AFF–808

Sub. Code

4BIT1C1

B.Sc. DEGREE EXAMINATION, NOVEMBER 2015

First Semester

Information Technology

PRINCIPLES OF INFORMATION TECHNOLOGY AND OS

(CBCS – 2014 onwards)

Time : 3 Hours   Maximum : 75 Marks

Part A   (10 × 2 = 20)

Answer **all** questions.

1.   Define the term "Database".

2.   What is the purpose of compression and decompression?

3.   What do you mean by software?

4.   Write down the features of database software.

5.   Differentiate between analog and digital signals.

6.   What is an intranet?

7.   What are the benefits of virtual machine?

8.   What are the advantages of multiprocessor system?

9.   Define: Process.

10. List out any four operations on processes.

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) What is an information technology? Describe the ethics of information technology.

Or

(b) Compare File management system and Database management system.

12. (a) What is an internet? Explain.

Or

(b) Write down the features of spreadsheet.

13. (a) What is EDI? Explain.

Or

(b) Explain about the local area networks.

14. (a) Explain the layered approach of the operating system structure.

Or

(b) What are the services provided by an operating system? Explain.

15. (a) What is thread? Write down the benefits of threads.

Or

(b) What are the types of schedulers?

Part C (3 × 10 = 30)

Answer any **three** questions.

16. Explain the operation of any two secondary storage devices.

17. What is word processing? Explain its features.

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18. Describe the practical uses of communication and connectivity.

19. Compare Batch system, Time sharing, real time and distributed systems.

20. Explain any two process scheduling algorithms.

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U.G. DEGREE EXAMINATION, NOVEMBER 2015

Information Technology

Allied — DISCRETE MATHEMATICS

(CBCS – 2014 onwards)

Time : 3 Hours　　　　　　　　　　Maximum : 75 Marks

Part A　　　　　　　$(10 \times 2 = 20)$

Answer **all** questions.

1. Write the following statement in symbolic form. "If I am not in a mood, then I will go to a movie".

2. Write down the rules for well-formed formula.

3. Define: Open statement.

4. What is a free and bound variable?

5. Draw a complete graph with five vertices.

6. Define:

   (a) Connected graph

   (b) Component of a graph.

7. Draw all trees with four vertices.

8. What is a cutest?

9. Give one example of a relation R on $A - \{1, 2, 3, 4\}$ which is symmetric, transitive but not reflexive.

10. In a Boolern a algebra, show that $a \vee (a' \wedge b) = a \vee b$.

Part B $(5 \times 5 = 25)$

Answer **all** questions.

11. (a) Construct the truth table of the formula.

$$\left(\rceil P \vee Q\right) \wedge \left(\rceil Q \vee P\right).$$

Or

(b) Verify whether $(P \vee Q) \to P$ is a tautology.

12. (a) Obtain   a   disjunctive   normal   form   of
$$P \to \left((P \to Q) \wedge \rceil (\rceil Q \vee \rceil P)\right).$$

Or

(b) Show that $R \to S$ can be derived from the premises
$P \to (Q \to S),\ \rceil R \vee P$ and Q.

13. (a) Prove that, in any graph, the number of vertices of odd degree is even.
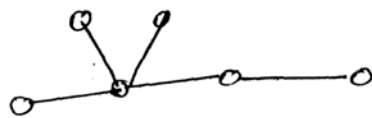
Or

(b) Define Tournament graph and give an example of tournament with 6 vertices.

14. (a) Prove that a tree with n vertices has n-1 edges.

Or

(b) Find the centers of the following tree.

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15. (a) What is an equivalence relation? Give an example.

Or

(b) Show that every distributive lattice is modular.

Part C (3 × 10 = 30)

Answer any **three** questions.

16. What are connectives? Construct the truth tables.

17. Obtain the principle conjunctive normal form of the formula. $\left(\neg P \to R\right) \wedge (Q \leftrightarrow P)$.

18. Prove that the simple graph with n vertices and K components Q_n have atmost. $(n-k)(n-k+1)/2$ edges.

19. Write a prim's algorithm to construct a minimum – weight spanning tree.

20. If $D(n)$ denotes the lattice of all positive divisors of the integer n, draw the Hasse diagrams of D(10), D(15), D(32) and D(45).

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		4BIT2C1

B.Sc. DEGREE EXAMINATION, NOVEMBER 2015

Second Semester

Information Technology

PROGRAMMING IN C AND DATA STRUCTURES

(CBCS – 2014 onwards)

Time : 3 Hours   Maximum : 75 Marks

Part A   (10 × 2 = 20)

Answer **all** questions.

1. What is an identifier in C? Give example.

2. What is the purpose of automatic variable?

3. Define array and give example.

4. What is a pointer in C?

5. How can you define a structure in C?

6. List out the importance of command line parameters.

7. Define stack.

8. What is a Queue?

9. What is a binary tree?

10. List out any two applications of tree.

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Discuss about constants and variables in C.

Or

(b) Describe the decision making with IF statement.

12. (a) How can you declare and initialize an array in C? Explain with example.

Or

(b) Explain how the variable is declared initialized and accessed through pointers.

13. (a) Discuss about self referential structures with example.

Or

(b) How will you create a data file in C? Explain with example.

14. (a) Discuss about the push and POP operations in stack.

Or

(b) Write a short note on priority queue.

15. (a) How can you implement tree – represented lists in C? Explain.

Or

(b) Write about constructing and evaluating an expression tree.

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Part C (3 × 10 = 30)

Answer any **three** questions.

16. Explain in detail about various data types in C.

17. Write a C program to multiply the given two matrices using array.

18. How will you pass structures to functions? Explain with suitable example.

19. Explain in detail about the operations of infix, postfix and prefix with example.

20. Explain in detail about binary tree representations.

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AFF–811

U.G. DEGREE EXAMINATION, NOVEMBER 2015

Information Technology

Allied — OPERATION RESEARCH

(CBCS – 2014 onwards)

Time : 3 Hours   Maximum : 75 Marks

Part A   (10 × 2 = 20)

Answer **all** questions.

1.   What is OR?

2.   Write about the scope of OR.

3.   What is a surplus variable? Give example.

4.   Define artificial variable.

5.   What is the principle of duality?

6.   List out any two methods to solve IPP.

7.   What is an assignment problem?

8.   Write mathematical formulation of assignment problem.

9.   What is a transportation problem?

10.   List out various methods to find IBFS for the given TP.

Part B $(5 \times 5 = 25)$

Answer **all** questions.

11. (a) Explain about tools, techniques and methods of OR.

Or

(b) Use Simplex method to solve the LPP.

Maximize $Z = x_1 + x_2$

Subject to $2x_1 + x_2 \leq 4$

$x_1 + 7x_2 \leq 7$

and $x_1, x_2 \geq 0$

12. (a) Write about the features of O.R.

Or

(b) Solve the following LPP graphically.

Maximize $Z = -x_1 + 2x_2$

Subject to $-x_1 + 3x_2 \leq 10$

$x_1 + x_2 \leq 6$

$x_1 - x_2 \leq 2$

and $x_1, x_2 \geq 0$

13. (a) List out and explain the steps involved in primal to dual conversion of LPP.

Or

(b) Obtain the dual for the following primal.

Maximize $Z = 3x_1 - 2x_2 + 4x_3$

$3x_1 + 5x_2 + 4x_3 \geq 7$

$6x_1 + x_2 + 3x_3 \geq 4$

Subject to $7x_1 - 2x_2 - x_3 \leq 10$

$x_1 - 2x_2 + 5x_3 \geq 3$

and $x_1, x_2, x_3 \geq 0$

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14. (a) List out various steps involved in Hungarian assignment model.

Or

(b) Solve the following assignment problem

Plant

	1	2	3	4
Product A	50	68	49	62
B	60	70	51	74
C	55	67	53	70
D	58	65	54	68

15. (a) Write down the steps involved VAM.

Or

(b) Find IBFS for the following TP using NWC method.

Destination

		D1	D2	D3	D4	Supply
	S1	8	6	4	3	25
Source	S2	10	12	14	17	30
	S3	9	8	7	6	45
	S4	13	15	14	18	70
Demand		30	20	50	40	

Part C $(3 \times 10 = 30)$

Answer any **three** questions.

16. List out and explain about various phases of OR.

17. Use Big.M method to solve the following LPP.

Minimize $Z = 600x_1 + 500x_2$

$$2x_1 + x_2 \geq 80$$

Subject to $x_1 + 2x_2 \geq 60$

and $x_1, x_2 \geq 0$

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18. Solve the following L.P.P. by Gomory's cutting plane method.

Maximize $Z = 2x_1 + 3x_2$

Subject to $x_1 + 3x_2 \leq 9$

$\qquad 3x_1 + x_2 \leq 7$

$\qquad x_1 - x_2 \leq 1$

and $x_1, x_2 \geq 0$ and are integers.

19. Solve the following assignment problem.

	P	Q	R	S	T
A	85	75	65	125	75
B	90	78	66	132	78
C	75	66	57	114	69
D	80	72	60	120	72
E	76	64	56	112	68

20. Find the optimum solution for the following T.P.

Destination

		D1	D2	D3	D4	Supply
	S1	19	30	50	10	7
Source	S2	70	30	40	60	9
	S3	40	8	70	20	18
Demand		5	8	7	14	

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Sub. Code
4BIT3C1

B.Sc. DEGREE EXAMINATION, NOVEMBER 2015

Third Semester

Information Technology

PROGRAMMING IN C++ AND ALGORITHMS

(CBCS – 2014 onwards)

Time : 3 Hours   Maximum : 75 Marks

Part A   (10 × 2 = 20)

Answer **all** the questions.

All questions carry equal marks.

1.   Define class.

2.   How arrays are used in C++?

3.   What is meant by constructor?

4.   How to initialize the objects in constructor?

5.   Define operator overloading.

6.   What is meant by virtual function?

7.   Give the importance of sorting.

8.   Name any two search.

9.   What is meant by coin changing?

10. Give an example for Fibonacci number sequence.

Part B (5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

All questions carry equal marks.

11. (a) How to make an outside function Inline?

Or

(b) Explain the usage of friendly function.

12. (a) How to have multiple constructors in a class?

Or

(b) Discuss the concept of copy constructor.

13. (a) How to overload unary operators?

Or

(b) Explain the concept of single inheritance.

14. (a) Give the importance of Back tracking.

Or

(b) Describe the algorithm for Insertion sort.

15. (a) Describe the Prim's algorithm.

Or

(b) Write an algorithm for multiplying two matrices.

Part C (3 × 10 = 30)

Answer any **three** questions.

All questions carry equal marks.

16. Explain the execution of switch statement in C++. Discuss with examples.

17. Discuss the following :

(a) Parameterized constructor

(b) Dynamic constructor.

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18. Explain the following with examples :

    (a)   Multilevel inheritance

    (b)   Multiple inheritance.

19. How depth-first search differs from breadth-first search? Explain with examples.

20. Describe the Dijkstra's algorithm with examples.

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3   **AFF–812**

AFF–813		Sub. Code
		4BITSA3

U.G. DEGREE EXAMINATION, NOVEMBER 2015

Information Technology

ACCOUNTING PRINCIPLES AND COMPUTER APPLICATIONS

(CBCS – 2014 onwards)

Time : 3 Hours   Maximum : 75 Marks

Part A   (10 × 2 = 20)

Answer **all** questions.

1.   What is Real Account? State its rule.

2.   What is Going concern concept of accounting?

3.   Define Ledger.

4.   What is Trail balance?

5.   What is Subsidiary Book?

6.   What is meant by petty cash book?

7.   What is Balance Sheet?

8.   What do you mean by Bank Reconciliation Statement?

9.   Journalise the following transactions.

   (a)   Sold goods to Samy & Co Rs. 9,500.

   (b)   Purchased Furniture Rs. 2,000.

10. Prepare a Trading Account for the year ended 31ˢᵗ March 2015.

	Rs.	Rs.
Opening Stock	5,730	
Purchases	1,58,000	
Purchases Returns		900
Sales		2,62,000
Sales Returns	600	

Closing stock was valued at Rs. 8,600.

Part B   (5 × 5 = 25)

Answer **all** questions.

11. (a) What is Financial Accounting? Explain its objectives.

Or

(b) Journalise the following transactions :

2014

December 5 Bought goods for Cash from Somu Rs. 1,700

9 Sold good to Selvam on Credit Rs. 1,700

10 Returned damaged goods to Sami Rs. 50

11 Paid Wages Rs. 85

15 Received Commission Rs. 70

12. (a) Explain the relations between Journal and Ledger.

Or

(b) Describe the steps involved in accounting process.

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13. (a) What are the various kinds of subsidiary book?

Or

(b) Enter the following transactions in proper subsidiary books :

2015		Rs.
March 1	Bought goods from A. Albert	2,000
2	Sold goods to B. Brown	1,000
7	C. Charles sold goods to us	1,000
8	D. David bought goods from us	700
10	Received goods returned by B. Brown	80
12	We return goods to A. Albert	50

14. (a) Show the necessary entries to adjust the following :

(i) Outstanding Rent Rs. 1,200

(ii) Prepaid insurance premium Rs. 500

(iii) Closing Stock Rs. 1,000

(iv) Depreciation on Machinery Rs. 550

(v) Bad Debts Rs. 250.

Or

(b) From the following balances extracted at the close of the year ended 31st March. 2014, prepare Profit and Loss account of Mr. Ravi as at that date :

	Rs.		Rs.
Gross profit	55,000	Repairs	500
Carriage on sales	500	Telephone expenses	520
Office rent	500	Interest (Dr.)	480
General expense	900	Fire insurance premium	900
Discount to customers	360	Bad debts	2,100
Interest from bank	200	Apprentice premium (Cr.)	1,500
Travelling expenses	700	Printing and Stationery	2,500
Salaries	900	Trade expenses	300
Commission	300		

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15. (a) What are the reasons for disagreement between balance as per Cash book and Pass Book?

Or

(b) Prepare a bank reconciliation statement from the following data as on 3.12.2010.

		Rs.
(i)	Balance as per cash book	12,500
(ii)	Cheques issued but not presented for payment	900
(iii)	Cheques deposited in bank but not collected	1,200
(iv)	Bank paid insurance premium	500
(v)	Direct deposit by a customer	800
(vi)	Interest on investment collected by bank	200
(vii)	Bank charges	100

Part C (3 × 10 = 30)

Answer any **three** questions.

16. Briefly explain the various accounting concepts.

17. From the under mentioned balances extracted from the books of a Trader on 31st March, 2014, Prepare a Trial Balance.

	Rs.		Rs.
Drawings	6,000	Salaries	9,500
Capital	24,000	Sales returns	1,000
Sundry creditors	43,000	Purchase returns	1,100
Bills payable	4,000	Travelling expenses	4,600
Sundry debtors	50,000	Commission paid	100
Bills receivable	5,200	Trading expenses	2,500

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Loan from Karthik	10,000	Discount earned	4,000
Furniture and fixtures	4,500	Bank overdraft	6,000
Opening stock	47,000	Purchases	70,800
Cash in hand	900	Tax	3,500
Cash at bank	12,500		
Sales	1,28,000		

18. From the following Trial Balance, prepare final accounts for the year ended 31st December 2005 :

	Debit Rs.	Credit Rs.
Capital and drawings	1,700	20,000
Purchases and sales	2,000	4,200
Debtors and Creditors	3,600	2,600
Bill payable	–	2,350
Plant and Machinery	12,000	
Horses and Carts	2,600	
Wages	800	
Cash at Bank	2,600	
Salaries	800	
Repairs	190	
Stock (opening)	1,600	
Rent	450	
Manufacturing expenses	150	
Bad debts	500	
Carriage	160	
	29,150	29,150

Adjustments :

(a) Closing stock Rs. 1,600

(b) Depreciation – Plant and Machinery 10%, Horses and Carts 15%

(c) Rs. 150 is due for wages

(d) Paid rent Rs. 50 in advance.

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19. Prepare bank reconciliation statement on 31.03.2014

    (a)   Credit balance as per cash book as on 31.03.2014 was Rs. 1,800

    (b)   Interest charged by the bank for the month of March recorded In the pass book Rs. 120

    (c)   Bank charges Rs. 30 appears only in the pass book

    (d)   Out of the cheques of Rs. 2,800 paid into the bank cheques of Rs. 1,700 were only cleared and credited by the banker

    (e)   Cheques issued for Rs. 800 and not presented for till 31st March.

    (f)   Dividend on shares Rs. 350 was collected by the bankers appears in the pass book only.

20. Enter the following transactions in a three column cash book.

Jan 1, 2014	Cash in hand	410
	Balance at bank	8,920
Jan 2	Cash sales	4,500
Jan 3	Paid into bank	4,000
Jan 5	Purchased stationery	100
Jan 8	Paid Mahesh by cheque	280
	Discount received	20
Jan 12	Gave a cheque for cash purchases	1,500
Jan 15	Drew for personal use	500
Jan 20	Drew from bank	1,000
Jan 21	Paid wages	800
Jan 31	Bank charges as per pass book	10

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