

**M.C.A. SEMESTER-II (CBCS 2018) : SUMMER - 2019**  
**SUBJECT: DATA STRUCTURES AND ALGORITHMS**

Day: Monday  
Date: 15/04/2019

**S-2019-2154**

Time: 10.00 AM TO 01.00 PM  
Max. Marks: 60

**N.B.:**

- 1) Q 4 from Section I is COMPULSORY.
- 2) Answer ANY TWO questions from Q 1, 2, 3 in Section I.
- 3) Answer ANY TWO questions from Q 5, 6, 7 in Section II.
- 4) All questions CARRY EQUAL marks.
- 5) Answers to Both the sections to be written in **SAME** answer books.
- 6) Draw a labeled diagram WHEREVER necessary.

**SECTION - I**

Q.1) Answer the following: (6 Marks X 2 = 12)

- a) What is data structure? Explain the operations on data structures.
- b) Explain Double Link list with example.

Q.2) Answer the following: (6 Marks X 2 = 12)

- a) Explain the implementation of recursion with the help of example.
- b) What is file handling? Explain the difference between append and write mode.

Q.3) Explain the following: (6 Marks X 2 = 12)

- a) What is set data structure? Explain the basic operations on Sets.
- b) Explain Binary search algorithm.

Q.4) Write short notes on the following: Attempt ANY THREE (4 Marks X 3 = 12)

- a) Abstract Data Type (ADT)
- b) Infix to Postfix Conversion algorithm.
- c) Depth First Traversals.
- d) Balanced Trees.
- e) Quick Sort.

**SECTION - II**

Q.5) Answer the following: (6 Marks X 2 = 12)

- a) Write a C Program to Create a Linked List & Display the Elements in the List.
- b) Write a C Program to Solve Tower-of-Hanoi Problem using Recursion.

Q.6) Answer the following: (6 Marks X 2 = 12)

- a) Write a C program to copy number of bytes of from a specific offset to another file.
- b) Write an algorithm to Search for a Particular Value in a Binary Search Tree.

Q.7) Explain the following: (6 Marks X 2 = 12)

- a) Write a C program for binary search.
- b) Write an algorithm to demonstrate Binary Heap Operations.

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# M.C.A. SEMESTER-II (CBCS 2018) : SUMMER - 2019

## SUBJECT: OPERATING SYSTEMS

Day: Tuesday  
Date: 30/04/2019

S-2019-2155

Time: 10.00 AM TO 01.00 PM  
Max. Marks: 60

### N.B.:

- 1) Q 4 from Section I is COMPULSORY.
- 2) Answer ANY TWO questions from Q 1, 2, 3 in Section I.
- 3) Answer ANY TWO questions from Q 5, 6, 7, in Section II.
- 4) All questions CARRY EQUAL marks.
- 5) Answers to Both the sections to be written in ' SAME ' answer books.
- 6) Draw a labeled diagram WHEREVER necessary.

### SECTION - I

Q.1) Answer the following: (6 Marks X 2 = 12)

- a) How operating system acts as a resource manager? Explain.
- b) What are the various scheduling criteria for CPU Scheduling?

Q.2) Answer the following: (6 Marks X 2 = 12)

- a) Explain the memory management with bit map. Give the advantages of it.
- b) What are semaphores? Explain solution to producer-consumer problem using semaphores.

Q.3) Explain the following: (6 Marks X 2 = 12)

- a) What is deadlock? What are the four necessary conditions for a deadlock to occur?
- b) Explain implementation of file system.

Q.4) Write short notes on the following: Attempt ANY THREE (4 Marks X 3 = 12)

- a) Command language users view of operating systems
- b) Compaction
- c) Reusable resources
- d) Design principles of security
- e) DMA transfer

### SECTION - II

Q.5) Answer the following: (12 Marks X 1 = 12)

Consider the following case.

Job No.	Arrival Time (am)	Run Time (min.)
P1	10.00	7
P2	10.01	8
P3	10.06	2
P4	10.08	3

Find average waiting and turnaround time in case of:

- a) FCFS
- b) SJF
- c) SRTN

Q.6) Answer the following: (12 Marks X 1 = 12)

Consider the following page reference string.

1,2,3,4,2,1,5,6,2,1,2,3,7,6

Assume physical memory with four page frames and all page frames are empty initially. Find out total number of page faults using FCFS and LRU.

Q.7) Explain the following: (12 Marks X 1 = 12)

Consider the disk with 100 tracks, numbered 0 to 99. Currently head is serving a request at track no. 47 and moving inside. Following is the queue of requests kept in the FIFO order.

86, 14, 19, 77, 94, 10, 48, 17, 46, 94, 70, 35, 68

Calculate total time required to move all these tracks using following disk scheduling algorithms.  
(Consider Seek time=0.40 sec.)

- i) FCFS
- ii) SSTF

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**M.C.A. SEMESTER-II (CBCS 2018) : SUMMER - 2019**  
**SUBJECT: SOFTWARE ENGINEERING**

Day: Monday  
Date: 22/04/2019

**S-2019-2156**

Time: 10.00 AM TO 01.00 PM  
Max. Marks: 60

**N.B.:**

- 1) Q 4 from Section I is COMPULSORY.
- 2) Answer ANY TWO questions from Q 1, 2, 3 in Section I.
- 3) Answer ANY TWO questions from Q 5, 6, 7 in Section II.
- 4) All questions CARRY EQUAL marks.
- 5) Answers to Both the sections to be written in SAME answer books.
- 6) Draw a labeled diagram WHEREVER necessary.

**SECTION - I**

Q.1) Answer the following: (6 Marks X 2 = 12)

- a) What do you mean by Software Engineering? Elaborate on the objectives of Software engineering for software development process.
- b) Explain in detail Data flow diagram symbols with its use.

Q.2) Answer the following: (6 Marks X 2 = 12)

- a) What do you mean by Software Design Process? Explain Various design stages in brief.
- b) Discuss in details Quality Control activities for software development process.

Q.3) Explain the following: (6 Marks X 2 = 12)

- a) Explain in detail Validation Testing with example.
- b) Discuss concept of Forward Engineering

Q.4) Write short notes on the following: Attempt ANY THREE (4 Marks X 3 = 12)

- a) Limitation of programming language in software development process
- b) Requirement Analysis problems
- c) GUI Feature and Limitations
- d) Quality Policy and Implementation of Quality activities
- e) Stress Testing

**SECTION - II**

Q.5) Answer the following: (6 Marks X 2 = 12)

- a) Draw Dataflow diagrams for Departmental store Management System
- b) Explain with example elements of good design and its implementation for medical store management system.

Q.6) Answer the following: (6 Marks X 2 = 12)

- a) How to develop E-Commerce website with maximum quality factors in it? Explain all the measures of payment options for the same.
- b) Explain with example testing objectives for inventory control management system.

Q.7) Explain the following: (6 Marks X 2 = 12)

- a) What is reengineering? Explain software reengineering process model.
- b) Discuss importance of interface design and programming tools in CASE.

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**M.C.A. SEMESTER-II (CBCS 2018) : SUMMER - 2019**

**SUBJECT: STATISTICAL TECHNIQUES**

Day: Wednesday

Date: 24/04/2019

**S-2019-2157**

Time: 10.00 AM TO 01.00 PM

Max. Marks: 60

**N.B.:**

- 1) Q 4 from Section I is COMPULSORY.
- 2) Answer ANY TWO questions from Q 1, 2, 3 in Section I.
- 3) Answer ANY TWO questions from Q 5, 6, 7 in Section II.
- 4) All questions CARRY EQUAL marks.
- 5) Answers to Both the sections to be written in *SAME* answer books.

**SECTION - I**

Q.1) Answer the following: (6 Marks X 2 = 12)

- a) Explain the Primary and secondary data.
- b) Calculate Mean and Median for data given below:

Marks :	0-10	10-20	20-30	30-40	40-50	50-60	60-70
No. of students :	6	5	8	15	7	6	3

Q.2) Answer the following: (6 Marks X 2 = 12)

- a) The ranks of the 6 students in two subjects are given below. Find the spearman's rank correlation coefficient.

Mathematics	1	2	3	4	5	6
Statistics	2	3	1	6	4	5

- b) Explain Variance and Standard Deviation.

Q.3) Explain the following: (6 Marks X 2 = 12)

- a) What is meant by correlation? Explain positive, negative correlation.
- b) Explain the concept of error in regression.

Q.4) Write short notes on the following: Attempt ANY THREE (4 Marks X 3 = 12)

- a) Cumulative frequency
- b) Mean deviation
- c) Concept of kurtosis
- d) Consistency of data
- e) Scatter diagram

**SECTION - II**

Q.5) Answer the following: (6 Marks X 2 = 12)

- a) Define Geometric Mean and explain its properties.
- b) Explain quartiles, deciles and percentiles for grouped data.

Q.6) Answer the following: (6 Marks X 2 = 12)

- a) Explain Association of Attributes.
- b) Calculate Karl Pearson's coefficient of correlation for the data given below:

Imports	42	44	58	55	89	98	66
Exports	56	49	53	58	65	76	58

Q.7) Explain the following: (6 Marks X 2 = 12)

- a) Find out two regression equation from the following data:

X	1	2	3
Y	8	6	4

- b) Explain Yule's coefficient of Association.

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**M.C.A. SEMESTER-II (CBCS 2018) : SUMMER - 2019**

**SUBJECT: FINANCIAL ACCOUNTING**

Day: Saturday  
Date: 27/04/2019

**S-2019-2158**

Time: 10.00 AM TO 01.00 PM  
Max. Marks: 60

**N.B.:**

- 1) Q 4 from Section I is COMPULSORY.
- 2) Answer ANY TWO questions from Q 1, 2, 3 in Section I.
- 3) Answer ANY TWO questions from Q 5, 6, 7 in Section II.
- 4) All questions CARRY EQUAL marks.
- 5) Answers to Both the sections to be written in SAME answer books.
- 6) Use of non-programmable calculator is allowed.

**SECTION - I**

Q.1) Answer the following: (6 Marks X 2 = 12)

- a) Explain the scope and functions of Financial Accounting.
- b) What do you mean by Journal? Explain its utility.

Q.2) Answer the following: (6 Marks X 2 = 12)

- a) Explain 'Entity Concept' with examples.
- b) Explain the written down value method (WDV) of charging depreciation.

Q.3) Explain the following: (6 Marks X 2 = 12)

- a) Explain the concept and need of International Financial Reporting Standards (IFRS)
- b) Explain Advantages of 'Computerized Accounting'.

Q.4) Write short notes on the following: Attempt ANY THREE (4 Marks X 3 = 12)

- a) Convention of Conservatism
- b) Tally Package
- c) Matching of Costs and Revenue Concept
- d) Convention of Materiality
- e) Trial Balance

**SECTION - II**

Q.5) Answer the following: (12 Marks X 1 = 12)

Journalize the following transactions in the books of Manish.

2017	
March 1	Manish invested Rs. 10,000/- into business
March 10	Manish gave a cheque for Rs 2000/- to Nitin on account
March 11	Purchased Stationery of Rs 500/-
March 15	Sold old office furniture for Rs 800/-
March 26	Gave Loan to Sushi by cheque Rs 20,000/-
March 28	Sold goods to Ram worth Rs. 2,00,000/-

Q.6) Answer the following: (6 Marks X 2 = 12)

- a) Kevin Co. Ltd. purchased a machinery worth Rs. 1,00,000/- on 1<sup>st</sup> January, 2014. The life of machinery is 5 years. The company charges depreciation on straight line method. On 30<sup>th</sup> June, 2016, the Company sold the machinery for Rs. 28,000/-. Prepare machinery A/c and depreciation A/c for the period 1<sup>st</sup> January, 2014 to 30<sup>th</sup> June, 2016 in the books of Kevin Co. Ltd.

- b) From the following prepare ledger accounts in the books of Ram and balance the same on 31<sup>st</sup> march 2017.

March 2017	Particulars
1	Ram started his business with cash Rs 10,000/-
3	He purchased goods from Mohan on credit Rs 2,000/-
6	He paid to Mohan Rs 1,000/-
14	He further purchased goods from Mohan Rs 2,000/-

Q.7) Answer the following: (12 Marks X 1 = 12)

Following is the Trial Balance of Shri. Rajesh. Prepare a Trading and Profit and Loss Account for the year ending 31<sup>st</sup> March 2018 and Balance Sheet as on the date

Trial Balance as on 31<sup>st</sup> March 2018

Particulars	Dr.Rs.	Cr.Rs.
Opening Stock	1,20,000	-
Salaries & Wages	12,000	-
Railway Freight	5,000	-
Purchases	1,20,000	-
Bills Receivable	1,200	-
Rent	7,500	-
Sales	-	2,53,000
Reserve for Bad Debts	-	1,000
Sundry Creditors	-	32,600
Returns Outwards	-	1,500
Bad Debts	300	-
Plant & Machinery	20,000	-
Travelling Expenses	6,000	-
Commission	-	1,000
Repairs to Plant	1,200	-
Cash at Bank	2,400	-
Buildings	50,000	-
Return Inwards	1,000	-
Sundry Debtors	35,000	-
Office Expenses	5,000	-
Drawings	6,500	-
Capital	-	50,000
Maharashtra Bank Loan	-	54,000
	<b>3,93,100</b>	<b>3,93,100</b>

The following Adjustments should be taken into consideration:

- 1) Closing Stock Rs. 35000/-

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