) Level-2, Semester-1, Jan-June-2017

Course Code: CIT-213 Course Title: Software Engineering

Session :2015-2016 Credit Hour: 3.00 Full Marks: 70 Duration: 3.00 Hours

[Figure in the right margin indicates fullmarks. Split answering of any question isnot recommended.]

*Answer any 7 of the following questions.*

- ✓ 1. a) What is software re-engineering?Findout thereasons for the Failure of Water Fall Model. 2  
b) Define Software Evolution Laws. 3  
c) Explain the different phasesinvolvedin waterfall life cycle. 3  
d) What is feasibility study? Show the contents we should contain in the feasibility report. 2
- ✓ 2. a) What are the varioussteps underrisk analysis? 3  
b) Explain the commonrisk tools andtechniques. 3  
c) Compare basic objects and aggregate objects used software configuration. 2  
d) Draw a diagram forpurewaterfall life cycle. 2
- ✓ 3. a) Briefly describe the characteristics of good software. 2  
b) Write the distinction between SCM and Software Support. 2  
c) What are the purposes of Data Flow diagrams and Entity-Relationship diagrams?Give an example of each. 3  
d) How do we define Software Quality? Define Software Reliability. 3
- ✓ 4. a) How do we compute the "Expected Value" for Software Size? 2  
b) What is software reuse? Explain various aspects of software reuse. 3  
c) Define the terms: i. Agility ii. Agile Team 2  
d) What arethe challenges in software? Write about software change strategies. 3
- ✓ 5. a) Discuss the different types of CASE tools available in Software Engineering. 3  
b) Explain all the phases involved in the implementation phase. 3  
c) Compare between the"Known Risks" and "Predictable Risks"? 2  
d) How many types of software maintenance? Why is it necessary? 2
6. a) List the process activitiesofsoftware configuration management. 3  
b) What is user acceptance testing? Explain different testing's in user acceptance testing. Why is it necessary? 3  
c) How to compute the cyclomatic complexity? What are the common approaches in debugging? 2  
d) Define White Box Testing. Explain in detail about Black box testing. Or  
A project PP has 100 nos. Regression test cases, 80 nos. test cases executed during regression testing.Find the percentage ofttest casesexecuted. 2
- ✓ 7. a) Write down the importance of CRC Modeling. 2  
b) Listand explain different types of testing done during the testing phase Unit. 3  
c) Showthe steps involved in the prototyping. 3  
d) For a certain project ABC, total defects attributed to all phases are 55 and total size of the projectis 180FP. Find the defect injection rate? 2
8. a) Define steps in Behavioral Modeling. 2  
b) What arethe basic design principles of Class-Based Components? 3  
c) Discuss about class and object. Draw the diagrams and representation of class and object. 3  
d) What is generalization?Give an example of generalization. Or  
Define the task regions in the Spiral model. 2