

**B.B.A. (Computer Application)**  
**DATA STRUCTURE**

*Time : 2 Hours*

*Max. Marks : 60*

*Instructions to the candidates:*

- 1) All questions are compulsory.*
- 2) Draw diagram wherever necessary.*

**Q1)** Attempt any Eight of the following :

**[8×2=16]**

- a) What are the advantages of linked list over an array?
- b) How to measure performance of an algorithm?
- c) What is adjacency of Matrix?
- d) What is pointer to pointer?
- e) What is complete binary tree?
- f) What is polynomial? How is it differ from structure?
- g) What is Priority queue?
- h) State the difference between stack & linked list.
- i) What is the need for the header?
- j) What is balance factor? How is it calculated?

**Q2)** Attempt any four of the following :

**[4×4=16]**

- a) What is height-balanced tree? Explain RR and RL rotations with an example.
- b) What is linked list? Explain its types in detail.
- c) Explain different types of asymptotic notation in detail.
- d) Explain insertion sort technique with an example.
- e) Differentiate array and structure.

**Q3)** Attempt any four of the following :

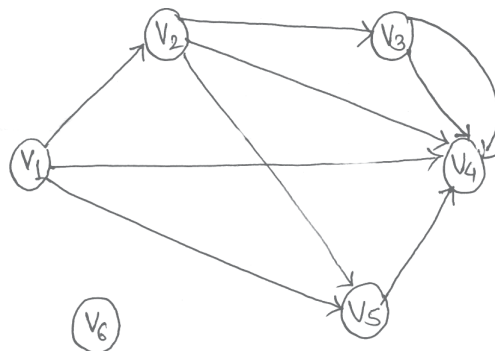
**[4×4=16]**

- a) Write a function to create & display circular singly linked list.
- b) Write a function to insert an element into a circular queue, in which the queue is implemented as an array.
- c) Write a function for in order traversal of the tree.
- d) Write a function to delete first node from singly linked list.
- e) Write a function to search the element from array using binary search.

**Q4)** Attempt any Three of the following :

**[4×3=12]**

- a) Convert the following expression into postfix.
  - i)  $(A + B) * C - D$
  - ii)  $A + B * C - D/E * F$
- b) Define the following terms :
  - i) Degree of node
  - ii) Child node
  - iii) Path
- c) What is degree of vertex? Find in degree & out degree of each vertex for the following graph.



- d) Write a C-program to traverse the linked list.

**B.B.A. (Computer Application)**  
**SOFTWARE ENGINEERING**

*Time : 2 Hours*

*Max. Marks : 60*

*Instructions to the candidates:*

- 1) *All questions are compulsory.*
- 2) *Draw diagram wherever necessary.*

**Q1) Attempt any Eight of the following:**

**[ 8 × 2 = 16 ]**

- a) Define Economical feasibility.
- b) What is system Analyst?
- c) Define data dictionary.
- d) State advantages of Waterfall Model.
- e) Define an Entity.
- f) Define unit testing.
- g) State the principles of software testing?
- h) Define open and closed system.
- i) What is prototype?
- j) What is module?

**Q2) Attempt any Four of the following:**

**[ 4 × 4 = 16 ]**

- a) Draw first level DFD for Hospital Management System.
- b) Explain spiral model in detail.
- c) Define software process and software product. Distinguish between them.
- d) Discuss different fact finding techniques.
- e) Define software maintenance. Explain types of software maintenance.

**Q3) Attempt any Four of the following:**

**[ 4 × 4 =16 ]**

- a) A ABC Foods Pvt. Ltd. Company is offering certain discount on the total amount of purchase. If the purchasing amount is more than 5,000 and the customer is making the payment within 5 days, then company 5% discount on invoice. If the purchase amount is between 3,000 to 5,000 and the customer is making the payment within 5 days, then company offers 3% discount. If the amount is less than 3,000 and customer is making the payment within 5 days, then no discount offered and customer has to pay full amount. If customer is not able to pay within 5 days, then no discount is given. Draw decision table.
- b) Define module. Explain types of modules.
- c) Draw ER-Diagram for "Food order system".
- d) What is Decision Table? Need of Decision table.
- e) Explain elements of Data flow diagrams.

**Q4) Attempt any Three of the following:**

**[ 4 × 3 = 12 ]**

- a) Material is issued to the department by considering whether the Material Requisition Note (MRN) is signed or not. It contains valid items or not and it is given within 8 Hours or not. Draw decision Tree for the above case.
- b) Differentiate between forward and reverse engineering.
- c) What is Data Flow Diagram? Explain its Advantages & Disadvantages.
- d) What is SDLC? Describe its phases?

**B.B.A. (Computer Application)**  
**PHP**

*Time : 2 Hours*

*Max. Marks : 60*

*Instructions to the candidates:*

- 1) *All questions are compulsory.*
- 2) *Draw diagram wherever necessary.*

**Q1)** Attempt any EIGHT ( Out of TEN)

**[8×2=16]**

- a) Explain difference between static and dynamic website.
- b) How to declare variable in PHP?
- c) What is the use of count ( ) in PHP?
- d) What is a session ?
- e) What is cookie?
- f) Explain PHP explode ( ) function.
- g) How to concatenate two strings in PHP?
- h) What is PHP?
- i) Explain \$ - SERVER
- j) Describe echo statement in PHP.

**Q2)** Attempt any FOUR (out of FIVE)

**[4×4=16]**

- a) What are differences between PHP constant and variable ?
- b) Explain the syntax for each loop with example.
- c) What are the different types of arrays in PHP?
- d) Explain methods to submit form.
- e) What is a session in PHP? Explain it.

**Q3)** Attempt any FOUR (out of FIVE)

**[4×4=16]**

- a) Explain if ...else statement in PHP using example.
- b) Explain difference between client side scripting and server side scripting
- c) Write a PHP program to calculate area of circle and triangle.
- d) Write a note on relational operators in PHP.
- e) Explain Respos and request objects in PHP.

**Q4)** Attempt any THREE(out of FOUR)

**[4×3=16]**

- a) Explain introspection in PHP.
- b) Radio button and checkbox
- c) Superglobals in PHP
- d) Class and object

**B.B.A. (Computer Application)**  
**COMPUTER NETWORKING**

*Time : 2 Hours*

*Max. Marks : 60*

*Instructions to the candidates:*

- 1) *All questions are compulsory.*
- 2) *Draw diagram wherever necessary.*

**Q1) Attempt any eight of the following :**

**[8 × 2 = 16]**

- a) What is protocol?
- b) What is cladding?
- c) What is proxy server?
- d) What is meant by class test Addressing?
- e) What is transmission media?
- f) What is internetwork?
- g) Define stegnography?
- h) What is Hub?
- i) What is Standard Ethernet?
- j) What is Firewall?

**Q2) Attempt any four of the following :**

**[4 × 4 = 16]**

- a) What is Computer Network? Explain Goals of computer Network.
- b) Explain Function of each layer ISO-OSI reference model.
- c) What is wireless transmission? Explain any one media in detail.
- d) Explain IEEE standard 802.11 (WLAN) in detail.
- e) What is attack? Explain various types of attacks.

**Q3) Attempt any four of the following :**

**[4 × 4 = 16]**

- a) What is Bridge? Explain types of bridges.
- b) Explain different modes of communication with sketch.
- c) Explain TCP/IP protocol in detail.
- d) What is guided media? Explain any one in detail.
- e) What is Fast Ethernet? Explain categories of Fast Ethernet.

**Q4) Attempt any Three of the following :**

**[4 × 3= 12]**

- a) Switch.
- b) Virtual LAN.
- c) Types of Network.
- a) What is copyright? Explain applications of copyright.
- b) What is Bluetooth? Explain its architecture.



# **B.B.A. (Computer Application)**

## **OPERATING SYSTEM**

*Time : 2 Hours*

*Max. Marks : 60*

*Instructions to the candidates:*

- 1) All questions are compulsory.*
- 2) Draw diagram wherever necessary.*

**Q1) Attempt any Eight of the following :**

**[8 × 2 = 16]**

- a) Define 'Least Recently Used' in memory management.
- b) Define Context Switch?
- c) What is a page frame?
- d) List various properties of the file.
- e) What is 'seek time' in Disk scheduling?
- f) What is compaction?
- g) Define Belady's Anomaly
- h) List any four characteristics of operating system
- i) Define a safe state.
- j) What is starvation?

**Q2) Attempt any Four of the following :**

**[4 × 4 = 16]**

- a) Explain Operating System Structure.
- b) What is scheduling? Compare short term scheduler with long term scheduler.
- c) Draw and explain Round Robin Scheduling with the help of an example.
- d) What are Semaphores? Explain the types of Semaphores.
- e) Draw and explain the Contiguous Memory Allocation.

**Q3) Attempt any Four of the following :**

**[4 × 4 = 16]**

- a) State and explain Critical Section Problem.
- b) Consider the following set of processes with the length of the CPU burst time given in milliseconds –

Process	Burst Time	Arrival Time
P1	3	3
P2	3	6
P3	4	0
P4	5	2

- i) Draw Gantt chart using non preemptive Shortest Job First method.
- ii) Calculate average Turnaround time & average Waiting time.
- c) What is a deadlock? How can deadlock be avoided?
- d) Explain File System Access Methods.
- e) Explain Paging in case of memory management.

**Q4) Attempt any Three of the following :**

**[4 × 3 = 12]**

- a) Assume there are a total 200 tracks present on the disk, if the request queue is: 82, 170, 43, 140, 24, 16, 190 and the initial position of the head is 50. Apply Shortest Seek Time First (SSTF) disk scheduling algorithm and calculate total head movement.
- b) Explain Job Control Block with the help of a diagram.
- c) What are the characteristics and necessary conditions for a deadlock?
- d) Consider the page reference string. 4, 7, 6, 1, 7, 6, 1, 2, 7, 2.

The number of frames in the memory is 3. Initially all frames are empty. Find out the number of page faults respective to :

- i) Optimal Page Replacement Algorithm
- ii) FIFO Page Replacement Algorithm
- iii) LRU Page Replacement Algorithm

**B.B.A. (Computer Application)**  
**CYBER SECURITY**

*Time : 2 Hours*

*Max. Marks : 60*

*Instructions to the candidates:*

- 1) All questions are compulsory.*
- 2) Draw diagram wherever necessary.*

**Q1)** Attempt any EIGHT of the following :

**[8 × 2 = 16]**

- a) What is cyber security?
- b) What is Virus?
- c) What is attack vector?
- d) State Social media marketing.
- e) What is Steganography?
- f) Differentiate between virus and Worm.
- g) Define Foot printing.
- h) What is cyber stalking?
- i) What is Phishing?

**Q2)** Attempt any FOUR of the following :

**[4 × 4 = 16]**

- a) Differentiate between Active attack and Passive attack.
- b) Explain the cyber security real life incident example.
- c) Discuss IPR Issues.
- d) What is SQL injection and what are the different countermeasures to prevent the attack?
- e) Why do we need Cyber laws: The Indian Context?

**Q3)** Attempt any FOUR of the following : **[4 × 4 = 16]**

- a) Discuss how emails are used in forensics analysis.
- b) Explain different types of credit card frauds.
- c) Explain the rules of Digital Evidence.
- d) What is Domain Name? Explain with example.
- e) Prepare a case study with its implication on “Company Website Hacked”.

**Q4)** Attempt any Three of the following : **[4 × 3= 12]**

- a) The Indian IT Act.
- b) Need of Cyber Laws.
- c) Social Media Marketing.
- d) Explain CIA triad.

## **B.B.A. (Computer Application)**

### **CORE JAVA**

*Time : 2 Hours*

*Max. Marks : 60*

*Instructions to the candidates:*

- 1) *All questions are compulsory.*
- 2) *Draw diagram wherever necessary.*

**Q1) Attempt any Eight:**

**[ 8 × 2 = 16 ]**

- i) Define variable in Java? What are the naming rules of variable?
- ii) What is recursion?
- iii) Define Inheritance?
- iv) What is difference between Array and ArrayList?
- v) What is error? List types of error?
- vi) List any two restrictions for applet.
- vii) What is an event?
- viii) What is Object and Class?
- ix) Write the definition of abstract class?
- x) What is Container?

**Q2) Attempt any Four:**

**[ 4 × 4 = 16 ]**

- i) Write a note on package in Java.
- ii) What is exception? Explain its keyword with example.
- iii) Explain java.util package.
- iv) What is a method in Java? Explain method overloading with example.
- v) How to handle events in applet? Explain with example.

**Q3) Attempt any Four:**

**[ 4 × 4 = 16 ]**

- i) Write a Java program using AWT to display details of Customer (cust\_id, cust\_name, cust\_addr) from user and display it on the next frame.
- ii) Write a Java program to reverse elements in array.
- iii) Write a Java program using static method which maintain bank account information about various customers.
- iv) Define an abstract class Shape with abstract method area() and volume(). Write a Java program to calculate area and volume of cone and cylinder.
- v) Write a Java program to display smiley face using applet.

**Q4) Attempt any Four:**

**[ 4 × 3 = 12 ]**

- i) What is Layout Manager? Explain any one in detail.
- ii) How to create and access package in Java? Explain it with example.
- iii) Write a Java program to Fibonacci series.
- iv) Explain anonymous class in detail.
- v) Write a Java program to display contents of file in reverse order.

**B.B.A. (Computer Application)**  
**RECENT TREND IN INFORMATION TECHNOLOGY**

*Time : 2 Hours*

*Max. Marks : 60*

*Instructions to the candidates:*

- 1) *All questions are compulsory.*
- 2) *Draw diagram wherever necessary.*

**Q1) Attempt any Eight of the following (Out of Ten)**

**[ 2 × 8 = 16 ]**

- a) What is OLTP?
- b) Define artificial intelligence.
- c) Define Data Frames.
- d) What is a Data Mart?
- e) Define OLAP.
- f) What is Robotics?
- g) Define spark.
- h) List any two applications of artificial intelligence.
- i) Which type of model is a Decision Tree?
- j) What is full form ETL?

**Q2) Attempt any Four of the following (Out of Five)**

**[ 4 × 4 = 16 ]**

- a) Differentiate between OLAP and OLTP
- b) Explain FP tree algorithm.
- c) Explain different RDD operations in spark.
- d) What are the disadvantages of 'Hill Climbing' in artificial intelligence?
- e) Explain briefly data mining task

**Q3) Attempt any Four of the following (Out of Five)**

**[ 4 × 4 = 16 ]**

- a) How is Apache Spark different from Map Reduce?
- b) What is data preprocessing? Explain
- c) Write down the algorithm of Breadth-First Search with its advantages.
- d) Explain the various search and control strategies in artificial intelligence.
- e) How does Spark work? Explain with the help of its Architecture?

**Q4) Attempt any Three of the following**

**[ 4 × 3 = 12 ]**

- a) What is Data warehouse? State any two advantages.
- b) What is a heuristic function?
- c) What are the two advantages of 'Depth First Search' (DFS)?
- d) Explain the three important artificial intelligence techniques.
- e) Explain briefly State Space Representation of Water Jug Problem.



**B.B.A. (Computer Application)**  
**SOFTWARE TESTING**

*Time : 2 Hours*

*Max. Marks :60*

*Instructions to the candidates:*

- 1) *All questions are compulsory.*
- 2) *Draw diagram wherever necessary.*

**Q1)** Attempt any eight of the following. (Out of ten)

**[8×2=16]**

- a) What is Software Testing?
- b) What is Static testing?
- c) State the advantages of manual testing.
- d) What are formulae for calculating cyclomatic complexity?
- e) What is Gray-box testing?
- f) Define validation testing?
- g) What is Debugging?
- h) Explain terms - Error, Fault and Failure?
- i) Define regression testing.
- j) What is software metric?

**Q2)** Attempt any four of the following. (Out of five)

**[4×4=16]**

- a) Write difference between verification and validation.
- b) Explain software testing life cycle with diagram.
- c) Explain Boundary - Value analysis in details.
- d) Explain Acceptance testing in details.
- e) Explain Test Case Design along with example.

**P.T.O.**

**Q3)** Attempt any four of the following. (Out of five)

**[4×4=16]**

- a) Explain any four testing principles in detail.
- b) Explain white box testing and its techniques.
- c) Explain Sandwich and Big-Bang approach of Integration testing.
- d) Explain load and Smoke testing in detail.
- e) Write difference between Static and Dynamic testing.

**Q4)** Attempt any Three of the following.

**[4×4=16]**

- a) Explain test case design for the login process.
- b) Stub and Driver concept in Unit testing.
- c) Explain GUI testing in details.
- d) What is difference between client/server and web-based testing?
- e) How to calculate the cyclometric complexity of a code? Explain with example.

**B.B.A. (Computer Application)**  
**ANDRIOD PROGRAMMING**

*Time : 2 Hours*

*Max. Marks :60*

*Instructions to the candidates:*

- 1) All questions are compulsory.*
- 2) Draw diagram wherever necessary.*

**Q1)** Attempt any eight of the following.

**[8×2=16]**

- a) What is view?
- b) What is Intent?
- c) What is activity?
- d) List features of Android Operating System.
- e) Define Android Virtual Devices (AVD).
- f) What is Layout Manager?
- g) What is Dialog Box in Android?
- h) Define SQLite Database.
- i) What is Toast?
- j) What is Text view?

**Q2)** Attempt any four of the following.

**[4×4=16]**

- a) What is android.xml or manifest file?
- b) Explain progress bar with example.
- c) Differentiate between JVM & DVM?
- d) Explain Date & Time picker with its methods.
- e) Explain android Architecture in detail with suitable diagram.

**Q3)** Attempt any four of the following :

**[4×4=16]**

- a) Explain activity life cycle with example.
- b) Explain types of Intent in detail with example.
- c) What is android layout? Explain its types in detail.
- d) Explain Toggle Button control with example.
- e) Create a simple application which send - Hello message from one activity to another with the help of button (use intent).

**Q4)** Write short note on any two of the following:

**[4×3=12]**

- a) Android JSON
- b) Bounded service
- c) Context menu