

Babasaheb Bhimrao Ambedkar Bihar University, Muzaffarpur
Directorate of Distance Education
Professional / Technical 2nd Semester (Session 2014-17)
Subject:- BCA
Paper – VII
Model Paper (Full Marks – 70)

Discrete Mathematics

- Q. 1. Define an equivalence relation with suitable example?
- Q. 2. Find the domain and range of the function $f(x) = \frac{x}{1+x^2}$
- Q. 3. Prove by mathematical induction that the sum of the first n natural numbers is $\frac{n(n+1)}{2}$
- Q. 4. Briefly explain summation of series by the method of differences.
- Q. 5. Define progression. Find the nth term of the series $1 + \frac{1}{2} + \frac{1}{4} + \frac{1}{8} + \dots$
- Q. 6. A student wishes to take a combination of three courses, one from each of three science subjects. There are 4 physics, 3 chemistry and 2 biology courses on offer. How many possible combinations are there?
- Q. 7. Define applications of recurrences with suitable example.
- Q. 8. Solve the recurrence relation $a_n = 2a_{n-1} - a_{n-2}$, $n \geq 2$, given $a_0 = 3$, $a_1 = -2$ using the generating function.
- Q. 9. Define Relational Matrices. Give suitable example.
- Q.10. What do you mean by Lattices? Let a and b be two elements in a lattice (L, \leq) . Show that $a \wedge b = b$ if and only if $a \vee b = a$.
- Q.11. Define Group. If G is a Group, then every elements in G has unique inverse in G.
- Q.12. Determine whether $(\mathbb{Z}^+, *)$ where $a*b = a$ is a semi group?
- Q.13. Write and explain properties of cosets.
- Q.14. Define and explain Ring.
- Q.15. Write short note on any two of the following:
- a) Partially Ordered Set b) Tautology c) Domain and Range.

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Paper – VIII
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Computer Architecture

- Q. 1. Explain Von Neumann Architecture. Explain the functions of ALU.
- Q. 2. List and explain the various condition flags of the Intel 8085 microprocessor.
- Q. 3. Define main memory and cache memory. Explain briefly.
- Q. 4. What do you mean by Bus? Give the advantages and disadvantages of physical and functional buses.
- Q. 5. Discuss in detail with example the addressing modes that do not use memory.
- Q. 6. Explain the calculation of effective address in case of Displacement addressing and relative addressing modes.
- Q. 7. Explain the addition of a two floating point numbers with examples.
- Q. 8. Define memory management in Operating System.
- Q. 9. Explain the replacement algorithms.
- Q.10. Discuss the different sequence of operations the CPU involved.
- Q.11. Discuss how priorities are used in dealing interrupts.
- Q.12. What are Micro-operations? Explain Micro operation of Fetch cycle.
- Q.13. Differentiate Hardwired Control and Micro-programmed Controls.
- Q.14. Explain the basic Structure of Linear Pipeline Processor.
- Q.15. Write short note on any two of the following:
 - a) RISK b) Vector processing issues c) RAID.

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Paper – IX
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C Programming and Data Structure

- Q. 1. What is looping? Discuss and explain different types of looping statements used in C language.
- Q. 2. Discuss and explain conditional statements in C language. Write an example of switch statement.
- Q. 3. Define structure? Write syntax with appropriate example for declaration and use of structure.
- Q. 4. Write a C program to reverse the given array without using extra memory.
- Q. 5. Write a C program to read N numbers of observations and print them in ascending order.
- Q. 6. Discuss the linear data structure with suitable example.
- Q. 7. Discuss the various STACK applications with suitable example.
- Q. 8. Discuss the insert/delete operation from the rear and front end of the queue.
- Q. 9. Write a C program to implement deque using circular linked list.
- Q.10. Explain the storage representation of Binary Tree with sequential representation of a tree.
- Q.11. Define spanning tree with neat diagram.
- Q.12. Explain the Sequential (Linear) Search with appropriate algorithm.
- Q.13. Write a program in C to search for an item using Binary Search.
- Q.14. Write a C program to sort N numbers using insertion sort.
- Q.15. Write short note on any two of the following:
 - a) Quick Sort
 - b) Merge Sort
 - c) Abstract Data Type.

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Paper – X
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Business Accounting

- Q. 1. Briefly explain the 'Entity Concept' and 'Money Measurement Concept' of accounting.
- Q. 2. What is double entry accounting? Discuss with example.
- Q. 3. Explain the ground rules of journalisation. Show the format of a typical journal.
- Q. 4. Study the process of Trial Balance preparation of manufacturing company.
- Q. 5. What is Suspense Account? How is it squared off?
- Q. 6. From the under mentioned Trial Balance of Mitra & Co. prepare a Trading Account, a Profit and Loss Account and a Balance Sheet

Particulars	Dr. Rs.	Cr. Rs.
Opening Stock	45,000	
Capital A/c		90,000
Plant and Machinery	85,000	
Sundry Creditors		40,000
Fixtures and Fittings	7,500	
Discount Received		3,500
Freehold Premises	75,000	
Bank overdraft		20,000
Purchases	1,50,000	
Provision for Bad Debts		3,000
Salaries	14,000	
Purchase Returns		1,500
Sundry Debtors	55,000	
Sales (net)		3,37,070
Manufacturing expenses	15,000	
Manufacturing Wages	30,000	
Carriage Inwards	2,000	
Carriage Outwards	2,100	
Administrative Expenses	10,000	
Bad Debts	750	
Interest and Bank Charges	625	
Discount Allowed	750	
Insurance	1,500	
Cash at Bank	695	
Cash in Hand	150	
	4,95,070	4,95,070

The following adjustments are required:

- a) Closing stock on 31st March, 2013 was Rs.57,000
- b) Depreciation on Plant and Machinery @ 10%, Fixtures & fitting @ 5%
- c) Prepaid Insurance Rs.500
- d) Prepaid Salary Rs.600
- e) Outstanding interest on overdraft Rs.2,500
- f) Provision for bad debts is to be maintained at 5% of sundry debtors

Q. 7. What are the objectives of financial management?

Q. 8. Explain the factors affecting Financial Plan.

Q. 9. The following data are available in respect of a company. A condition is laid by suppliers that the orders must be placed in multiples of 500 units only.

Annual requirements	300000 units
Purchase price per unit	Rs. 3
Carrying cost	25% of purchase price
Cost per order placed	Rs. 20
Find EOQ.	

Q.10. Explain the steps in Ratio Analysis.

Q.11. What are the objectives of Fund Flow statement?

Q.12. Give format of Adjusted Profit and Loss Account.

Q.13. Following are the summarized balance sheets of Thomson as on 31st December 2012 and 2013:

Liabilities	2012	2013	Assets	2012	2013
Share capital	1,00,000	1,30,000	Land	1,00,000	95,000
General reserve	25,000	30,000	Machinery	75,000	84,500
P & L A/c	15,200	15,400	Stock	50,000	37,000
Bank loan (Long term)	35,000	-	Debtors	40,000	32,100
Creditors	75,000	67,500	Cash	200	300
Provision for tax	15,000	17,500	Bank	-	4,000
			Goodwill	-	7,500
Total	2,65,200	2,60,400		2,65,200	2,60,400

Adjustments

1. Dividend of Rs.11,500 was paid.
2. Assets of another company was purchased for a consideration of Rs.30,000 payable in shares. The following assets were purchased a) stock Rs.10,000, b) Machinery Rs.12,500.
3. Machinery was further purchased for Rs.4,000.
4. Income tax paid Rs.16,500 for the year.
5. Depreciation written-off in Machinery Rs.6,000.
6. Loss on sale of machine Rs.100 was written-off to General Reserve Prepare Cash flow statement.

Q.14. what are the objectives of a Cash Flow statement?

Q.15. Write short note on any two of the following:

- a) Fund Flow Statement b) Inventory Management c) Operating Cycle.