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**B.C.A. (Semester - I) (CBCS) Examination: March/April – 2026**  
**Fundamentals of Computer Paper – I (BCA1102)**

Day & Date: Friday, 17-04-2026  
 Time: 03:00 PM To 05:00 PM

Max. Marks: 40

- Instructions:** 1) All questions are compulsory.  
 2) Figures to the right indicate full marks.  
 3) Draw neat diagrams wherever necessary.

**Q.1 Choose the correct alternatives.****08**

- 1) \_\_\_\_\_ is an input device, which translate paper documents into an electronic format, which can be stored in computer.
  - a) Scanner
  - b) Keyboard
  - c) Mouse
  - d) Joystick
  
- 2) ROM stand for \_\_\_\_\_.
  - a) Read Access Memory
  - b) Read Only Memory
  - c) Both a and b
  - d) Random Access memory
  
- 3) \_\_\_\_\_ is the brain of computer.
  - a) Motherboard
  - b) RAM
  - c) Microprocessor
  - d) ROM
  
- 4) \_\_\_\_\_ is an integrated set of programs that controls the resources.
  - a) Operating system
  - b) Data
  - c) Information
  - d) Both b and c
  
- 5) WWW Stand for \_\_\_\_\_.
  - a) Win World Web
  - b) Windows Web Windows
  - c) Windows Wide Web
  - d) World Wide Web
  
- 6) LCD stands for \_\_\_\_\_.
  - a) Liquid Crystal Display
  - b) Link Crystal Display
  - c) Linkage Crystal Display
  - d) Link Crystal Data
  
- 7) \_\_\_\_\_ is the primary online secondary storage device.
  - a) Floppy disk
  - b) Compact disk
  - c) Hard disk
  - d) None of these
  
- 8) Printers are the most popular output devices used today for producing \_\_\_\_\_ Output.
  - a) Hard copy
  - b) Soft copy
  - c) Both a and b
  - d) None of these

- Q.2 Answer the following question. (Any Four) 08**
- a) What is Computer?
  - b) What is Network?
  - c) What is E-mail?
  - d) What is flowchart?
  - e) What is search engine?
  - f) What is software?
- Q.3 Answer the following question. (Any Two) 08**
- a) Explain generations of the computers in detail.
  - b) What is meant by network topology? Describe any two network topologies.
  - c) Explain the applications of computer in various fields.
- Q.4 Answer the following question. (Any Two) 08**
- a) What is network? Explain its types.
  - b) What are the characteristics of computers?
  - c) What is internet? Explain its applications.
- Q.5 Answer the following question. (Any One) 08**
- a) What is secondary storage media? Explain hard disk in detail.
  - b) Explain the block diagram of computer in detail.

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**B.C.A. (Semester - I) (CBCS) Examination: March/April – 2026**  
**Web Programming - I (Paper - II) (BCA1105)**

Day & Date: Saturday, 18-04-2026  
 Time: 03:00 PM To 05:00 PM

Max. Marks: 40

- Instructions:** 1) All questions are compulsory.  
 2) Draw neat diagrams and give equations wherever necessary.  
 3) Figures to the right indicate full marks.

**Q.1 Choose correct alternatives.****08**

- 1) Which of the following tag is used for inserting the largest heading in HTML?
  - a) head
  - b) <h1>
  - c) <h6>
  - d) heading
- 2) Which of the following elements in HTML5 defines video or movie content?
  - a) <video>
  - b) <movie>
  - c) <audio>
  - d) <media>
- 3) Which HTML tag is used to insert an image?
  - a) <img url="htmllogo.jpg"/>
  - b) <img alt="htmllogo.jpg"/>
  - c) 
  - d) <img link="htmllogo.jpg"/>
- 4) Which of the following CSS property is used to make the text bold?
  - a) text-decoration: bold
  - b) font-weight: bold
  - c) font-style: bold
  - d) text-align: bold
- 5) What is the default value of the position property in CSS?
  - a) relative
  - b) absolute
  - c) fixed
  - d) static
- 6) Which of the following is NOT a valid HTML tag?
  - a) <em>
  - b) <strong>
  - c) <break>
  - d) <br>
- 7) What is the correct syntax of doctype in HTML5?
  - a) <!doctype html>
  - b) <doctype html!>
  - c) <doctype html>
  - d) </doctype html>
- 8) Which of the following is the correct way to apply CSS Styles?
  - a) in an external CSS file
  - b) inside an HTML element
  - c) inside the <head> section of an HTML page
  - d) All of the mentioned

- Q.2 Answer the following. (Any Four) 08**
- a) Explain need of HTML5.
  - b) Explain use of internet.
  - c) Explain use of CSS.
  - d) What is Marquee?
  - e) Stands for HTML & CSS.
  - f) What are CSS backgrounds, list the properties?
- Q.3 Write short notes. (Any Two) 08**
- a) Structure of HTML
  - b) Animation
  - c) Media tags
- Q.4 Answer the following. (Any Two) 08**
- a) Explain selectors in CSS.
  - b) Explain input tags.
  - c) Explain singular and paired tags.
- Q.5 Answer the following. (Any One) 08**
- a) What is CSS? Explain types of CSS.
  - b) What is HTML? Explain text formatting elements in HTML.

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**B.C.A. (Semester - I) (CBCS) Examination: March/April – 2026**  
**Fundamentals of Electronics Paper – I (BCA1108)**

Day & Date: Monday 20-04-2026  
 Time: 03:00 PM To 05:00 PM

Max. Marks: 40

- Instructions:** 1) All questions are compulsory.  
 2) Draw neat diagrams and give equations wherever necessary.  
 3) Figures to the right indicate full marks.

**Q.1 Multiple choice question.****08**

- 1) IC stands for \_\_\_\_\_.
 

a) Internal Circuit	b) Integrated Circuit
c) Input Circuit	d) Infinite Circuit
  
- 2) SiO layer is used for \_\_\_\_\_.
 

a) Conducting	b) Insulation
c) Heating	d) Cooling
  
- 3) Epitaxial growth is used to form \_\_\_\_\_.
 

a) Metal layer	b) Insulating layer
c) N-type and P-type layers	d) Plastic layer
  
- 4) Photolithography is used for \_\_\_\_\_.
 

a) Cutting IC	b) Masking and etching
c) Heating wafer	d) Cooling wafer
  
- 5) LED works on principle of \_\_\_\_\_.
 

a) Photoelectric effect	b) Electroluminescence
c) Magnetism	d) Induction
  
- 6) Seven segment display is used to display \_\_\_\_\_.
 

a) Images	b) Alphabets only
c) Numbers	d) Sound
  
- 7) LCD works on \_\_\_\_\_.
 

a) Light emission	b) Liquid crystal property
c) Heat energy	d) Magnetic field
  
- 8) SMD stands for \_\_\_\_\_.
 

a) Surface Mount Device	b) Simple Mount Device
c) Small Mount Device	d) System Mount Device

- Q.2 Answer the following. (Any Four) 08**
- a) Define Integrated Circuit (IC).
  - b) Define Linear IC and Digital IC.
  - c) What is SiO layer?
  - d) What is PCB?
  - e) Define SMD and SMT.
- Q.3 Write short notes. (Any Two) 08**
- a) Photolithography (Masking and Etching)
  - b) Diffusion (Doping / Ion Implantation)
  - c) Seven Segment Display
- Q.4 Answer the following. (Any Two) 08**
- a) Explain LED construction and working.
  - b) Explain steps of IC fabrication process.
  - c) Explain PCB technology (Single layer and Multilayer).
- Q.5 Answer the following. (Any One) 08**
- a) Explain fabrication of Monolithic IC components (Transistor, Diode, Resistor, Capacitor).
  - b) Explain LCD display construction, working and applications.

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**B.C.A. (Semester - I) (CBCS) Examination: March/April – 2026**  
**Linear Electronics – II (BCA1109)**

Day & Date: Tuesday, 21-04-2026  
 Time: 03:00 PM To 05:00 PM

Max. Marks: 40

- Instructions:** 1) All questions are compulsory.  
 2) Draw neat labeled diagrams wherever necessary.  
 3) Figures to right indicate full marks.

**Q.1 Multiple Choice Questions.****08**

- 1) A resistor whose value can be changed is called \_\_\_\_\_.
  - a) Fixed resistor
  - b) Variable resistor
  - c) Capacitor
  - d) Inductor
- 2) The unit of capacitance is \_\_\_\_\_.
  - a) Ohm
  - b) Henry
  - c) Farad
  - d) Volt
- 3) Which capacitor is polarized?
  - a) Ceramic
  - b) Mica
  - c) Electrolytic
  - d) Air
- 4) In a P-type semiconductor, majority carriers are \_\_\_\_\_.
  - a) Electrons
  - b) Protons
  - c) Holes
  - d) Neutrons
- 5) A diode conducts in \_\_\_\_\_.
  - a) Reverse bias only
  - b) Forward bias only
  - c) Both directions
  - d) None
- 6) Transformer works on the principle of \_\_\_\_\_.
  - a) Resistance
  - b) Capacitance
  - c) Mutual induction
  - d) Heating effect
- 7) 78xx series IC is used for \_\_\_\_\_.
  - a) Negative voltage
  - b) Positive voltage
  - c) AC voltage
  - d) Amplification
- 8) SMPS stands for \_\_\_\_\_.
  - a) Simple Mode Power Supply
  - b) Switched Mode Power Supply
  - c) Standard Mode Power Supply
  - d) Single Mode Power Supply

- Q.2 Answer the following. (Any Four) 08**
- a) Define resistor and list its types.
  - b) Explain the construction of carbon composition resistor.
  - c) What is a potentiometer? State its applications.
  - d) Define capacitor and classify it.
  - e) What is an inductor? State its applications.
- Q.3 Write short note. (Any Two) 08**
- a) Resistor colour coding with example
  - b) Electrolytic capacitor construction
  - c) Air core and iron core inductors
- Q.4 Answer the following. (Any Two) 08**
- a) Explain working of P-N junction diode with diagram.
  - b) Explain construction and working of step-down transformer.
  - c) Describe half-wave and full-wave rectifiers.
- Q.5 Answer the following (Any one). 08**
- a) Explain construction and working of NPN and PNP transistor with applications.
  - b) Explain block diagram and working of regulated power supply using 78xx/79xx IC.

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**B.C.A. (Semester - II) (New) (CBCS) Examination:  
March/April – 2026  
Operating System (BCA1203)**

Day & Date: Friday, 17-04-2026  
Time: 12:00 PM To 02:00 PM

Max. Marks: 40

**Instructions:** 1) All questions are compulsory.  
2) Figures to the right indicate full marks.

**Q.1 Multiple choice Questions:**

**08**

- 1) The operating system where fixed time slot is allocated to each active process is \_\_\_\_\_.
  - a) real time O.S
  - b) multiprogramming O.S
  - c) batch O.S
  - d) time-sharing O.S
- 2) Which one of the following is the address generated by CPU?
  - a) Physical address
  - b) absolute address
  - c) Logical address
  - d) none of the mentioned
- 3) In multiprogramming environment \_\_\_\_\_.
  - a) A single user can execute many programs at the same time
  - b) The processor executes more than one process at a time
  - c) The programs are developed by more than one person
  - d) More than one process resides in the memory
- 4) Which is not the state of a process of the following?
  - a) New
  - b) Old
  - c) Waiting
  - d) Running
- 5) The degree of Multiprogramming is controlled by \_\_\_\_\_.
  - a) CPU Scheduler
  - b) Context Switching
  - c) Long-term Scheduler
  - d) Medium term Scheduler
- 6) There is a guarantee that the critical tasks are completed in given amount of time. That is Called as \_\_\_\_\_.
  - a) Hard Real time systems
  - b) Soft real time system
  - c) Real time systems
  - d) None of these
- 7) The layer between the hardware and the user program is \_\_\_\_\_.
  - a) Operating environment
  - b) System environment
  - c) Operating system
  - d) None of these
- 8) \_\_\_\_\_ will provide the address of the next instruction that is to be executed by the current process.
  - a) Program counter
  - b) CPU registers
  - c) base register
  - d) Process stack

- Q.2 Answer any four of the following. 08**
- a) What is Batch operating System?
  - b) What is mean by Parallel Operating System?
  - c) What is Virtual machine?
  - d) What is Process?
  - e) What is Inter Process Communication?
  - f) What is Race Conditions?
  - g) What is Process Scheduling?
- Q.3 Write short notes. (Any Two) 08**
- a) Write Short note on Monolithic Systems.
  - b) Process control block
  - c) Semaphores
- Q.4 Answer any two of the following. 08**
- a) What is Operating System? Explain Different Services provided by O.S.
  - b) What is Process Synchronization? Explain The Producer Consumer Problem?
  - c) Explain FCFS Scheduling Algorithms with example.
- Q.5 Answer any one of the following 08**
- a) What is Threads? Explain Types of Thread with Benefits of Multithread.
  - b) Explain Round Robin Scheduling Algorithms with Example.

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**B.C.A. (Semester - III) (New) (CBCS) Examination:  
March/April – 2026  
Object Oriented Programming using Java - I (BCA1301)**

Day & Date: Thursday, 02-04-2026  
Time: 09:00 AM To 11:00 AM

Max. Marks: 40

- Instructions:** 1) All questions are compulsory.  
2) Draw neat diagrams wherever necessary.  
3) Figures to right indicate full marks.

**Q.1 Choose correct alternatives.**

**08**

- 1) Which of the following is not a Java feature?
  - a) Object-oriented
  - b) Platform Independent
  - c) Pointers
  - d) Robust
  
- 2) Which of the following is not a type of polymorphism in Java?
  - a) Compile-time polymorphism
  - b) Run-time polymorphism
  - c) Static polymorphism
  - d) Dynamic constructor
  
- 3) Which keyword is used to explicitly throw an exception?
  - a) Throw
  - b) Throws
  - c) Final
  - d) Try
  
- 4) Which type of inheritance is not supported in Java using classes?
  - a) Single
  - b) Multilevel
  - c) Hierarchical
  - d) Multiple
  
- 5) Which of the following is the correct way to create a String in Java?
  - a) String s = "Hello";
  - b) String s = new String("Hello");
  - c) Both a and b
  - d) None
  
- 6) Which of the following is true about abstract methods?
  - a) They have a body
  - b) They do not have a body
  - c) They must be static
  - d) They must be final
  
- 7) What is the default package in Java if none is specified?
  - a) java
  - b) java.lang
  - c) User
  - d) No package
  
- 8) Which exception is thrown if a file is not found?
  - a) IOException
  - b) FileNotFoundException
  - c) EOFException
  - d) RuntimeException

- Q.2 Answer the following. (Any Four) 08**
- a) List out features of java.
  - b) Use of this keyword.
  - c) Write steps to execute java program.
  - d) What is package.
  - e) What is interface.
  - f) Define abstract class and abstract method.
- Q.3 Attempt the following. (Any Two) 08**
- a) Write short note on JVM.
  - b) What is exception handling? Explain custom exception with example.
  - c) What is StringBuffer class? Explain methods of StringBuffer class.
- Q.4 Answer the following. (Any Two) 08**
- a) Write a program that copy content of one file into another.
  - b) What is method overriding? Explain with example.
  - c) Write short note on control statements in java.
- Q.5 Answer the following. (Any One) 08**
- a) What is constructor? Explain types of constructor with example.
  - b) What is inheritance? Explain its types with example.

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**B.C.A. (Semester - III) (New) (CBCS) Examination:  
March/April – 2026  
Data Structure Using 'C' – I (BCA1302)**

Day & Date: Saturday, 04-04-2026  
Time: 09:00 AM To 11:00 AM

Max. Marks: 40

**Instructions:** 1) All questions are compulsory.  
2) Figures to the right indicate full marks.

**Q.1 Multiple choice question.**

**08**

- 1) Which of the following is a linear data structure?
  - a) Array
  - b) AVL tree
  - c) binary tree
  - d) graph
- 2) From following which is not the operation of data structure?
  - a) operations that manipulate data in some way
  - b) operations that perform a computation
  - c) operations that check for syntax error
  - d) operations that monitor on object for the occurrence of a controlling event
- 3) When a pop () operation is called on an empty queue, what is the condition called?
  - a) overflow
  - b) underflow
  - c) syntax error
  - d) garbage value
- 4) \_\_\_\_\_ form of access is used to add and remove nodes from a queue.
  - a) LIFO, Last In First Out
  - b) FIFO, First In First Out
  - c) Both a and b
  - d) None of these
- 5) The term push and pop is related to \_\_\_\_\_.
  - a) array
  - b) list
  - c) stack
  - d) tree
- 6) In which type of linked lists traversals can be performed in both directions?
  - a) singly linked list
  - b) doubly linked list
  - c) circular linked list
  - d) None of the above
- 7) A linked list in which none of the nodes contains a NULL pointer is?
  - a) singly linked list
  - b) doubly linked list
  - c) circular linked list
  - d) None of the above
- 8) Which of the following is a Divide and Conquer algorithm?
  - a) bubble sort
  - b) selection sort
  - c) merge sort
  - d) heap sort

- Q.2 Answer the following. (Any Four) 08**
- a) What is data structure?
  - b) Define ADT.
  - c) What is queue?
  - d) What are the differences between stack and queue?
  - e) Convert the infix expression  $a+(b*c)-d$  in to postfix form.
  - f) Define linkedlist.
- Q.3 Write Short Notes. (Any Two) 08**
- a) Greedy algorithm
  - b) Circular queue
  - c) Singular linked list
- Q.4 Answer any two of the following. 08**
- a) Write a program to implement stack operations.
  - b) Explain different Types of data structure.
  - c) Explain types of queue.
- Q.5 Answer any one of the following. 08**
- a) Write an algorithm that evaluates postfix expression using stack.
  - b) Write a program to implement queue operation.

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**B.C.A. (Semester - III) (New) (CBCS) Examination:  
March/April – 2026  
Database Management System – I (BCA1303)**

Day & Date: Monday, 06-04-2026  
Time: 09:00 AM To 11:00 AM

Max. Marks: 40

**Instructions:** 1) All questions are compulsory.  
2) figure to right indicate full marks.

**Q.1 Multiple Choice Question.**

**08**

- 1) \_\_\_\_\_ key helps us to establish the relationship between two tables.
  - a) Candidate key
  - b) Foreign key
  - c) Primary key
  - d) Unique key
  
- 2) Whenever a sub query appears in SQL, it is enclosed within \_\_\_\_\_ and placed to the \_\_\_\_\_ of the SQL operators.
  - a) Brackets, Left
  - b) Brackets, Right
  - c) Parenthesis, Left
  - d) Parenthesis, Right
  
- 3) The advantage of DBMS is \_\_\_\_\_.
  - a) Data independence
  - b) Centralized control of data
  - c) To avoid the data redundancy
  - d) All of these
  
- 4) Which of the following statements is NOT true for views in SQL?
  - a) Select statement used in the view definition cannot include ORDER BY clause
  - b) A view drives its data from the base tables(s)
  - c) A view is updatable if it has been defined from a single relation
  - d) A view contains a copy of the data
  
- 5) To change column value in a table the \_\_\_\_\_ command can be used.
  - a) create
  - b) insert
  - c) alter
  - d) update
  
- 6) \_\_\_\_\_ operator is used to compare a value to a specified list of values.
  - a) IN
  - b) BETWEEN
  - c) ALL
  - d) ANY
  
- 7) Which of the following is not an aggregate function?
  - a) Avg
  - b) Sum
  - c) With
  - d) Min

- 8) \_\_\_\_\_ clause is used to sort the result of SELECT statement.
- a) SORT BY
  - b) ORDER BY
  - c) ARRENAGE BY
  - d) None of the above

**Q.2 Answer the following. (Any Four) 08**

- a) How to create a new user in Oracle?
- b) Define Relationship.
- c) Define Index.
- d) Write down syntax & example of create table command.
- e) What is the importance of data integrity?
- f) What is entity?

**Q.3 Write Short Notes. (Any Two) 08**

- a) Explain Generalization and Aggregation.
- b) What is Pseudo Columns? Explain CURRVAL, NEXTVAL.
- c) What is DDL? Explain Alter commands with example

**Q.4 Answer the following. (Any Two) 08**

- a) What is Join? Explain types of join with example.
- b) Explain limitations of traditional file system.
- c) Explain different types of database users.

**Q.5 Answer the following. (Any One) 08**

- a) What is sub query? Explain types of sub query with example.
- b) Explain Relational Algebra operations with example.

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**B.C.A. (Semester - III) (New) (CBCS) Examination:  
March/April – 2026  
Software Engineering (BCA1304)**

Day & Date: Tuesday, 07-04-2026  
Time: 09:00 AM To 11:00 AM

Max. Marks: 40

**Instructions:** 1) All questions are compulsory.  
2) Each question should only one correct option.

**Q.1 Choose correct alternatives:**

**08**

- 1) What is the first step in the software development lifecycle?
  - a) System Design
  - b) Coding
  - c) System Testing
  - d) Preliminary Investigation and Analysis
  
- 2) What does the study of an existing system refer to?
  - a) Details of DFD
  - b) Feasibility Study
  - c) System Analysis
  - d) System Planning
  
- 3) Who proposed the spiral model?
  - a) Barry Boehm
  - b) Pressman
  - c) Royce
  - d) IBM
  
- 4) Which of the following model is used to show how data flows through a sequence of processing steps?
  - a) Data Flow Diagram
  - b) Symantic Data Model
  - c) System Model
  - d) Object Model
  
- 5) By normalizing relations or sets of relations, one minimizes \_\_\_\_\_.
  - a) Data
  - b) Redundancy
  - c) Fields
  - d) Database
  
- 6) Which of the following is not a fact-finding technique?
  - a) Questionnaire
  - b) Interview
  - c) Record Review
  - d) Third Party Enquiry
  
- 7) SQA stands for \_\_\_\_\_.
  - a) Software Quality Accuracy
  - b) Software Quantity Assurance
  - c) Software Quantity Announce
  - d) Software Quality Assurance

- 8) An entity in ER Model is a real world being, which has some properties called as?
- a) Attributes
  - b) Relationship
  - c) Domains
  - d) None of These

**Q.2 Answer any four of the following. 08**

- a) What is the purpose of DFD?
- b) Who is System Analyst?
- c) What is software Engineering?
- d) List characteristics of software.
- e) What is Data Dictionary?
- f) Define Decision Table.

**Q.3 Answer any Two of the following. 08**

- a) What is system? Explain elements of system.
- b) Explain structured English in detail.
- c) Explain spiral model with diagram.

**Q.4 Answer any Two of the following. 08**

- a) What is risk? Explain different types of risk in details.
- b) Explain DFD in details with example.
- c) Explain various types of system in details.

**Q.5 Answer any One of the following 08**

- a) What is fact finding technique? Explain types of fact-finding techniques.
- b) What is Normalization? Explain all normal forms with example.

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**B.C.A. (Semester - III) (New) (CBCS) Examination:  
March/April - 2026  
Web Development using PHP (SEC-1)**

Day & Date: Wednesday, 08-04-2026  
Time: 09:00 AM To 12:00 PM

Max. Marks: 80

**Instructions:** 1) All questions are compulsory.  
2) Figures to the right indicate full marks.

**Q.1 Choose correct alternative.**

**16**

- 1) How to define a function in PHP?
  - a) function {function body}
  - b) functionName(parameters) {function body}
  - c) function functionName(parameters) {function body}
  - d) None of the above
  
- 2) What will be the output of the following PHP code?
 

```
<?php
$num=1;
$num1=2;
print$num."+" , $num 1;
?>
```

  - a) 3
  - b) 1+2
  - c) 1.+2
  - d) Error
  
- 3) Which of the following is used to create a session?
  - a) \$\_SESSION[]
  - b) isset() function
  - c) session\_start() function
  - d) session\_destroy() function
  
- 4) Which PHP function is used to find files?
  - a) file()
  - b) fold()
  - c) glob()
  - d) None of the above
  
- 5) Which one of the following property scopes is not supported by PHP?
  - a) public
  - b) final
  - c) friendly
  - d) static
  
- 6) Which of the following variables is not a predefined variable in PHP?
  - a) \$get
  - b) \$post
  - c) \$request
  - d) \$ask
  
- 7) Which of following is not a Superglobals in PHP?
  - a) \$\_SERVER
  - b) \$\_ENV
  - c) \$\_FILES
  - d) \$\_PUT



- Q.3 A) Attempt any two of the following. 10**
- a) What is multidimensional array? Explain with example.
  - b) Explain different parameter passing technique used in PHP with example.
  - c) Explain different forms controls, its properties, methods and events.
- B) Short note (one compulsory) 06**
- What is cookie? Explain with example.
- Q.4 A) Attempt any two of the following. 08**
- a) What is function? Types of function.
  - b) What is Session? Explain session state management in detail.
  - c) Difference between Static website vs Dynamic website development.
- B) Explain Control statements in PHP. 08**
- Q.5 Attempt any two of the following. 16**
- a) What is Validation? Types of Validations.
  - b) What is file and explain various file opening modes.
  - c) Explain Exception handling with example.

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**B.C.A. (Semester - III) (New) (CBCS) Examination: March/April – 2026**  
**Financial Accounting with Tally (BCA1305)**

Day & Date: Thursday, 09-04-2026  
 Time: 09:00 AM To 11:00 AM

Max. Marks: 40

- Instructions:**
- 1) All questions are compulsory.
  - 2) Draw neat diagrams and give equations wherever necessary.
  - 3) Figures to the right indicate full marks.
  - 4) Use of log table and calculator is allowed

**Q.1 Multiple choice questions.**

**08**

- 1) Which book is known as the book of original Entry?
 

a) Ledger	b) Trial Balance
c) Journal	d) Balance Sheet
  
- 2) Which of these correctly match an account type with an example?
 

a) Personal-Furniture	b) Real- Salary
c) Nominal- Rent Paid	d) Real- Commission Received
  
- 3) Return of goods by a customer is recorded in \_\_\_\_\_.
 

a) Purchase Book	b) Sales Book
c) Sales Return Book	d) Purchase Return Book
  
- 4) GST stands for \_\_\_\_\_.
 

a) Get and Sales Tax	b) Goods and Sales Tax
c) Govt and Security Tax	d) Goods and Service Tax
  
- 5) Which account is credited when goods are sold on credit?
 

a) Sales Account	b) Purchase Account
c) debtor Account	d) Cash Account
  
- 6) In general the financial year from shall be from \_\_\_\_\_.
 

a) 1 April of any Year	b) 31st March of Any Year
c) All of them	d) None of these
  
- 7) Where do we record cash sales in Tally?
 

a) Contra	b) Receipt
c) Payment	d) Journal
  
- 8) How many groups are pre-defined in Tally?
 

a) 28	b) 30
c) 15	d) 19

- Q.2 Answer any four of the following. 08**
- a) Define Account.
  - b) What is Double Entry?
  - c) Define Journal.
  - d) What is Bad debts?
  - e) What is Voucher?
  - f) What is capital?
- Q.3 Attempt any Two of the following. 08**
- a) Write down types and Rules of Account.
  - b) Write down Methods of Recording.
  - c) Difference Between Debtor and Creditor.
- Q.4 Answer any Two of the following. 08**
- a) Write down characteristics of Accounting Information.
  - b) Write down Importance and Utility of Journal.
  - c) Write short note on "Subsidiary Books.
- Q.5 Answer any One of the following 08**
- a) Explain the advantage of Double entry Book-keeping System.
  - b) What is Tally? Explain use of Function key In Tally.

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**B.C.A. (Semester - III) (New) (CBCS) Examination:  
March/April – 2026  
Operating System - II (BCA1306)**

Day & Date: Friday, 10-04-2026  
Time: 09:00 AM To 11:00 AM

Max. Marks: 40

**Instructions:** 1) All questions are compulsory.  
2) Figures to the right indicate full marks.

**Q.1 Choose correct alternatives. (MCQ)**

**08**

- 1) \_\_\_\_\_ is a technique of temporarily removing inactive programs from the Memory of computer system.
  - a) Swapping
  - b) Spooling
  - c) Semaphore
  - d) Scheduler
- 2) Which one of the following is the deadlock avoidance algorithm?
  - a) Banker's algorithm
  - b) Round-robin algorithm
  - c) FCFS algorithm
  - d) Priority algorithm
- 3) To avoid deadlock \_\_\_\_\_.
  - a) There must be a fixed number of resources to allocate
  - b) Resource allocation must be done only once
  - c) All deadlocked processes must be aborted
  - d) Inversion technique can be used
- 4) For non-sharable resources like a printer, mutual exclusion \_\_\_\_\_.
  - a) Must exist
  - b) Must not exist
  - c) May exist
  - d) None of the mentioned
- 5) The data structures available in the Banker's algorithm are \_\_\_\_\_.
  - a) Available
  - b) Need
  - c) Allocation
  - d) All of the mentioned
- 6) Which one of the following is the address generated by CPU?
  - a) physical address
  - b) absolute address
  - c) logical address
  - d) None of the mentioned
- 7) \_\_\_\_\_ is the concept in which a process is copied into the main memory from the Secondary memory according to the requirement.
  - a) Paging
  - b) Demand paging
  - c) Segmentation
  - d) Swapping
- 8) In FIFO page replacement algorithm, when a page must be replaced \_\_\_\_\_.
  - a) oldest page is chosen
  - b) newest page is chosen
  - c) random page is chosen
  - d) None of the mentioned

- Q.2 Answer the following. (Any Four) 08**
- a) Define the Term Swapping?
  - b) What is demand paging?
  - c) What is boot block?
  - d) What is Fragmentation?
  - e) Define the term Directory structure.
  - f) Define the term Thrashing?
- Q.3 Write short notes on any two of the following 08**
- a) Write short note on methods of Handling Dead Locks.
  - b) Write short note FCFS disk scheduling algorithms.
  - c) Write short note on Least Recently used (LRU) in Page Replacement policy.
- Q.4 Answer the following. (Any Two) 08**
- a) What is Paging? Explain Paging with diagram.
  - b) Define the term deadlock. Explain the necessary conditions for deadlock to occur.
  - c) What is File? Explain different File types in Storage Management.
- Q.5 Answer the following. (Any One) 08**
- a) What is Segmentation? Explain Segmentation with advantages and disadvantages.
  - b) Explain banker's algorithm with example.

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**B.C.A. (Semester - III) (CBCS) Examination:  
March/April – 2026  
OOPs with C++ I (19409301)**

Day & Date: Thursday, 02-04-2026  
Time: 09:00 AM To 11:00 AM

Max. Marks: 40

- Instructions:** 1) All questions are compulsory.  
2) Draw neat diagrams wherever necessary.  
3) Figures to the right indicate full marks.

**Q.1 Multiple choice questions:****08**

- 1) \_\_\_\_\_ member function having same name as class name precedes with tiled symbol (~).
  - a) Inline function
  - b) Constructor
  - c) Destructor
  - d) Friend
- 2) Who is known as the creator of C++?
  - a) Dennis Ritchie
  - b) Brian Kernighan
  - c) Bjarne Stroustrup
  - d) James Gosling
- 3) Which of the following is NOT a keyword in C++?
  - a) Typedef
  - b) Enum
  - c) Private
  - d) Array
- 4) Which of the following operator is not overloaded?
  - a) ++
  - b) sizeof
  - c) new
  - d) +
- 5) Which type of constructor does not accept any parameter?
  - a) Default
  - b) Parameterized
  - c) Static
  - d) Copy
- 6) Which of the following operator is overloaded with cout object?
  - a) Extraction
  - b) Insertion
  - c) Addition
  - d) Multiplication
- 7) \_\_\_\_\_ function not allow to use private data of object.
  - a) Constructor
  - b) Destructor
  - c) Friend function
  - d) None of these
- 8) Static polymorphism achieved with the help of?
  - a) Function overloading
  - b) Operator overloading
  - c) Both a & b
  - d) Virtual function

- Q.2 Attempt the following. (Any Four) 08**
- a) What is role of inheritance?
  - b) What is Friend class?
  - c) State the accessibility of protected member of class.
  - d) What is Dynamic memory allocation?
  - e) List out characteristics of destructor.
  - f) What are the advantages of OOP's over POP?
- Q.3 Attempt the following. (Any Two) 08**
- a) What is constructor overloading? Explain with example.
  - b) Write short note on: Data abstraction and data hiding.
  - c) What is nesting of classes? Explain with example.
- Q.4 Attempt the following. (Any Two) 08**
- a) What is friend function? Explain with example.
  - b) Write a program that demonstrate passing object as pass by reference.
  - c) Write a program to overload '-' as binary operator.
- Q.5 Attempt the following. (Any One) 08**
- a) What is static data member and static member function? Explain with example/program.
  - b) What is array of object? Explain with example/program.

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**B.C.A. (Semester - III) (CBCS) Examination:  
March/April – 2026  
Computer Networks - I (19409306)**

Day & Date: Thursday, 02-04-2026  
Time: 12:00 PM To 02:00 PM

Max. Marks: 40

**Instructions:** 1) All questions are compulsory.  
2) Figures to the right indicate full marks.

**Q.1 Multiple choice questions.**

**08**

- 1) The elements of data communication are \_\_\_\_\_.
  - a) Sender
  - b) Receiver
  - c) Transmission medium
  - d) All of the above
- 2) \_\_\_\_\_ is the process of dividing a link, the physical medium, into logical channels for better efficiency.
  - a) Multiplexing
  - b) Switching
  - c) Protocol
  - d) Modulation
- 3) \_\_\_\_\_ is a set of rules that governs data communication.
  - a) Message
  - b) Sender
  - c) Receiver
  - d) Protocol
- 4) The effectiveness of data communication can be checked by \_\_\_\_\_.
  - a) Accuracy
  - b) Delivery
  - c) Timeliness
  - d) All of the above
- 5) \_\_\_\_\_ model is a model for understanding and designing network architecture.
  - a) TCP/IP
  - b) Open system interconnection
  - c) Network Model
  - d) None of these
- 6) \_\_\_\_\_ is a set of procedures used to restrict the amount of data the sender can sent before waiting for an acknowledgement.
  - a) Flow control
  - b) Error Control
  - c) Access Control
  - d) None of these
- 7) \_\_\_\_\_ is a number of packets passing through the network in a unit of time.
  - a) Switching
  - b) Modulation
  - c) Throughput
  - d) Multiplexing
- 8) DNS is the abbreviation of \_\_\_\_\_.
  - a) Dynamic Name System
  - b) Dynamic Network System
  - c) Domain Name System
  - d) Domain Network Service

- Q.2 Answer the following: (Any Four) 08**
- a) Define the term Protocol.
  - b) What are the Period and Phase?
  - c) Define Analog and Digital signal?
  - d) What is Transmission Media?
  - e) Define the term Hubs?
  - f) Define the term Framing?
- Q.3 Write short notes on the following. (Any Two) 08**
- a) Switches.
  - b) Twisted Pair.
  - c) CSMA/CD.
- Q.4 Answer the following: (Any Two) 08**
- a) What is network Topology? Explain Types of network Topologies.
  - b) What is switching? Explain Packet switching.
  - c) What is Modulation? Explain types of modulation.
- Q.5 Answer the following: (Any One) 08**
- a) Explain TCP/IP reference model in detail with suitable diagram?
  - b) What is Multiplexing? Explain types of Multiplexing.

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**B.C.A. (Semester - IV) (New) (CBCS) Examination:  
March/April - 2026  
Object Oriented Programming using Java - II (BCA1401)**

Day & Date: Thursday, 09-04-2026  
Time: 12:00 PM To 02:00 PM

Max. Marks: 40

- Instructions:** 1) All questions are compulsory.  
2) Draw neat labelled diagrams wherever necessary.  
3) Figures to the right indicate full marks.  
4) Use of log table and calculator is allowed.

**Q.1 Multiple choice question:****08**

- 1) Which of these packages contain all the collection classes?
  - a) java.lang
  - b) java.util
  - c) java.net
  - d) java.awt
- 2) Which of these is a wrapper for data type int?
  - a) Integer
  - b) Long
  - c) Byte
  - d) Double
- 3) Which of these is a wrapper for simple data type char?
  - a) Float
  - b) Character
  - c) String
  - d) Integer
- 4) Which of these are types of multitasking?
  - a) Process based
  - b) Thread based
  - c) Process and Thread based
  - d) None of the mentioned
- 5) Thread priority in Java is?
  - a) Integer
  - b) Float
  - c) double
  - d) long
- 6) Which of these package contains classes and interfaces for networking?
  - a) java.io
  - b) java.util
  - c) java.net
  - d) java.network
- 7) Which of these class is used to encapsulate IP address and DNS?
  - a) DatagramPacket
  - b) URL
  - c) ContentHandler
  - d) InetAddress
- 8) Which of these packages contains all the classes and methods required for even handling in Java?
  - a) java.applet
  - b) java.awt
  - c) java.event
  - d) java.awt.event

- Q.2 Answer the following. (Any Four) 08**
- a) Define type casting.
  - b) Define Collection Framework.
  - c) Define wrapper Classes.
  - d) Define Multitasking.
  - e) Define Socket.
  - f) Define URL.
- Q.3 Attempt the following. (Any Two) 08**
- a) Write a note on auto boxing and unboxing.
  - b) Explain collection object Set with example.
  - c) Write a program to display IP address of the host on the internet
- Q.4 Answer the following. (Any Two) 08**
- a) Explain collection class Stack with example.
  - b) Write a note on thread priorities.
  - c) Write a program to demonstrate ActionListener interface for handling click event.
- Q.5 Answer the following. (Any One) 08**
- a) What is JDBC? Explain the different types of JDBC drivers.
  - b) What is thread? Explain different states in thread life cycle.

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**B.C.A. (Semester - IV) (New) (CBCS) Examination:  
March/April – 2026  
Data Structure Using 'C' – II (BCA1402)**

Day & Date: Friday, 10-04-2026  
Time: 12:00 PM To 02:00 PM

Max. Marks: 40

- Instructions:** 1) All questions are compulsory.  
2) Figures to the right indicate full marks.  
3) Draw neat diagrams and give equations wherever necessary.

**Q.1 Multiple choice questions.**

**08**

- 1) BFS full form is \_\_\_\_\_.
  - a) Breadth First Traversal
  - b) Best First Traversal
  - c) Better First Traversal
  - d) None of the above
- 2) What is the best time Complexity of Quick Sort?
  - a)  $O(n \log n)$
  - b)  $O(\log n)$
  - c)  $O(n)$
  - d) None of above
- 3) Which of the following is not an advantage of trees?
  - a) Hierarchical structure
  - b) Faster search
  - c) Router algorithms
  - d) Undo/Redo operations in a notepad
- 4) To obtain a prefix expression, which of the Tree Traversals is used?
  - a) Preorder
  - b) Postorder
  - c) Inorder
  - d) None of above
- 5) What is an AVL tree?
  - a) A tree which is balanced and is a height balanced tree
  - b) A tree which is unbalanced and is a height balanced tree
  - c) A tree with three children
  - d) A tree with at most 3 children
- 6) In Binary Tree, nodes with no children are called \_\_\_\_\_.
  - a) Siblings
  - b) Leaf Nodes
  - c) Root
  - d) Internal Nodes
- 7) Graph is \_\_\_\_\_ data structure.
  - a) linear
  - b) non-linear
  - c) Both
  - d) None

8) \_\_\_\_\_ data structure is used in DFS of graph to store nodes.

- a) Array
- b) Queue
- c) Stack
- d) Tree

**Q.2 Explain the following concept. (Any Four)**

**08**

- a) What is AVL Tree?
- b) What is Traversal? List out its types.
- c) List out applications Graph.
- d) What is leaf node and sibling in tree?
- e) What is Sorting? List its types.
- f) Compare Linear & Non-Linear Data structure.

**Q.3 Answer the following. (Any Two)**

**08**

- a) What is BST? Explain its Traversal Methods.
- b) State difference between linear search and binary search.
- c) Difference between Breadth First Search (BFS) and Depth First Search (DFS).

**Q.4 Answer the following. (Any Two)**

**08**

- a) What is Tree? What are the types of Tree?
- b) What is Hashing? Explain different Hash functions.
- c) What is Radix sort? Give example.

**Q.5 Answer the following. (Any One)**

**08**

- a) What is searching? Explain categories of searching in detail with example.
- b) WAP for implementation of Linear search.

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**B.C.A. (Semester - IV) (New) (CBCS) Examination:  
March/April – 2026  
Database Management System – II (BCA1403)**

Day & Date: Saturday, 11-04-2026  
Time: 12:00 PM To 02:00 PM

Max. Marks: 40

**Instructions:** 1) All questions are compulsory.  
2) Figures to the right indicate full marks.

**Q.1 Choose the correct alternatives from the option: 08**

- 1) The deadlock state can be changed back to stable state by using \_\_\_\_\_ statement.
 

a) Commit	b) Rollback
c) Save point	d) Deadlock
  
- 2) Trigger are supported in \_\_\_\_\_.
 

a) Delete	b) Update
c) Views	d) All of the mentioned
  
- 3) \_\_\_\_\_ Cursor are declared by ORACLE for each UPDATE, DELETE and INSERT SQL commands.
 

a) Implicit	b) Explicit
c) Internal	d) External
  
- 4) PL/SQL supports data type(s) \_\_\_\_\_.
 

a) Scalar data type	b) Composite data type
c) Both a) and b)	d) None of the above
  
- 5) Concatenation operator is PL/SQL \_\_\_\_\_.
 

a) &&	b) +
c) -	d)
  
- 6) \_\_\_\_\_ represents single line comment in PL/SQL.
 

a) --	b) -
c) /* and */	d) *
  
- 7) To find number of rows updated by a SQL state use \_\_\_\_\_.
 

a) SQL.ROWCOUNT	b) ROWCOUNT
c) SQL%ROWCOUNT	d) %SQL.ROWCOUNT
  
- 8) Exceptions are designed to detect and handle \_\_\_\_\_ errors.
 

a) run time	b) compile time
c) both a) and b)	d) None

- Q.2 Answer the following. (Any Four) 08**
- a) %type and %row type in PL/SQL
  - b) Advantages of stored procedure
  - c) What is deadlock?
  - d) What is datatype?
  - e) What is Serializability?
  - f) What is check?
- Q.3 Answer the following. (Any Two) 08**
- a) Differentiate between PL/SQL function and procedure.
  - b) Write a PL/SQL block which handles two user defined exceptions.
  - c) Write a PL/SQL block to check given number is Armstrong or not.
- Q.4 Answer the following. (Any Two) 08**
- a) What is database trigger? Explain types of database trigger.
  - b) What is Cursor? Explain types of cursor with example.
  - c) Explain shadow paging.
- Q.5 Answer the following. (Any One) 08**
- a) What is concurrency control? Explain lock-based protocol in detail.
  - b) What is transaction? Explain properties of transaction.

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**B.C.A. (Semester - IV) (New) (CBCS) Examination:  
March/April - 2026  
Software Testing and QA (BCA1404)**

Day & Date: Monday, 13-04-2026  
Time: 12:00 PM To 02:00 PM

Max. Marks: 40

- Instructions:**
- 1) All questions are compulsory.
  - 2) Draw neat diagrams and give equations wherever necessary.
  - 3) Figures to the right place indicate full marks.
  - 4) Use of logarithmic table and calculator is allowed.

**Q.1 Choose correct alternatives from the following.**

**08**

- 1) Which of the following is not part of the Test document?
  - a) Test Case
  - b) Requirements Traceability Matrix [RTM]
  - c) Test strategy
  - d) Project Initiation Note [PIN]
  
- 2) Which Test Document is used to define the Exit Criteria of Testing?
  - a) Defect Report
  - b) Test Summary Report
  - c) Test Case
  - d) Test Plan
  
- 3) What is Selenium used for?
  - a) Stress testing databases
  - b) Performance testing of APIs
  - c) Automation of web application testing
  - d) Manual testing
  
- 4) What does boundary value analysis focus on?
  - a) Ensuring complete code coverage
  - b) Testing at the boundary of input ranges
  - c) Testing all input combinations
  - d) Testing invalid inputs only
  
- 5) Who usually conducts User Acceptance Testing (UAT) in Black Box Testing?
  - a) Compilers
  - b) Log analyzers
  - c) Developers
  - d) End-users
  
- 6) Which method is often combined in Grey Box Testing?
  - a) Alpha and Beta testing
  - b) Black Box Testing and White Box Testing
  - c) Manual testing and automated testing
  - d) Database testing only

- 7) What is Exploratory Testing?
- a) A simultaneous test design and execution process
  - b) A structured form of testing
  - c) Automated testing for new features
  - d) Testing with predefined test cases
- 8) What is Compatibility Testing?
- a) Ensuring the system works on different devices and browsers
  - b) Debugging individual lines of code
  - c) Testing only database schema
  - d) Performing code reviews

**Q.2 Answer the following. (Any Four) 08**

- a) Define Test Case Template.
- b) Define Soak Testing.
- c) What is Performance Testing?
- d) Define Failure and Error.
- e) What is Adhoc Testing?
- f) What is Alpha Testing?

**Q.3 Answer the following. (Any Two) 08**

- a) Explain integration testing with types.
- b) Explain regression testing with types.
- c) Design test case for Online Purchase Order in detail.

**Q.4 Answer the following. (Any Two) 08**

- a) What is Defect? Explain Defect Life Cycle.
- b) Explain Equivalence Class Partition Technique in BBT.
- c) Differences between Manual and Automation Testing.

**Q.5 Answer the following. (Any One) 08**

- a) What is Software Testing? Explain in details importance or need of software testing.
- b) Explain Statement Coverage Testing, Branch Coverage Testing, Path Coverage Testing and Inspection in WBT.

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**B.C.A. (Semester - IV) (New) (CBCS) Examination:  
March/April – 2026  
Digital Marketing (BCA1405)**

Day & Date: Wednesday, 15-04-2026  
Time: 12:00 PM To 02:00 PM

Max. Marks: 40

- Instructions:** 1) All questions are compulsory.  
2) Figures to the right indicate full marks.  
3) Draw neat & well labelled diagram wherever necessary.

**Q.1 Choose correct alternative:**

**08**

- 1) What is the purpose of search engine optimization (SEO)?
  - a) To increase website traffic through paid advertising
  - b) To build email lists
  - c) To create engaging content for social media
  - d) To improve website rankings in search engine results pages (SERPs)
  
- 2) What does SEM stand for?
 

a) Search Engine Marketing	b) Search Engine Optimization
c) Search Engine Maximization	d) Search Engine Management
  
- 3) Which platform is most commonly used for SEM campaigns?
 

a) Google Ads	b) Twitter Ads
c) Facebook Ads	d) Instagram Ads
  
- 4) What is the purpose of analyzing website traffic?
  - a) To increase website traffic
  - b) To create more content
  - c) To understand user behavior and optimize the website
  - d) To promote the website on social media
  
- 5) Which of the following is NOT a search engine?
 

a) Bing	b) Google
c) Facebook	d) Yahoo
  
- 6) Which social media platform is best suited for B2B marketing?
 

a) LinkedIn	b) Twitter
c) Facebook	d) Instagram
  
- 7) What does SEO stand for?
  - a) Search Engine Oversight
  - b) Search Engine Operations
  - c) Search Engine Optimization
  - d) Search Engine Output

- 8) What is the primary goal of digital marketing?
- a) To generate leads and sales
  - b) To drive website traffic
  - c) To create brand awareness
  - d) All of these

**Q.2 Answer the following. (Any Four) 08**

- a) What is SWOT?
- b) What is E-Commerce?
- c) What is blog?
- d) Explain Goole AdWords.
- e) What is SMO?
- f) What is affiliate marketing?

**Q.3 Answer the following. (Any Two) 08**

- a) Write on: Facebook and E-Mail marketing.
- b) Explain the Google Analytics.
- c) Explain the Traffic Sources of Website.

**Q.4 Answer the following. (Any Two) 08**

- a) What is the role of social media in Marketing?
- b) Explain the difference between traditional marking and digital marketing.
- c) What is the Search engine marketing? Explain its uses.

**Q.5 Answer the following. (Any One) 08**

- a) What is social media? Explain types of media platforms.
- b) Explain the different off page optimization technique in detail.

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**B.C.A. (Semester - IV) (New) (CBCS) Examination:  
March/April – 2026  
Python - II (BCA1406)**

Day & Date: Thursday, 16-04-2026  
Time: 12:00 PM To 02:00 PM

Max. Marks: 40

- Instructions:**
- 1) All questions are compulsory.
  - 2) Draw neat diagrams and give equations wherever necessary.
  - 3) Figures to the right indicate full marks.
  - 4) Use of logarithmic table and calculator is allowed.

**Q.1 Multiple Choice Questions.**

**08**

- 1) What is the purpose of the Frame widget in Tkinter?
  - a) To create a new window
  - b) To group related widgets together
  - c) To display a message
  - d) To create a button
  
- 2) How do you create a user-defined exception in Python?
  - a) By deriving a class from the Exception class
  - b) By using the raise statement
  - c) By using the try block
  - d) By using the except block
  
- 3) What is the purpose of the super() function in Python?
  - a) To define a new function
  - b) To call a method from a subclass
  - c) To define a new class
  - d) To call a method from a superclass
  
- 4) What is the main window in a Tkinter application called?
  - a) Primary window
  - b) Main window
  - c) Root window
  - d) Parent window
  
- 5) Which module is used to create threads in Python?
  - a) threading
  - b) processing
  - c) multithreading
  - d) multiprocessing
  
- 6) What is the purpose of the self parameter in a class method?
  - a) To refer to the class itself
  - b) To refer to the instance of the class
  - c) To refer to the parent class
  - d) To refer to the child class



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**B.C.A. (Semester - IV) (CBCS) Examination: March/April – 2026  
OOPS with C++ - II (19409401)**

Day & Date: Thursday, 09-04-2026  
Time: 12:00 PM To 02:00 PM

Max. Marks: 40

**Instructions:** 1) All questions are compulsory.  
2) Figures to the right indicate full marks.

**Q.1 Choose correct alternative.**

**08**

- 1) What is abstract class in C++?
  - a) Any Class in C++ is an abstract class
  - b) Class from which any class is derived
  - c) Class specifically used as a base class with at least one virtual functions
  - d) Class specifically used as a base class with at least one pure virtual functions
  
- 2) Which among the following can't be used for polymorphism?
  - a) Static member functions
  - b) Member functions overloading
  - c) Predefined operator overloading
  - d) Constructor overloading
  
- 3) Polymorphism is possible in C language.
  - a) True
  - b) False
  
- 4) What is an exception in C++ program?
  - a) A problem that arises during the execution of a program
  - b) A problem that arises during compilation
  - c) Also known as the syntax error
  - d) Also known as semantic error
  
- 5) A base class contain pure virtual function is called as \_\_\_\_\_.
  - a) Private base class
  - b) abstract base class
  - c) Virtual function
  - d) None of these
  
- 6) Which header file is required to use file I/O operations?
  - a) <ifstream>
  - b) <ostream>
  - c) <fstream>
  - d) <iostream>
  
- 7) Which of the following is the default mode of the opening using the ofstream class?
  - a) ios::in
  - b) ios::out
  - c) ios::app
  - d) ios::trunc

- 8) Which of the following is not used as a file opening mode?
- a) ios::trunk
  - b) ios::binary
  - c) ios::in
  - d) ios::ate

**Q.2 Answer the following. (Any Four) 08**

- a) Write the rules of destructor.
- b) Write the syntax of eof() stream state member function.
- c) Define Pure Virtual function.
- d) Write file opening modes.
- e) Define custom exceptions.

**Q.3 Answer the following. (Any Two) 08**

- a) Write a program in C++ to implement multiple inheritance
- b) Explain the difference between polymorphism with example.
- c) Write a program in C++ to read a file and count the number of vowels in that file.

**Q.4 Answer the following. (Any Two) 08**

- a) Explain any four stream state member function with example.
- b) Explain try, catch and throw method with example.
- c) Explain constructor overloading with example.

**Q.5 Answer the following. (Any One) 08**

- a) Define Inheritance? Explain virtual base class with example.
- b) Write a program in C to copy one file into another file.

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**B.C.A. (Semester - IV) (CBCS) Examination: March/April – 2026**  
**MySQL (19409403)**

Day & Date: Friday, 10-04-2026  
 Time: 12:00 PM To 02:00 PM

Max. Marks: 40

**Instructions:** 1) All questions are compulsory.  
 2) Draw neat diagrams and give equations wherever necessary.

**Q.1 Multiple choice questions.**

**08**

- 1) Which command is used to create a new database in MySQL?
  - a) create database
  - b) new database
  - c) make database
  - d) init database
- 2) Which of the following is not a valid MySQL data type?
  - a) int
  - b) varchar
  - c) image
  - d) date
- 3) Which function returns the current date in MySQL?
  - a) now()
  - b) curdate()
  - c) getdate()
  - d) date()
- 4) Which operator is used to test a value within a range?
  - a) like
  - b) in
  - c) between
  - d) exists
- 5) Which clause is used to remove duplicate rows from a result set?
  - a) unique
  - b) distinct
  - c) group by
  - d) having
- 6) Which logical operator is used to check if both conditions are true?
  - a) or
  - b) and
  - c) xor
  - d) not
- 7) Which of the following statements is used to rename a table?
  - a) rename table
  - b) alter table
  - c) modify table
  - d) update table
- 8) Which command is used to export a MySQL table into CSV format?
  - a) export
  - b) select into outfile
  - c) dump csv
  - d) save csv

**Q.2 Answer any four of the following.**

**08**

- a) Explain the difference between DDL and DML commands.
- b) Define subquery with an example.
- c) Differentiate between Primary Key and Foreign Key.

- d) What the use of the HAVING clause.
- e) What are IN and EXISTS operators?
- f) What is the difference between TRUNCATE and DELETE?

**Q.3 Answer any two of the following. 08**

- a) Explain the architecture of MySQL in detail.
- b) What are the different types of joins in MySQL? Explain with examples.
- c) Explain ROLLUP in GROUP BY with an example.

**Q.4 Answer any two of the following. 08**

- a) Explain transactions in MySQL with examples of COMMIT, ROLLBACK, and SAVEPOINT.
- b) What is a stored procedure? Write the syntax for creating a procedure with IN and OUT parameters.
- c) Define indexing. What are its advantages?

**Q.5 Answer any one of the following. 08**

- a) What are aggregate functions in MySQL? Give examples.
- b) Consider the following table Employee and write down following Queries.

EmpID	Name	Department	Salary	HireDate	City
1	Ramesh	HR	40000	2019-02-10	Pune
2	Sunita	IT	55000	2020-05-15	Mumbai
3	Rajesh	Finance	60000	2018-08-01	Delhi
4	Anjali	IT	45000	2021-03-22	Pune
5	Neha	HR	47000	2020-12-30	Delhi

- i) Display employees from Pune.
- ii) Find the average salary of each department.
- iii) Display employees hired after 2020-01-01.
- iv) Increase salary of IT employees by 10%.
- v) Create a view to show Employee Name and Department only.
- vi) Display employee details whose name start with 'R' letter.

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**B.C.A. (Semester - IV) (CBCS) Examination: March/April – 2026**  
**Ethics and Cyber Law (19409404)**

Day & Date: Saturday, 11-04-2026  
 Time: 12:00 PM To 02:00 PM

Max. Marks: 40

**Instructions:** 1) All questions are compulsory.  
 2) Figures to the right indicate full marks.

**Q.1 Multiple Choice Questions.****08**

- 1) \_\_\_\_\_ is not a spot from where attackers seek information.
  - a) Domain name
  - b) IP address
  - c) System enumeration
  - d) Document files
  
- 2) After performing \_\_\_\_\_ the ethical hacker should never disclose client information to other parties.
  - a) hacking
  - b) cracking
  - c) penetration testing
  - d) exploiting
  
- 3) \_\_\_\_\_ is defined as an attempt to steal, spy, damage or destroy computer systems, networks, or their associated information.
  - a) Cyber attack
  - b) Computer security
  - c) Cryptography
  - d) Digital hacking
  
- 4) Which one option is not a type of cybercrime?
  - a) Data theft
  - b) Forgery
  - c) Damage to data and systems
  - d) Installing antivirus for protection
  
- 5) \_\_\_\_\_ Acts provides legal framework for e-governance in India.
  - a) IT (Amendment) Act, 2008
  - b) Indian Penal Code
  - c) IT Act-2000
  - d) None of the above
  
- 6) Which of the following is a type of cyber attack?
  - a) Phishing
  - b) SQL Injections
  - c) Password Attack
  - d) All of the above
  
- 7) Release of Message Content and Traffic analysis are type of \_\_\_\_\_.
  - a) both active and passive attacks
  - b) neither active and passive attacks
  - c) active attacks
  - d) passive attacks

8) The legal risks of ethical hacking include lawsuits due to \_\_\_\_\_ of personal data.

- a) stealing
- b) disclosure
- c) deleting
- d) hacking

**Q.2 Answer any four of the following. 08**

- a) What is Ethical Hacking?
- b) Why are cyber laws needed?
- c) What is password cracking?
- d) Define criminal aspect.
- e) Define security aspect.
- f) What is Cybercrime?

**Q.3 Write short notes on any Two of the following. 08**

- a) Explain scope and limitations of Ethical Hacking.
- b) Explain Essential Terminology (Threat, Vulnerability, Target of Evaluation, Attack, Exploit).
- c) What is Foot Printing? Explain objectives of Foot Printing.

**Q.4 Answer any Two of the following. 08**

- a) Explain weakness in Information Technology Act.
- b) Explain Passive Attacks and Active Attacks in detail.
- c) Explain Cyber offenses in detail.

**Q.5 Answer any One of the following. 08**

- a) What is Hacking? Explain types of Hackers. Explain reasons for Hacking.
- b) Explain the key elements certification and monitoring prevention of crimes in Information Technology Act - 2000 in detail.

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**B.C.A. (Semester - IV) (CBCS) Examination: March/April - 2026**  
**Angular JS (19409405)**

Day & Date: Monday, 13-04-2026  
 Time: 12:00 PM To 02:00 PM

Max. Marks: 40

- Instructions:** 1) All questions are compulsory.  
 2) Draw neat labeled diagrams wherever necessary.  
 3) Figure to right indicate full marks.

**Q.1 Multiple choice questions.****08**

- 1) Which of the following is not a feature of AngularJS?
  - a) Two-way data binding
  - b) MVC architecture
  - c) Dependency injection
  - d) File system access
- 2) To bind input field data to a model, \_\_\_\_\_ directive is used.
  - a) ng-bind
  - b) ng-model
  - c) ng-app
  - d) ng-controller
- 3) ng-show and ng-hide work by \_\_\_\_\_.
  - a) Removing elements from DOM
  - b) Changing CSS display property
  - c) Adding classes only
  - d) None of the above
- 4) How do you make a property available to the view in AngularJS?
  - a) Attach it to \$scope
  - b) Attach it to document
  - c) Attach it to window
  - d) Attach it to controller
- 5) To display text in uppercase, you use \_\_\_\_\_.
  - a) {{text.toUpperCase()}}
  - b) {{text | uppercase}}
  - c) {{uppercase(text)}}
  - d) {{text | caps}}
- 6) The filter filter is used to \_\_\_\_\_.
  - a) Transform numbers
  - b) Format strings
  - c) Search and filter arrays
  - d) Sort arrays
- 7) To bind an input field to \$scope.username, you write \_\_\_\_\_.
  - a) <input ng-model="username">
  - b) <input ng-bind="username">
  - c) <input value="{{username}}">
  - d) <input model="username">
- 8) Which property of form object indicates if the form has been modified?
  - a) \$pristine
  - b) \$valid
  - c) \$touched
  - d) \$dirty

- Q.2 Solve any Four of the following. 08**
- a) List two advantages and two disadvantages of using a SPA.
  - b) Which AngularJS module is required to enable animations in directives and how do you include it in your application?
  - c) How to configure AngularJS?
  - d) What is Dependency Injection?
  - e) What is use of Filter Filter? Give example.
  - f) What is Scope broadcasting?
- Q.3 Write short notes on any Two of the following. 08**
- a) Explain features of AngularJS.
  - b) What is SPA? Explain ng-Route in detail.
  - c) Explain all data binding directives with example.
- Q.4 Answer any Two of the following. 08**
- a) Explain AngularJS Directive lifecycle.
  - b) Explain number expressions and string expressions with example.
  - c) Which directives are used for animation? Explain with example.
- Q.5 Answer any One of the following. 08**
- a) What is nested controller? How to create nested controller? Explain with example.
  - b) What is filter? How to create custom filter? Create custom filter which counts number of words in text.



**Q.2 Answer any Four of the following. 08**

- What is RARP?
- What is meant by logon script?
- What is meant by encryption?
- What is remote sensing?
- What is flooding?
- What is a smart card?

**Q.3 Write short notes on any Two of the following. 08**

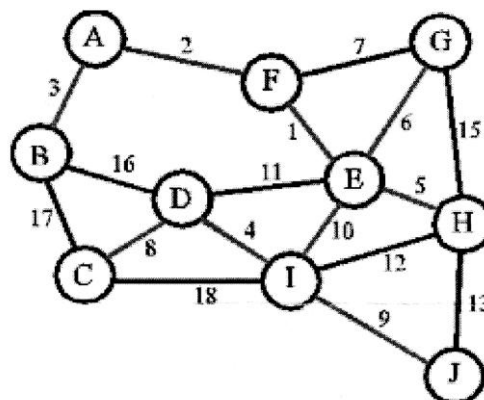
- Digital Signature
- Audio Compression
- Samba server

**Q.4 Answer any Two of the following. 08**

- Explain three-way handshaking mechanism.
- Explain Bluetooth in short.
- Explain PGP in detail.

**Q.5 Answer any One of the following. 08**

- Explain UDP format in detail. Also explain uses of UDP.
- Consider the following network with the indicated link cost. Use Dijkstra's shortest-path algorithm to compute the shortest paths from A to H and J.



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**B.C.A. (Semester - IV) (CBCS) Examination: March/April – 2026  
Python Programming (19409407)**

Day & Date: Thursday, 16-04-2026  
Time: 12:00 PM To 03:00 PM

Max. Marks: 80

**Instructions:** 1) All questions are compulsory.  
2) Figures to right indicates full marks.

**Q.1 A) Multiple choice questions. 10**

- 1) Which of the following functions results in case insensitive matching?
 

a) re.A	b) re.U
c) re.l	d) re.X
  
- 2) To open a file c:\scores.txt for reading, we use \_\_\_\_\_.
 

a) infile = open ("c:\scores.txt", "r")	b) infile = open("c:\\scores.txt", "r")
c) infile = open(file = "c:\scores.txt", "r")	d) infile = open(file = "c:\\scores.txt", "r")
  
- 3) What will be the output after the following statements?
 

```
x = 50
y = 10
z = y if (y > x) else x
print(z)
```

a) True	b) False
c) 50	d) 10
  
- 4) In IDLE shell, the output will be the same for all the following statements except one. Which one?
 

a) 4*3	b) 60//5
c) 17-5	d) 12/1
  
- 5) For which type of error does the interpreter runs the program but halts at error and reports the error as an "Exception"?
 

a) Semantic error	b) Syntax error
c) Runtime error	d) All type of errors
  
- 6) What will be the output after the following statements?
 

```
x = ['Today', 'Tomorrow', 'Yesterday']
y = x[1]
print(y)
```

a) x1	b) Today
c) Tomorrow	d) Yesterday



- Q.3 A) Attempt any Two of the following. 10**
- a) Write a python program to append data to an existing file and display them.
  - b) Explain Math module in details.
  - c) Explain Thread in python.
- B) What is function? Write a program to confirm entered number is odd or even using function. 06**
- Q.4 A) Attempt any Two of the following questions. 08**
- a) What is Literals? Explain different types of Literals in python.
  - b) Explain Button and Label widgets.
  - c) Explain the features of python.
- B) What are the conditional statements used in python explain with example? 08**
- Q.5 Attempt any Two of the following questions. 16**
- a) Explain any four widgets with example.
  - b) What is exception? Explain built-in exceptions and user defined exceptions with example.
  - c) Write a program to count number of words, lines and characters which is stored into file.

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**B.C.A. (Semester - V) (New) (CBCS) Examination: March/April – 2026**  
**ENGLISH**  
**Business English (BCA1501)**

Day & Date: Saturday, 18-04-2026  
 Time: 03:00 PM To 05:00 PM

Max. Marks: 40

**Instructions:** 1) All questions are compulsory.  
 2) Figures to the right indicate full marks.

**Q.1 Choose the correct alternative from the options:** **08**

- 1) What did Phatik leave for his brother?
  - a) bicycle
  - b) wooden log
  - c) books
  - d) fishing-rod, kite and marbles
  
- 2) Who snatched the queen's mirror?
  - a) her daughter
  - b) the new bride
  - c) the king
  - d) None of the above
  
- 3) Oliver goldsmith was an \_\_\_\_\_ poet,
  - a) Indian
  - b) American
  - c) British
  - d) Anglo-Irish
  
- 4) What is the central message of "*Money Madness*" by D.H. Lawrence?
  - a) Money is the root of all evil
  - b) The pursuit of money brings temporary happiness
  - c) Obsession with money can destroy human compassion and relationships
  - d) Poverty is a noble way of life
  
- 5) Which of the following is NOT one of the seven stages described by Shakespeare?
  - a) The lover
  - b) Justice
  - c) The merchant
  - d) The schoolboy
  
- 6) A.P.J. Abdul Kalam was awarded which of these prestigious civilian awards?
  - a) Bharat Ratna
  - b) Padma Shri
  - c) Padma Bhushan
  - d) All of the above
  
- 7) Choose the correct meaning of the phrasal verb "look after."
  - a) To search for something
  - b) To take care of someone or something
  - c) To watch closely
  - d) To find information

- 8) "They have completed the project." (Change the voice)
- a) The project has completed by them
  - b) The project has been completed by them
  - c) They have been completed the project
  - d) The project completed them.

**Q.2 Answer the following question in brief. (Any Four) 12**

- a) Why is the queen unsatisfied and seeks a rival?
- b) Describe the character of Village School Master.
- c) Sketch the character of Phatik.
- d) Write in brief about the Three Visions for India of A.P.J. Abdul Kalam.
- e) Write a short summary of Money Madness.
- f) What are the "Seven Ages of Man" described in the poem?

**Q.3 Answer the following. (Any One) 10**

- a) Explain the concept of 21<sup>st</sup> Century Skills in details.

**OR**

- b) Explain the concept of Leadership, Initiative, Productivity and Flexibility skills with suitable example.

**Q.4 Answer the following questions: 10**

Explain the learning skills with suitable example.

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**B.C.A. (Semester - V) (New) (CBCS) Examination:  
March/April - 2026  
Data Communication and Networking (BCA1502)**

Day & Date: Monday, 20-04-2026  
Time: 03:00 PM To 06:00 PM

Max. Marks: 80

- Instructions:**
- 1) All questions are compulsory.
  - 2) Draw neat labelled diagrams wherever necessary.
  - 3) Figures to right indicate full marks.

**Q.1 A) Multiple choice questions.**

**10**

- 1) An ARP request is normally \_\_\_\_\_.
  - a) broadcast
  - b) multicast
  - c) unicast
  - d) None of the above
- 2) \_\_\_\_\_ framing method is not suitable for Unicode characters.
  - a) Character Count
  - b) Byte Stuffing
  - c) Bit stuffing
  - d) Physical code violation
- 3) Which protocol handles errors by retransmitting only specific frames rather than the entire window?
  - a) Stop-and-Wait ARQ
  - b) Go-Back-N ARQ
  - c) Selective Repeat ARQ
  - d) Automatic Repeat Request (ARQ)
- 4) FTP uses \_\_\_\_\_ parallel TCP connections to transfer a file.
  - a) 1
  - b) 2
  - c) 3
  - d) 4
- 5) \_\_\_\_\_ operates at the physical as well as data link layers of the OSI protocol hierarchy.
  - a) Bridges
  - b) Routers
  - c) Switches
  - d) Hubs
- 6) SMTP uses which port number by default?
  - a) 20
  - b) 25
  - c) 110
  - d) 143
- 7) In CSMA/CA, before sending data, a station: \_\_\_\_\_
  - a) Waits for a token
  - b) Sends a jamming signal
  - c) Sends a Request to Send (RTS) signal
  - d) Broadcasts the data to all devices

- 8) What does Differential Manchester encoding use to represent data?
  - a) Level of signal
  - b) Frequency of pulses
  - c) Presence or absence of transition at start of bit interval
  - d) Pulse width
  
- 9) Which layer in the OSI model is responsible for end-to-end communication and error recovery?
  - a) Network
  - b) Session
  - c) Transport
  - d) Application
  
- 10) PCM is an example of which type of modulation?
  - a) Analog modulation
  - b) Frequency modulation
  - c) Digital modulation
  - d) Amplitude modulation

**B) Fill in the blanks:****06**

- 1) A \_\_\_\_\_ is a device that regenerates and amplifies signals to extend the transmission distance.
- 2) In \_\_\_\_\_, each signal is assigned a different frequency band.
- 3) In digital communication, \_\_\_\_\_ converts analog signals into digital form.
- 4) Minimum size of a UDP datagram would be \_\_\_\_\_.
- 5) Manchester is a type of \_\_\_\_\_ encoding.
- 6) The rate at which data is transmitted is called \_\_\_\_\_.

**Q.2 Solve the following. (Any Eight)****16**

- a) Which are the various control flags in TCP segment?
- b) What is gateway?
- c) Which are the types of errors?
- d) What is meant by non adaptive routing algorithm?
- e) What is flooding?
- f) What is routers?
- g) What is a phase modulation?
- h) What is three way handshaking mechanism?
- i) What is half duplex communication?
- j) What is meant by FDM?

**Q.3 A) Attempt the following. (Any Two)****10**

- 1) Explain ARP in short.
- 2) Explain Manchester and differential Manchester encoding.
- 3) Explain design issues of layers.

**B) Explain CSMA/CA protocol in detail.****06**

- Q.4 A) Attempt the following. (Any Two) 08**
- 1) Explain Go Back n ARQ protocol in detail.
  - 2) Explain Telnet.
  - 3) Detect and correct the error of received code 110001101 by using hamming code.
- B) Explain Guided transmission media in detail. 08**
- Q.5 Answer the following. (Any Two) 16**
- a) Explain network topologies in detail.
  - b) Explain Pulse coded modulation in detail.
  - c) Explain IPv4 protocol.

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**B.C.A. (Semester - V) (New) (CBCS) Examination:  
March/April – 2026  
Data Warehousing and Data Mining (BCA1503)**

Day & Date: Tuesday, 21-04-2026  
Time: 03:00 PM To 06:00 PM

Max. Marks: 80

**Instructions:** 1) All questions are compulsory.  
2) Figures to right indicate full marks.

**Q.1 A) Multiple choice questions. 10**

- 1) In a \_\_\_\_\_ schema a central fact table is connected to multiple dimension tables.
  - a) Snowflake
  - b) Star
  - c) Fact Constellation Schema
  - d) None of the above
  
- 2) \_\_\_\_\_ clustering, like DBSCAN, can automatically determine the number of clusters based on the density.
  - a) Density based
  - b) Partitioning Clustering
  - c) Hierarchical
  - d) None of these
  
- 3) The \_\_\_\_\_ Classifier is a probabilistic model based on Bayes' Theorem.
  - a) Decision tree
  - b) Back prorogation
  - c) Naive Bayes
  - d) KNN
  
- 4) \_\_\_\_\_ is not a common step in data preprocessing.
  - a) Data transformation
  - b) Data Modeling
  - c) Data cleaning
  - d) Data integration
  
- 5) \_\_\_\_\_ normalization is not very well efficient in handling the outliers.
  - a) Min-Max
  - b) Z-score
  - c) Decimal Scaling
  - d) None of the above
  
- 6) \_\_\_\_\_ variable has only two states.
  - a) Interval scale
  - b) Binary
  - c) Categorical
  - d) Ordinal
  
- 7) Which of the following is an example of an association rule?
  - a) If a customer buys bread, they are likely to buy butter
  - b) Classifying emails as spam or not spam
  - c) Clustering customers into groups based on their purchase history
  - d) Predicting the next word in a sentence

- 8) In association rule mining, \_\_\_\_\_ is most commonly used to generate frequent item sets?
- a) Linear regression                      b) K-means  
c) Apriori                                      d) Decision tree
- 9) What does ETL stand for in the context of data warehousing?
- a) Extract, Transform, Load              b) Evaluate, Test, Learn  
c) Execute, Transfer, Link                 d) Extract, Transfer, Link
- 10) What is a Data Mart?
- a) A central place to store raw unprocessed data  
b) A smaller, focused subset of a Data Warehouse for a specific business area or department  
c) Same as OLTP database  
d) A method of data cleaning

**B) Fill in the blank****06**

- 1) The process of combining data from multiple sources into a single dataset is called \_\_\_\_\_.
- 2) Fact constellation schema is also known as \_\_\_\_\_.
- 3) A \_\_\_\_\_ model is trained on labeled data.
- 4) AdaBoost is a type of \_\_\_\_\_ algorithm.
- 5) The process of discovering patterns and knowledge from large datasets is called \_\_\_\_\_.
- 6) The closest points to the separating hyperplane in SVM are called \_\_\_\_\_.

**Q.2 Solve the following. (Any Eight)****16**

- a) What is support and confidence?
- b) Describe the star schema in data warehousing.
- c) List out data mining functionalities.
- d) What is difference between supervised and unsupervised learning technique?
- e) What is Outlier Analysis?
- f) What is Frequent Itemsets?
- g) List out Data Warehouse Components.
- h) What is normalization?
- i) What is regression?
- j) List out Data Mining Applications.

**Q.3 A) Attempt the following. (Any Two)****10**

- a) Discuss the ensemble learning methods Bagging and Boosting.
- b) Explain the steps involved in data preprocessing.
- c) Consider a dataset of students with their Hours Studied, Regular in college (0 not regular 1 regular) and Exam Result (Pass = 1, Fail = 0): apply KNN classification for new student with Hours studied = 5 and regular = 1

Student	Regular	Hours Studied	Result
A	0	2	0 (fail)
B	0	4	0 (fail)
C	0	4	1 (pass)
D	1	6	1 (pass)
E	1	6	1 (pass)
F	1	3	0 (fail)
G	1	7	1 (pass)

**B)** Explain Bayesian Classification with example. **06**

**Q.4 A) Attempt the following. (Any Two)** **08**

- Explain data warehouse architecture.
- Explain SVM for classification.
- Apply all binning methods for the following sorted data with 3 bins:  
3, 7, 8, 13, 22, 22, 24, 26, 28, 28, 30, 37.

**B)** What is KDD? Explain steps in KDD. **08**

**Q.5 Answer the following.** **16**

- With a suitable example, explain K-Means Clustering algorithm.
- What is OLAP? Explain all OLAP operations in detail.
- Find all frequent itemset and association rule by using Apriori algorithm for min. support 3 and confidence 80%.

TID	Items bought
T1	B,A,D
T2	C,A,B,E
T3	D,A,C,E,B
T4	K,A,D,B
T5	F,K,A

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**B.C.A. (Semester - V) (New) (CBCS) Examination: March/April – 2026  
NET Core (BCA1504)**

Day & Date: Wednesday, 22-04-2026  
Time: 03:00 PM To 06:00 PM

Max. Marks: 80

**Instructions:** 1) All questions are compulsory.  
2) Figures to right indicate full marks.

**Q.1 A) Choose the correct alternative: 10**

- 1) Which of the following cannot be overloaded?
 

a) Constructors	b) Methods
c) Indexers	d) Destructors
  
- 2) \_\_\_\_\_ operator is called the Elvis operator.
 

a) ??	b) ?.
c) ::	d) =>
  
- 3) Which of the following is the base class for all exceptions in C#?
 

a) ApplicationException	b) Exception
c) SystemException	d) Object
  
- 4) Which keyword is used to restrict a class from being inherited?
 

a) sealed	b) abstract
c) Base	d) virtual
  
- 5) Which of the following statements about abstract classes and interfaces?
  - a) A class can implement multiple interfaces.
  - b) An interface can inherit from multiple interfaces.
  - c) An abstract class can be instantiated directly.
  - d) Both a and b
  
- 6) What is the advantage of using multiple threads?
  - a) Faster CPU scheduling
  - b) Concurrent execution and improved responsiveness
  - c) Reduced memory usage
  - d) Automatic garbage collection
  
- 7) Which generic collection allows fast search and insertion using a key?
  - a) List<T>
  - b) HashSet<T>
  - c) Dictionary<TKey, TValue>
  - d) Queue<T>



**B) Answer any one of the following.**

- 1) Write a note on Custom Exception with example. **08**
- 2) Explain params and out parameter passing technique with example.

**Q.5 Answer the following. (Any Two)**

**16**

- a) What is an Interface? Differentiate between abstract class and interface with suitable example
- b) Explain LINQ with a join query example
- c) Differentiate generic and non-generic classes. Explain any two Generic Collections with example.

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**B.C.A. (Semester - V) (New) (CBCS) Examination:  
March/April – 2026  
Data Science using Python (BCA1505-A)**

Day & Date: Thursday, 23-04-2026  
Time: 03:00 PM To 06:00 PM

Max. Marks: 80

- Instructions:**
- 1) All questions are compulsory.
  - 2) Draw neat, labelled diagrams wherever necessary.
  - 3) Figures to right indicate full marks.
  - 4) Use of log table and Scientific calculator is allowed.

**Q.1 A) Choose Correct Alternative. 10**

- 1) The \_\_\_\_\_ life cycle is simply the series of steps a data scientist.
 

a) Data Collection	b) Data Security
c) Data Science	d) None of these
  
- 2) In data analysis EDA Stands for \_\_\_\_\_.
 

a) Exploratory Data Action	b) Exploratory Data Analysis
c) Electronic Data Access	d) None of these
  
- 3) A VPN \_\_\_\_\_ is a powerful tool for protecting your online privacy.
 

a) Valid Private Network	b) Virtual Public Network
c) Virtual Private Network	d) None of these
  
- 4) \_\_\_\_\_ refers to information collected directly from first-hand sources.
 

a) Second Data	b) Raw Data
c) Primary Data	d) None of these
  
- 5) The \_\_\_\_\_ function can round to a specific decimal place.
 

a) round()	b) kround
c) specificround()	d) None of these
  
- 6) A U-shaped pattern in residual plots appears when the residuals exhibit a systematic curvature, resembling the shape of the letter \_\_\_\_\_.
 

a) Y	b) U
c) C	d) All of the these
  
- 7) \_\_\_\_\_ is a Python library for numerical calculations.
 

a) Array	b) Numpy
c) Data Structure	d) None of these

- 8) Slicing in python uses the \_\_\_\_\_ notation with a colon : to specify the range.
- |                  |                   |
|------------------|-------------------|
| a) Angle Bracket | b) Square Bracket |
| b) Curly Bracket | d) None of these  |
- 9) Pandas can be installed using \_\_\_\_\_ on Windows.
- |           |                  |
|-----------|------------------|
| a) pip    | b) np            |
| c) pandas | d) None of these |
- 10) \_\_\_\_\_ is a Python library for data visualization, primarily used to create static, animated, and interactive plots.
- |               |                  |
|---------------|------------------|
| a) Mplotlib   | b) NplotLib      |
| c) Matplotlib | d) None of these |

**B) Fill in the blank. 06**

- 1) Data \_\_\_\_\_ uses an algorithm to change human-readable text into a string of unreadable characters.
- 2) In data science, \_\_\_\_\_ are data points that significantly deviate from the overall pattern or distribution of a dataset.
- 3) \_\_\_\_\_ searching is a method to find the best possible combination of hyper parameters at which the model achieves the highest accuracy.
- 4) \_\_\_\_\_ in NumPy is a method of performing operations on entire arrays without explicit loops.
- 5) NumPy, short for \_\_\_\_\_ is a fundamental open-source library in Python for scientific computing.
- 6) in Matplotlib, we use the \_\_\_\_\_ function to create histograms

**Q.2 Solve the following. (Any Eight) 16**

- a) What is data in Data Science?
- b) What is data Collection?
- c) What is data preprocessing?
- d) What is data cleaning?
- e) What is a residual plot?
- f) What is cross validation in machine learning?
- g) What is overfitting and underfitting?
- h) What is testing and training data?
- i) What is catplot in seaborn?
- j) What is heatmap in seaborn?

**Q.3 A) Attempt the following. (Any Two) 10**

- a) Explain Applications of Data Science in various fields.
- b) Explain Data Science Life Cycle With suitable diagram.
- c) Explain Data Types of ndarrays with one suitable example.

**B) Short note. 06**

- a) Joint Distribution Plot
- b) Write short note on pip

- Q.4 A) Attempt the following. (Any Two) 08**
- a) Explain Secondary data collection methods.
  - b) What is generalization error? Explain.
  - c) Explain unique() and nunique() methods.
- B) What is membership operator? Explain with suitable example. 08**
- Q.5 Attempt the following. (Any Two) 16**
- a) What is Pandas and which task we can do using pandas? Explain with suitable example.
  - b) What is Slicing and Indexing in python? Explain with suitable examples.
  - c) What is Primary Data? Explain Primary Data collection methods.





**Q.5 Answer the following. (Any Two)****16**

- a) What is Data class? Explain use of data class with example.
- b) Explain use of break and continue. Write a program to demonstrate break and continue.
- c) Write a program to check given number is Armstrong number or not.

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**B.C.A. (Semester - V) (New) (CBCS) Examination:  
March/April – 2026  
React JS (BCA1505-C)**

Day & Date: Thursday, 23-04-2026  
Time: 03:00 PM To 06:00 PM

Max. Marks: 80

- Instructions:**
- 1) All questions are compulsory.
  - 2) Draw neat, labelled diagrams wherever necessary.
  - 3) Figures to right indicate full marks.
  - 4) Use of log tables and calculators is allowed.

**Q.1 A) Multiple choice questions.**

**10**

- 1) What is React primarily used for \_\_\_\_\_.
  - a) Building Mobile app
  - b) Server Side Processing
  - c) Building user Interface
  - d) Data Analysis
- 2) Which of the following is a correct way to comment in JSX?
 

a) <code>{/* Comment Line */}</code>	b) <code>//-----</code>
c) <code>&lt;!-----!&gt;</code>	d) <code># Command</code>
- 3) What are props in React?
  - a) Data passed from a parent component to a child component
  - b) Internal state of a component
  - c) External Libraries used in React
  - d) Functions inside a component
- 4) ReactJS written in which Language?
 

a) JAVA	b) PHP
c) JavaScript	d) None of these
- 5) What is Babel?
 

a) Compiler	b) Interpreter
c) Both a & b	d) None of these
- 6) JSX stands for \_\_\_\_\_.
 

a) JavaScript Extension	b) JavaScript
c) JavaScript XML	d) None of these
- 7) What is React?
  - a) A JavaScript Library
  - b) A CSS framework
  - c) A Python Library
  - d) A PHP Library

- 8) React JS is primarily used for which of the following?  
a) Backend Development            b) Database Management  
c) Frontend Development            d) Mobile App Development
- 9) How do you create a React Application?  
a) Using Node.JS  
b) Writing Plain JavaScript  
c) Using 'npx create-react-app' command  
d) Using HTML
- 10) Which testing framework is commonly used with React?  
a) Jest                                    b) Mocha  
c) Jasmine                                d) Py test

**B) Answer One sentence****06**

- 1) Define Workflow.
- 2) Define Pros.
- 3) Long form JSX
- 4) Define Form.
- 5) Define Method.
- 6) Long form API

**Q.2 Solve the following. (Any Eight)****16**

- a) Define React.
- b) Long form of NPM
- c) What is Building Block?
- d) What is Node?
- e) What is Project?
- f) What is Operator?
- g) What is Hooks?
- h) What is Refs?
- i) Define Synthetic Event in ReactJS.
- j) Differentiate between Controlled and Uncontrolled Components.

**Q.3 A) Attempt the following. (Any Two)****10**

- a) Difference between Local State vs Global State
- b) Difference between Functional Component vs Class Component
- c) Difference between JS and JSX

**B) Short Notes on "Redux Architecture".****06****Q.4 A) Attempt the following. (Any Two)****08**

- a) Write down Child Component.
- b) Explain if-else statement with example.
- c) Write down list and Keys.

**B) What is Operator? Explain types of Operator.****08**

**Q.5 Attempt the following. (Any Two)**

**16**

- a)** What is Hooks? Explain the types of Hooks.
- b)** What is Event? Explain Binding, Handlers, Pooling, Synthetic Events.
- c)** What is Router? Explain the types of Router.

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**B.C.A. (Semester - V) (New) (CBCS) Examination:  
March/April – 2026  
Advanced Java (BCA1506)**

Day & Date: Friday, 24-04-2026  
Time: 03:00 PM To 06:00 PM

Max. Marks: 80

- Instructions:**
- 1) All questions are compulsory.
  - 2) Draw neat diagrams wherever necessary.
  - 3) Figure to right indicate full marks.
  - 4) Use of log table and calculator in allowed.

**Q.1 A) Multiple Choice Question:**

**10**

- 1) Which class is used to create a connection to a database in JDBC?
  - a) DriverManager
  - b) Statement
  - c) Connection Manager
  - d) DataStream
- 2) Which method is called when a servlet is destroyed?
  - a) init()
  - b) destroy()
  - c) service()
  - d) doGet()
- 3) What is the full form of CGI?
  - a) Common Gateway Interface
  - b) Common Generic Interface
  - c) Computer Gateway Interface
  - d) Common Group Interface
- 4) Which tag in JSP is used to write Java code?
  - a) `<%! %>`
  - b) `<%= %>`
  - c) `<% %>`
  - d) All of the above
- 5) What is the advantage of using PreparedStatement?
  - a) Compile-time SQL validation
  - b) Precompiled for faster execution
  - c) Only used for SELECT statements
  - d) None
- 6) Which of the following is NOT a JSP implicit object?
  - a) request
  - b) out
  - c) resultSet
  - d) session
- 7) Hibernate is a \_\_\_\_\_.
  - a) Web server
  - b) Object Relational Mapping tool
  - c) Servlet
  - d) Compiler

- 8) In spring, which type of dependency injection uses the constructor?  
 a) Setter Injection                      b) Constructor Injection  
 c) Auto Wiring                            d) Field Injection
- 9) Javax.servlet.http.HttpServlet extends which class?  
 a) GenericServlet                        b) HttpRequest  
 c) Object                                    d) HttpSession
- 10) Which collection is used for one-to-many mapping in Hibernate?  
 a) List                                        b) Map  
 c) Set                                         d) All of the above

**B) Fill in the blank/Definition/One sentence answer/ One word answer/ Give the Name/Predict the product etc. 06**

- 1) The method used to forward a request from one servlet to another is \_\_\_\_\_.
- 2) \_\_\_\_\_ tag in JSP is used to declare variables and methods.
- 3) In JDBC, exceptions are handled using the \_\_\_\_\_ block.
- 4) Hibernate provides a mapping between Java classes and \_\_\_\_\_ tables.
- 5) The session.invalidate() method is used to \_\_\_\_\_ a session.
- 6) JSP pages are converted into \_\_\_\_\_ before execution.

**Q.2 Solve the following. (Any Eight) 16**

- a) What are the different types of JDBC drivers?
- b) What is URL rewriting? State its advantages.
- c) Write an all steps to connect to a MySQL database using JDBC.
- d) Explain the Servlet life cycle with diagram.
- e) What are cookies? State their advantages and disadvantages.
- f) Explain JSTL core tags with an example.
- g) Describe the use of RequestDispatcher in servlet.
- h) What is Hibernate annotation? Give one example.
- i) Difference between GenericServlet and HttpServlet.
- j) What are implicit objects in JSP? Name any four.

**Q.3 A) Attempt the following. (Any Two) 10**

- a) Explain different Session Tracking techniques in detail.
- b) Write a JSP program to display user input using a form.
- c) Explain different inheritance mapping strategies in Hibernate with diagrams.

**B) Write a program demonstrate to use of Setter Injection using XML in spring. 06**

**Q.4 A) Attempt the following. (Any Two) 08**

- a) What are JavaBeans? Explain with example.
- b) Describe architecture of JSP with a neat diagram.
- c) Write a program to use of CallableStatement.

- B)** Write a program to insert, update, and delete Employee data from a database using PreparedStatement and MySQL database. **08**

**Q.5 Attempt the following. (Any Two) 16**

- a)** Write a servlet program to check whether a user is authenticated or not.
- b)** Write a program to read product details such as product id, name, expire date, manufacture date, price from user and store it into product info table using hibernate.
- c)** Create a custom tag <custom:prime> that accepts parameter with name number and check that number is prime or not.

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**B.C.A. (Semester - V) (CBCS) Examination: March/April – 2026**  
**Core Java (19409502)**

Day & Date: Saturday, 18-04-2026  
 Time: 03:00 PM To 06:00 PM

Max. Marks: 80

- Instructions:**
- 1) All questions are compulsory.
  - 2) Figures to right indicate full marks.
  - 3) Draw neat labeled diagrams wherever necessary.
  - 4) Use of log table and calculators is allowed.

**Q.1 A) Multiple choice questions.****10**

- 1) Which keyword is used to inherit a class in Java?
  - a) implements
  - b) extends
  - c) inherits
  - d) superclass
- 2) try block can be followed by \_\_\_\_\_.
  - a) Only catch
  - b) Only finally
  - c) Catch or finally or both
  - d) None
- 3) How do you declare an array of integers in Java?
  - a) int arr[];
  - b) array int arr;
  - c) int[] arr;
  - d) Both a and c
- 4) Method overriding is an example of \_\_\_\_\_.
  - a) Compile-time polymorphism
  - b) Runtime polymorphism
  - c) Static binding
  - d) None
- 5) Threads communicate using \_\_\_\_\_.
  - a) wait() and notify()
  - b) sleep() and resume()
  - c) start() and stop()
  - d) yield() and join()
- 6) What is true about static members of a class?
  - a) They belong to instances
  - b) Dynamic allocation
  - c) Cannot be accessed via class name
  - d) Shared by all instances
- 7) Which Layout Manager arranges components in a single line?
  - a) Border Layout
  - b) Grid Layout
  - c) Flow Layout
  - d) Card Layout

- 8) Which of the following is a valid Java identifier naming convention?
  - a) Starting with number
  - b) Starting with underscore
  - c) Using spaces
  - d) All uppercase mandatory
  
- 9) An abstract class in Java \_\_\_\_\_.
  - a) can be instantiated
  - b) can have only abstract methods
  - c) can have concrete methods
  - d) must have no methods
  
- 10) What is the purpose of the break statement in Java?
  - a) To exit a loop or switch
  - b) To skip to next iteration
  - c) To continue execution
  - d) To pause execution

**B) One Sentence Answer**

**06**

- 1) What is an exception in Java?
- 2) What does JDBC stand for?
- 3) What does public access modifier mean?
- 4) What is AWT in Java?
- 5) State any one key feature of Java.
- 6) What is the purpose of the super keyword?

**Q.2 Solve any Eight of the following.**

**16**

- a) What is multiple inheritance? How does Java support it?
- b) How do you initialize an array in Java? Give an example.
- c) What are the main components of JDBC architecture?
- d) What is the significance of the main method in Java?
- e) What are event listeners? Give an example.
- f) What is the lifecycle of a Java thread?
- g) What is the purpose of CallableStatement in JDBC?
- h) What does final keyword mean when applied to a class?
- i) What does protected access modifier mean?
- j) What are the differences between abstract class and interface?

**Q.3 A) Attempt the following. (Any Two)**

**10**

- 1) Compare Thread class and Runnable interface for threading
- 2) Explain the concept of constructors in Java with examples.
- 3) Explain Java AWT components with examples (Frame, Button, Label).

**B) Describe object-oriented programming principles and how Java implements them.**

**06**

**Q.4 A) Attempt the following. (Any Two)**

**08**

- 1) Compare different layout managers BorderLayout and GridLayout with examples.
- 2) Describe how iteration for and while statements are used in Java programming.
- 3) Discuss how to execute SQL queries using JDBC Statement and PreparedStatement.

**B)** Explain exception handling mechanisms in Java with example. **08**

**Q.5 Attempt the following. (Any Two)** **16**

- a)** Discuss access control in Java (public, private, protected, default) with example.
- b)** Explain threading concepts in Java including synchronization mechanisms.
- c)** Discuss JDBC connectivity steps including driver loading, connection establishment, and query execution.

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Set **P**

**B.C.A. (Semester - V) (CBCS) Examination: March/April - 2026**  
**Visual Programming (19409503)**

Day & Date: Monday, 20-04-2026  
 Time: 03:00 PM To 06:00 PM

Max. Marks: 80

**Instructions:** 1) All questions are compulsory.  
 2) Figures to right indicate full marks.

**Q.1 A) Choose the correct alternatives given below. 10**

- 1) Which method has the same name as that of its class?
  - a) delegate
  - b) class
  - c) constructor
  - d) None of the mentioned
- 2) To implement delegates, the necessary condition is?
  - a) Class declaration
  - b) Inheritance
  - c) Runtime polymorphism
  - d) Exception
- 3) Which control flow statement is used to iterate over a collection in c#?
  - a) for
  - b) foreach
  - c) do-while
  - d) None of these
- 4) To declare an array, define the variable type with \_\_\_\_\_.
  - a) Square brackets []
  - b) Curly brackets {}
  - c) Round brackets ()
  - d) None of the above
- 5) Which C# concept has the capability of an object to take number of different forms and hence display behaviour as accordingly?
  - a) Polymorphism
  - b) Encapsulation
  - c) Abstraction
  - d) None of the above
- 6) Which keyword is used to declare an interface in C#?
  - a) interface
  - b) Interchange
  - c) implement
  - d) Implements
- 7) In c#, which keyword is used to define a method that does not return a value?
  - a) return
  - b) None
  - c) void
  - d) null
- 8) What is the purpose of exception handling in c#?
  - a) To enhance programme performance
  - b) To avoid writing error messages
  - c) To gracefully handle runtime errors
  - d) To simplify debugging

- 9) An interface can contain declaration of \_\_\_\_\_.  
 a) Method  
 b) Events  
 c) Indexer  
 d) None of these
- 10) Which keyword is used to initiate an object of class in c#?  
 a) create  
 b) instance  
 c) object  
 d) new

**B) One Sentence Answer.****06**

- a) What is function in c#?  
 b) What is static variable?  
 c) Write syntax for how to create object in c#.  
 d) What is interface?  
 e) What is Reference type?  
 f) Which keyword is used for declaring namespace?

**Q.2 Solve the following. (Any Eight)****16**

- a) What is difference between method overloading & method overriding?  
 b) What is FCL?  
 c) What is sorted list?  
 d) What is virtual method?  
 e) What is abstract class?  
 f) What is difference between SDI & MDI?  
 g) What is type casting in c#?  
 h) What is jagged array?  
 i) What is data reader in ADO.Net?  
 j) What is importance of finally block?

**Q.3 A) Attempt the following questions. (Any Two)****10**

- 1) Explain the significance of property & indexer with example.  
 2) Write a difference between structure and class in c#.  
 3) What is inheritance & give example of multilevel inheritance.

**B) Short note:****06**

- i) Enumeration  
 ii) Garbage Collection

**Q.4 A) Attempt the following questions. (Any Two)****08**

- 1) What is constructor & explain default constructor with example.  
 2) What is a delegate? Write simple example of delegate in c#.  
 3) What are the components of ADO.Net architecture?

**B) Explain .net framework with block diagram.****08****Q.5 Attempt the following. (Any Two)****16**

- a) What is polymorphism in C# & explain their type with example?  
 b) Define exception handling & explain try-catch-throw-finally with example.  
 c) What is collection & explain their four type with example.

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**B.C.A. (Semester - V) (CBCS) Examination: March/April – 2026**  
**Computer Graphics (19409504)**

Day & Date: Tuesday, 21-04-2026  
 Time: 03:00 PM To 06:00 PM

Max. Marks: 80

- Instructions:**
- 1) All questions are compulsory.
  - 2) Draw neat labelled diagrams wherever necessary.
  - 3) Figures to right indicate full marks.
  - 4) Use of log table and calculators is allowed.

**Q.1 A) Multiple choice questions.****10**

- 1) Which of the following is not an application of Computer Graphics?
  - a) CAD (Computer-Aided Design)
  - b) Image processing
  - c) Weather forecasting
  - d) Game development
- 2) Raster scan monitors refresh the screen using \_\_\_\_\_.
  - a) Randomly drawn pixels
  - b) Horizontal line by line scanning
  - c) Vertical line by line scanning
  - d) Vector-based display
- 3) Which of the following devices is a graphical input device?
 

a) LCD panel	b) Plotter
c) Keyboard	d) Joystick
- 4) Bresenham's line drawing algorithm is efficient because it \_\_\_\_\_.
  - a) Uses floating-point arithmetic
  - b) Avoids floating-point arithmetic and uses integer calculations
  - c) Requires polynomial equations
  - d) Uses recursion
- 5) The odd-even method and winding number method are used for \_\_\_\_\_.
  - a) Polygon clipping
  - b) Line drawing
  - c) Inside-outside test for polygons
  - d) Circle generation
- 6) The homogeneous coordinate system is mainly used in computer graphics for \_\_\_\_\_.
  - a) Faster memory access
  - b) Simplifying 2D and 3D transformations
  - c) Enhancing image quality
  - d) Handling raster devices

- 7) Which transformation is not a basic 2D transformation?
  - a) Translation
  - b) Rotation
  - c) Scaling
  - d) Reflection about any line
- 8) In 3D graphics, rotation about an arbitrary axis can be represented using \_\_\_\_\_.
  - a) Bresenham's algorithm
  - b) Homogeneous transformation matrices
  - c) Boundary fill algorithm
  - d) Cohen-Sutherland algorithm
- 9) Perspective projection is different from parallel projection because \_\_\_\_\_.
  - a) It maintains the size of objects
  - b) It produces vanishing points
  - c) It uses only orthographic planes
  - d) It avoids depth perception
- 10) Cohen-Sutherland algorithm is used for \_\_\_\_\_.
  - a) Line clipping in 2D
  - b) Polygon filling
  - c) Scan conversion of circles
  - d) 3D rotation

**B) Fill in the blank.****06**

- 1) The process of converting a mathematical description of a line or circle into a set of pixels is called \_\_\_\_\_.
- 2) The algorithm used to fill a bounded region using a starting seed point is called the \_\_\_\_\_ algorithm.
- 3) A \_\_\_\_\_ projection preserves parallelism of lines but does not provide a realistic depth effect.
- 4) In 2D viewing, the portion of the scene that is visible is defined by the \_\_\_\_\_ and \_\_\_\_\_.
- 5) The \_\_\_\_\_ algorithm is an efficient method for generating circles using only integer calculations.
- 6) A \_\_\_\_\_ transformation in 2D graphics is used to slant the shape of an object.

**Q.2 Solve the following. (Any Eight)****16**

- a) Define Computer Graphics.
- b) List any two graphical input devices.
- c) What is raster scan display?
- d) State the difference between DDA and Bresenham's line drawing algorithm.
- e) What is the purpose of inside--outside test in polygons?
- f) Define translation in 2D transformations.
- g) What are vanishing points in perspective projection?
- h) Write two applications of clipping.
- i) Define shearing in 2D transformation.
- j) What is the role of homogeneous coordinates in computer graphics?

- Q.3 A) Attempt the following. (Any Two) 10**
- 1) Explain the boundary fill and scan line fill algorithms with diagrams.
  - 2) Discuss the various types of parallel projections with neat sketches.
  - 3) Explain scaling about a reference point with an example.
- B) Explain inverse of basic transformation. 06**
- Q.4 A) Attempt the following. (Any Two) 08**
- 1) Explain the difference between raster scan and random scan devices.
  - 2) Write short notes on plasma panel display and LCD panels.
  - 3) Explain the concept of window and viewport in 2D viewing.
- B) Explain Cohen-Sutherland line clipping algorithm with an example. 08**
- Q.5 Attempt the following. (Any Two) 16**
- a) Explain in detail the midpoint circle drawing algorithm with an example.
  - b) Describe the different 3D transformations with suitable examples.
  - c) Discuss perspective projection in detail. Explain vanishing points with diagrams.

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**B.C.A. (Semester - V) (CBCS) Examination: March/April – 2026**  
**Recent Trends in IT (19409505)**

Day & Date: Wednesday, 22-04-2026  
 Time: 03:00 PM To 06:00 PM

Max. Marks: 80

- Instructions:** 1) All questions are compulsory.  
 2) Draw neat labelled diagrams wherever necessary.  
 3) Figures to right indicate full marks.  
 4) Use of log table calculators is allowed.

**Q.1 A) Multiple choice questions.****10**

- 1) Which of the following are the features of cloud computing?
  - a) Security
  - b) Availability
  - c) Large Network Access
  - d) All of the mentioned
- 2) Which of the following is the application of cloud computing?
  - a) Adobe
  - b) Paypal
  - c) Google G Suite
  - d) All of the above
- 3) Which of the following is an example of a SaaS cloud service?
  - a) Google Workspace
  - b) Dropbox
  - c) Salesforce
  - d) All of the above
- 4) Which of the following is one of the key data science skills?
  - a) Statistics
  - b) Machine Learning
  - c) Data Visualization
  - d) All of the mentioned
- 5) What is the full form of IoT?
  - a) Internet of Technology
  - b) Incorporate of Things
  - c) Internet of Things
  - d) Incorporate of Technology
- 6) \_\_\_\_\_ has the world's largest Hadoop cluster.
  - a) Apple
  - b) Datamatics
  - c) Facebook
  - d) None of the mentioned
- 7) Which of the following is the most important language for Data Science?
  - a) Ruby
  - b) R
  - c) Java
  - d) None of these
- 8) Which architectural layer is used as a backend in cloud computing?
  - a) cloud
  - b) soft
  - c) client
  - d) all of the mentioned

- 9) In simple term, machine learning is \_\_\_\_\_.  
 a) Prediction to answer a query  
 b) training based on historical data  
 c) Both a) and b)  
 d) None of above
- 10) In which language is Hadoop written?  
 a) C  
 b) Python  
 c) Java  
 d) Ruby

**B) Fill in the blank. 06**

- 1) Who is the father of cloud computing?  
 2) Graphical representation of a data set is called \_\_\_\_\_.  
 3) Data with a large size is called as \_\_\_\_\_.  
 4) The process of evaluating data through analytical and statistical tools are called as \_\_\_\_\_.  
 5) Describe the 3 Rs of green IT \_\_\_\_\_.  
 6) A relationship between two or more variables is referred to as a \_\_\_\_\_.

**Q.2 Solve the following. (Any Eight) 16**

- a) IAAS stands for.  
 b) Define IOT.  
 c) What is Virtualization?  
 d) BI Stands for.  
 e) Hadoop YARN Stands for.  
 f) What is Green IT?  
 g) What is training phase in Machine Learning?  
 h) Define Public Clouds.  
 i) Define the term Multitenancy?  
 j) What is virtual machine?

**Q.3 A) Attempt the following. (Any Two) 10**

- 1) Explain characteristics of Big data?  
 2) Explain Hadoop Architecture.  
 3) Write a short note on role of Data Scientist.

**B) Short note/Solve. 06**

- 1) Cloud service models.  
 2) Big Data.

**Q.4 A) Attempt the following. (Any Two) 08**

- 1) What are the Core Components of Hadoop?  
 2) Explain applications of Machine Learning Algorithms.  
 3) Define cloud computing and explain essential characteristics.

**B) Describe /Explain /Solve. 08**

Explain in details the architecture of IOT and applications of IOT.

**Q.5 Answer the following. (Any Two)****16**

- a)** What are Virtual Machines? Explain Architecture of Virtual Machines in detail.
- b)** What are the Environmental impacts of IT and explain the Holistic Approach to Greening IT.
- c)** Data Science Vs BI.



- 8) Select the most appropriate option from below which changes the following direct sentence into indirect sentence.  
She said, "I am not feeling well today."  
a) She said that she was not feeling well that day.  
b) Today she was not feeling well was told to me.  
c) She told me that she has not been feeling well that day.  
d) She is telling she was not feeling well today

**Q.2 Answer the following in brief. (Any Four)****12**

- a) What is the significance of the Wife's dream?
- b) What are the qualities for young citizens, highlights by Lal Bahadur Shastriji?
- c) Describe the personality of the duchess.
- d) Describe the theme of the poem "Ode to Beauty".
- e) Discuss the relationship between the speaker and the tree in "Tree at My Window".
- f) Discuss the theme of time in Rabindranath Tagore's poem "Endless Time".

**Q.3 Answer the following. (Any One)****10**

- a) How do literacy skills in IMT contribute to the development of effective communication in a digital age?
- b) Discuss the role of media and technology in raising environmental awareness. How do digital platforms and social media help spread knowledge about environmental issues?

**Q.4 Answer the following.****10**

What are the essential qualities of a good leader according to the FLIPS model?

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**B.C.A. (Semester - VI) (New) (CBCS) Examination:  
March/April - 2026  
Network Security (BCA1602)**

Day & Date: Monday, 20-04-2026  
Time: 12:00 PM To 03:00 PM

Max. Marks: 80

- Instructions:** 1) All questions are compulsory.  
2) Figures to right indicate full marks.  
3) Draw neat labelled diagram wherever necessary.

**Q.1 A) Multiple choice questions.**

**10**

- 1) MAC is a \_\_\_\_\_.
  - a) one-to-one mapping
  - b) many-to-one mapping
  - c) onto mapping
  - d) None of the mentioned
- 2) Network Security provides authentication and access control for resources.
  - a) True
  - b) False
- 3) Asymmetric key cryptography is also known as \_\_\_\_\_ key cryptography.
  - a) Public
  - b) Private
  - c) Personal
  - d) None of these
- 4) Which of the following is an authentication method?
  - a) Secret question
  - b) Biometric
  - c) Password
  - d) All of the above
- 5) The field that covers a variety of computer networks, both public and private, that are used in everyday jobs.
  - a) Artificial Intelligence
  - b) ML
  - c) Network Security
  - d) IT
- 6) Which of the following is an objective of network security?
  - a) Confidentiality
  - b) Integrity
  - c) Availability
  - d) All of the above
- 7) Which of these is a part of network identification?
  - a) User ID
  - b) Password
  - c) OTP
  - d) Fingerprint
- 8) \_\_\_\_\_ is a strong password.
  - a) 15August23
  - b) Pune88
  - c) P@ass123
  - d) ! August

- 9) The process of verifying the identity of a user.
- |                   |                   |
|-------------------|-------------------|
| a) Authentication | b) Identification |
| c) Validation     | d) Verification   |
- 10) Cryptography can be divided into \_\_\_\_\_ types.
- |      |      |
|------|------|
| a) 5 | b) 4 |
| c) 3 | d) 2 |

**B) Fill in the blank.****06**

- 1) \_\_\_\_\_ defined as a network security device that allows or rejects network access between an untrusted zone and a trusted zone.
- 2) \_\_\_\_\_ can be used to protect any document on the Internet.
- 3) An algorithm in encryption is called \_\_\_\_\_.
- 4) Biometric authentication works on the basis of \_\_\_\_\_.
- 5) The process of transforming unreadable text into plain text is called \_\_\_\_\_.
- 6) \_\_\_\_\_ play an important role in the use of encryption for various network security applications.

**Q.2 Solve the following. (Any Eight)****16**

- a) What is transposition technique?
- b) Define Encryption.
- c) What is Network Security?
- d) Stand for HMAC & PGP.
- e) What is Kerberos?
- f) What are the type Principle of Security?
- g) What is Authentication?
- h) What are the type of Security Attacks?
- i) What is honey pots?
- j) Define Plain Text.

**Q.3 A) Attempt the following. (Any Two)****10**

- 1) What is Cryptography? Explain cryptography with symmetric key encryption.
- 2) Define Biometric? Explain Biometric Authentication
- 3) Explain Knapsack & ELGamal Algorithms in details.

**B) Short note on IP Security.****06****Q.4 Attempt the following. (Any Two)****16**

- a) What is Firewall? Explain type of firewall.
- b) Explain type of Internet Security protocol.
- c) Explain message digests in details.

**Q.5 Answer the following. (Any Two)****16**

- a) Define the User Authentication? Explain smart card in details.
- b) What is digital signature? Explain its use with the help of example.
- c) What is Security? What are the need for Security?

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**B.C.A. (Semester - VI) (New) (CBCS) Examination:  
March/April – 2026  
Data Visualization using Power BI (BCA1603)**

Day & Date: Tuesday, 21-04-2026  
Time: 12:00 PM To 03:00 PM

Max. Marks: 80

- Instructions:** 1) All questions are compulsory.  
2) Draw neat, labelled diagrams wherever necessary.  
3) Figures to right indicate full marks.

**Q.1 A) Multiple choice questions.**

**10**

- 1) Which of the following is NOT a component of Power BI?
  - a) Power BI Service
  - b) Power BI Desktop
  - c) Power BI Engine
  - d) Power BI Gateway
- 2) Which file type is NOT supported as a data source in Power BI?
  - a) JSON
  - b) TXT
  - c) JPG
  - d) XML
- 3) In Power Query, \_\_\_\_\_ is used to reorder columns?
  - a) Transform
  - b) Home
  - c) View
  - d) Column Tools
- 4) \_\_\_\_\_ DAX function returns the earliest date in a column?
  - a) MIN()
  - b) FIRSTDATE()
  - c) EARLIER()
  - d) EARLIEST()
- 5) \_\_\_\_\_ Chart is best for showing cumulative progress toward a target.
  - a) Gauge
  - b) Waterfall
  - c) KPI
  - d) Card
- 6) Power BI's Import Mode is best suited when \_\_\_\_\_.
  - a) Datasets are very large
  - b) Data is updated in real time
  - c) Fast performance is needed
  - d) Only cloud data is used
- 7) \_\_\_\_\_ DAX function creates a calculated column with row-by-row logic.
  - a) CALCULATE()
  - b) SUMX()
  - c) FILTER()
  - d) IF()
- 8) \_\_\_\_\_ Visual is used to represent geographic data.
  - a) Pie Chart
  - b) Map
  - c) Card
  - d) KPI

9) Which of the following is a Power BI Desktop view?

- a) Data view
- b) Report view
- c) Model view
- d) All of these

10) A Power BI Dashboard is always limited to \_\_\_\_\_.

- a) One dataset
- b) One page
- c) One visualization
- d) One report

**B) Fill in the blank.**

**06**

- 1) \_\_\_\_\_ is the cloud-based service where Power BI reports are shared.
- 2) \_\_\_\_\_ Chart is suitable for comparing actual vs target values.
- 3) \_\_\_\_\_ is the process of removing duplicate records in Power Query.
- 4) The \_\_\_\_\_ function in DAX is used to filter a table expression.
- 5) In Power BI, a \_\_\_\_\_ is a saved set of steps applied to data during transformation.
- 6) \_\_\_\_\_ Visual is commonly used to show performance trends with drill-down.

**Q.2 Solve the following. (Any Eight)**

**16**

- a) Define Power BI Gateway.
- b) What is conditional formatting?
- c) Define a clustered bar chart and its use case.
- d) What is the “Manage Relationships” feature in Power BI?
- e) What is the difference between “Column Quality” and “Column Profile”?
- f) What is the use of KPI visual?
- g) Define Append Queries with example.
- h) What are the different types of data sources supported in Power BI?
- i) What are importances of data view and relationship view?
- j) What is the role of “Drill-through” in reports?

**Q.3 A) Write short notes. (Any Two)**

**10**

- 1) Explain the process of transforming datasets in Power Query: renaming, merging, and splitting.
- 2) Difference between Measures and Calculated Columns.
- 3) Describe filtering data by numeric, text, and date ranges.

**B) Describe the types of joins in Power BI.**

**06**

**Q.4 A) Attempt the following (Any Two)**

**08**

- 1) Explain SUM, SUMX and its use with example.
- 2) Describe types of Filters in Power BI Desktop.
- 3) Explain sorting data and defining sort by columns.

**B) Explain the components of Power BI.**

**08**

**Q.5 Attempt the following. (Any Two)**

16

- a) How slicers improve interactivity in dashboards. Explain in details.
- b) What are TreeMap visuals? Explain their advantages and limitations.
- c) Consider the following Sales Dataset and write DAX queries.

OrderID	Product	Sales	Quantity	City	OrderDate
101	Laptop	50000	2	Mumbai	2020-05-10
102	Mobile	20000	5	Delhi	2021-07-12
103	Tablet	15000	3	Pune	2021-08-15
104	Laptop	60000	4	Mumbai	2022-01-20
105	Mobile	25000	6	Chennai	2022-03-22

- a) Calculate total sales by City.
- b) Find the average sales of Laptops.
- c) Count the total number of orders in 2021.
- d) Create a calculated column to extract Year from OrderDate.
- e) Find total sales of mobile products.
- f) Find total sales by product.
- g) Calculate total quantity sold by product.
- h) Count of Orders in Mumbai.

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**B.C.A. (Semester - VI) (New) (CBCS) Examination:  
March/April – 2026  
ASP.Net Core (BCA1604)**

Day & Date: Wednesday, 22-04-2026  
Time: 12:00 PM To 03:00 PM

Max. Marks: 80

- Instructions:**
- 1) All questions are compulsory.
  - 2) Draw neat labelled diagrams wherever necessary
  - 3) Figures to right indicate full marks.

**Q.1 A) Multiple choice question: 10**

- 1) The \_\_\_\_\_ method reads an item from TempData without removing it, allowing the data to be accessed multiple times without deletion.
  - a) Store
  - b) Peek
  - c) Load
  - d) Save
- 2) Suppose you want to upload multiple files using Razor forms then \_\_\_\_\_ is used.
  - a) Html.FilesFor()
  - b) [Upload(Multiple)]
  - c) <input type="file" multiple />
  - d) <fileupload multiple='true' />
- 3) The primary role of the View in MVC is \_\_\_\_\_.
  - a) Handle business logic
  - b) Manage routing
  - c) Store data
  - d) Display data to the user
- 4) The dependency injection in ASP.NET Core is \_\_\_\_\_.
  - a) A technique to pass objects and service into a class
  - b) A way to insert data into the database
  - c) A way to register routes
  - d) A method for HTTP POST
- 5) The \_\_\_\_\_ file contains routing configuration in ASP. NET Core MVC.
  - a) \_ViewStart.cshtml
  - b) appsettings.json
  - c) Program.cs
  - d) \_ViewImport.cshtml
- 6) IActionResult is \_\_\_\_\_.
  - a) An interface for models
  - b) A configuration class
  - c) A routing attribute
  - d) An interface that represents the result of an action method

- 7) The \_\_\_\_ attribute is used to define an action method for a specific route.
- |            |                |
|------------|----------------|
| a) [Route] | b) [HttpRoute] |
| c) [Path]  | d) [MvcRoute]  |
- 8) The \_\_\_\_\_ attribute is used to restrict access to a controller.
- |            |                |
|------------|----------------|
| a) [Route] | b) [Authorize] |
| c) [Bind]  | d) [Validate]  |
- 9) Entity Framework Core is \_\_\_\_\_.
- A front-end framework
  - A JavaScript library
  - An Object-Relational Mapper (ORM)
  - A database system
- 10) The \_\_\_\_\_ attribute/annotation is used to set a primary key in a model.
- |         |              |
|---------|--------------|
| a) [Id] | b) [Primary] |
| c) Sql  | d) [Key]     |

**B) Fill in the blank.**

**06**

- Razor syntax starts with \_\_\_\_ symbol.
- Static files are typically served from \_\_\_\_\_ folder.
- The \_\_\_\_\_ package is required for EF Core SQL Server support.
- To define the EF Core context, the class must inherit from \_\_\_\_\_.
- The \_\_\_\_\_ return type sends a raw string as the response.
- The \_\_\_\_\_ class provides base functionality to all controllers in ASP.NET Core MVC.

**Q.2 Solve the following. (Any Eight)**

**16**

- What are Benefits of Using HTML Helpers?
- Explain Blazor technology.
- Explain Database-First Approach.
- Write down steps to create Student model with prope annotations.
- What are different Form Helpers used in ASP.Net Core? Write syntax of it.
- What are key Features of SSMS?
- What is DbSet? Explain with example.
- Explain ViewBag with example.
- What are different Key Components of ASP.NET Core?
- What is ViewModel? Explain with example.

**Q.3 A) Attempt the following. (Any Two)**

**10**

- What is difference between partial view and view component? Explain view component with example.
- What is route constraint? Explain with example.
- What is MVC? Explain in detail.

- B) What are different techniques used to pass data from controller to view? Explain each with example.**

**06**

- Q.4 A) Attempt the following. (Any Two) 08**
- 1) Which package is used for migration? Explain how to create migration and seeding with example.
  - 2) Explain how to import and export excel file with example.
  - 3) What are differences Between Cookies and Sessions? Explain in detail.
- B) Write program to demonstrate all types of action methods used in ASP.Net Core MVC application. 08**
- Q.5 Answer the following (Any two) 16**
- a) Explain Layout View, ViewStart and ViewImport with example.
  - b) What is Data Annotations? Explain model-based data annotation with example.
  - c) What is dependency injection? Write a program to demonstrate different lifetime of dependency injection.

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**B.C.A. (Semester - VI) (New) (CBCS) Examination:  
March/April – 2026  
Linux and Shell Programming (BCA1605-A)**

Day & Date: Thursday, 23-04-2026  
Time: 12:00 PM To 03:00 PM

Max. Marks: 80

- Instructions:** 1) All questions are compulsory.  
2) Draw neat labelled diagrams wherever necessary  
3) Figures to right indicate full marks.

**Q.1 A) Multiple choice questions.**

**10**

- 1) GNOME is a \_\_\_\_\_
 

a) Shell	b) Desktop environment
c) Kernel	d) File system
- 2) Permission 777 means \_\_\_\_\_
 

a) Read only	b) Execute only
c) No access	d) Full access
- 3) write command is used to \_\_\_\_\_
 

a) Print file	b) Send message
c) Delete file	d) Copy file
- 4) ln creates \_\_\_\_\_
 

a) Link	b) Folder
c) User	d) Archive
- 5) rpm command is used for \_\_\_\_\_
 

a) Package management	b) Process control
c) Disk management	d) Printing
- 6) SELinux provides \_\_\_\_\_
 

a) Networking	b) Security
c) Storage	d) Editing
- 7) Function is declared using \_\_\_\_\_
 

a) name()	b) function keyword
c) Both a and b	d) None
- 8) \$1 represents \_\_\_\_\_
 

a) Script name	b) First argument
c) Output	d) Function name

- 9) tar command is used for \_\_\_\_\_
- |            |           |
|------------|-----------|
| a) Archive | b) Edit   |
| c) Delete  | d) Search |
- 10) Shell acts as \_\_\_\_\_
- Compiler
  - Bootloader
  - Editor
  - Interface between user and kernel

**B) Fill in the blank / Definition / One sentence answer / One word answer / Give the name / Predict the product etc. 06**

- Inode contains \_\_\_\_\_
- pwd stands for \_\_\_\_\_
- nice command changes \_\_\_\_\_
- grep is used for \_\_\_\_\_
- DHCP assigns \_\_\_\_\_
- Default shell in most Linux distributions \_\_\_\_\_

**Q.2 Solve the following. (Any Eight) 16**

- What is Boot Block?
- Define lpr command.
- What is sed command used for?
- What is the use of chmod command?
- What is the difference between head and tail command?
- What is nice command?
- What is kill command?
- What is the purpose of mkdir command?
- What are meta characters?
- Define variable in shell script.

**Q.3 A) Attempt the following. (Any Two) 10**

- Explain Linux file system structure in detail.
- Explain linking files in Linux (hard link and soft link).
- Explain process management in Linux.

**B) Explain looping statements in shell programming with examples. 06**

**Q.4 A) Attempt the following. (Any Two) 08**

- Explain basic file and directory management commands with examples.
- What is shell scripting? Write steps to execute a shell script.
- Write short note on role of system administrator.

**B) Explain Users and Groups management in Linux with commands and examples. 08**

**Q.5 Answer the following. (Any Two)****16**

- a)** Explain text processing commands like grep, cut, paste, sort and uniq with examples.
- b)** Explain boot loaders in Linux (GRUB and LILO) in detail.
- c)** Explain functions in shell scripting including passing arguments and returning values.

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**B.C.A. (Semester - VI) (New) (CBCS) Examination:  
March/April – 2026  
Mobile Application Development using Kotlin (BCA1605-B)**

Day & Date: Thursday, 23-04-2026  
Time: 12:00 PM To 03:00 PM

Max. Marks: 80

- Instructions:** 1) All questions are compulsory.  
2) Draw neat, labelled diagrams wherever necessary.  
3) Figures to right indicate full marks.

**Q.1 A) Multiple choice questions.****10**

- 1) Which of the following component is NOT a part of Android's application components?
  - a) Activity
  - b) Service
  - c) Fragment
  - d) Transformer
- 2) What is the file extension of a Kotlin source file?
  - a) .kot
  - b) .k
  - c) .kt
  - d) .java
- 3) Which layout arranges elements vertically or horizontally?
  - a) ConstraintLayout
  - b) GridLayout
  - c) FrameLayout
  - d) LinearLayout
- 4) Which of these is used to display brief messages to the user in Android?
  - a) Toast
  - b) AlertDialog
  - c) Snackbar
  - d) Notification
- 5) Which method is used to start a new activity?
  - a) startActivity()
  - b) launchActivity()
  - c) startActivity()
  - d) openActivity()
- 6) What is the primary file used to define UI layouts in Android?
  - a) main.kt
  - b) styles.xml
  - c) layout.kt
  - d) activity\_main.xml
- 7) SQLite in Android is a \_\_\_\_\_.
  - a) Server database
  - b) In-memory database
  - c) Relational database
  - d) Cloud database
- 8) The function used to display a message using Toast in Kotlin is \_\_\_\_\_.
  - a) Toast.makeMessage()
  - b) Toast.message()
  - c) Toast.makeText()
  - d) show.Toast()

- 9) Which Android component is used for background tasks?  
 a) BroadcastReceiver      b) ContentProvider  
 c) Service                      d) Activity

- 10) APK stands for \_\_\_\_\_.  
 a) Android Phone Kit      b) Android Package  
 c) Android Portable Kit      d) Application Package

**B) Fill in the blank / Definition / One sentence answer / One word answer / Give the name / Predict the product etc.      06**

- 1) What is RecyclerView used for?
- 2) Name any one Android lifecycle method.
- 3) What is an Intent in Android?
- 4) Define Fragment in Android.
- 5) What is SharedPreferences used for?
- 6) What is the use of AndroidManifest.xml?

**Q.2 Solve the following. (Any Eight)      16**

- a) What is an Activity in Android?
- b) Why is null safety important in Kotlin?
- c) What is the role of ViewGroup in Android?
- d) Mention any two benefits of using SQLite in Android.
- e) How do you navigate between two activities in Android?
- f) What is Toast in Android? Give an example.
- g) State any two differences between Activity and Fragment.
- h) Why is XML used in Android UI development?
- i) Name any two components of Android architecture.
- j) What is SharedPreferences? Mention its use.

**Q.3 A) Attempt the following. (Any Two)      10**

- a) Explain the Android Project Structure in detail.
- b) Describe how RecyclerView is implemented and used.
- c) Explain the use of Intents and Bundles for data transfer

**B) Short note/Solve      06**

- a) Explain the Android activity lifecycle with suitable methods
- b) What are Material Design guidelines in Android?

**Q.4 A) Attempt the following. (Any Two)      08**

- a) Discuss Fragment-based UI and how to implement it.
- b) Explain the steps to create and use SQLite database in Android.
- c) Describe the role of AndroidManifest.xml.

**B) Explain the use of different layout types in Android.      08**

**Q.5 Attempt the following. (Any Two)      16**

- a) Write Kotlin code for a login screen with EditText, Button, and TextView.
- b) List steps to publish an Android app on Google Play Store.
- c) Write Kotlin code to send an SMS in Android.

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**B.C.A. (Semester - VI) (New) (CBCS) Examination:  
March/April – 2026  
Internet of Things (BCA1605-C)**

Day & Date: Thursday, 23-04-2026  
Time: 12:00 PM To 03:00 PM

Max. Marks: 80

- Instructions:**
- 1) All questions are compulsory.
  - 2) Draw neat diagrams wherever necessary.
  - 3) Figure to right indicate full marks.

**Q.1 A) Multiple Choice questions. 10**

- 1) Which of the following is not an element of the IoT ecosystem?
  - a) Sensors
  - b) Actuators
  - c) Word processors
  - d) Gateways
  
- 2) Why is IoT important in today's world?
  - a) It reduces the cost of smartphones
  - b) It allows devices to operate without electricity
  - c) It enables automation and real-time data analysis
  - d) It only supports military operations
  
- 3) What are business drivers for IoT?
  - a) Technological innovations
  - b) Government policies
  - c) Cost reduction, customer engagement, new revenue streams
  - d) Use of wires
  
- 4) Which of these is a key technology driver for IoT?
  - a) High labor cost
  - b) Advancements in wireless technologies
  - c) Increase in oil prices
  - d) Use of CDs and DVDs
  
- 5) What does SCADA stand for?
  - a) Supervisory Control and Data Acquisition
  - b) Systematic Control and Data Analysis
  - c) Secure Communication and Data Access
  - d) Standardized Control and Data Application
  
- 6) What does the IoT stack include?
  - a) Water supply layers
  - b) Layers from perception to application
  - c) Only mobile devices
  - d) Only the internet

- 7) What is the primary purpose of integrating IoT with cloud computing?
  - a) To reduce the size of IoT devices
  - b) To provide scalable storage and processing power
  - c) To eliminate the need for sensors in IoT devices
  - d) To replace IoT devices with cloud servers
  
- 8) Which IoT application is commonly used to monitor food quality and safety?
  - a) Driver Assistance
  - b) Healthcare
  - c) Food
  - d) Retail
  
- 9) What is a major challenge in IoT?
  - a) Overuse of RAM
  - b) Lack of internet
  - c) Security and privacy
  - d) Reading newspapers
  
- 10) What kind of sensors can be used in IoT?
  - a) Only audio sensors
  - b) Temperature, motion, humidity, etc.
  - c) Writing pens
  - d) Cooking sensors only

**B) Fill in the blank.****06**

- 1) IoT connects physical devices using the \_\_\_\_\_ to exchange data.
- 2) \_\_\_\_\_ computing allows data processing closer to the source of data generation.
- 3) An example of enabling technology in IoT is \_\_\_\_\_ computing.
- 4) The IoT stack includes layers such as perception, \_\_\_\_\_ and application.
- 5) A key characteristic of IoT systems is \_\_\_\_\_, where device communicate with each other.
- 6) Sensors need to be \_\_\_\_\_ properly to ensure accurate data collection.

**Q.2 Solve the following: (Any Eight)****16**

- a) List the Applications of IOT.
- b) Draw Architecture of IOT.
- c) What are microcontrollers?
- d) Define smart objects.
- e) What is mean by RFID?
- f) List the advantages of Modbus.
- g) What are the different components used in IOT?
- h) What is Raspberry Pi?
- i) List advantages of PWM used in IOT?
- j) What is Fog computing?

- Q.3 A) Attempt the following. (Any Two) 10**
- a) What are the OIC Architecture? Explain it.
  - b) Explain SCADA protocol in detail.
  - c) Explain the WSN protocol and its applications.
- B) What are the different challenges in IoT? 06**
- Q.4 A) Attempt the following. (Any Two) 08**
- a) Describe various types of sensors used in IoT
  - b) Write a note on ARM.
  - c) Explain the IoT Stack in detail with an appropriate diagram.
- B) Explain cloud computing in detail. 08**
- Q.5 Answer the following. (Any Two) 16**
- a) Explain element of an IOT ecosystem in detail.
  - b) Describe the architecture and applications of Raspberry Pi.
  - c) Explain food and warehouse application of IOT.

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**B.C.A. (Semester-VI) (New) (CBCS) Examination: March/April - 2026**  
**Dot Net Technology (19409603)**

Day & Date: Saturday, 18-04-2026  
 Time: 12:00 PM To 03:00 PM

Max. Marks: 80

**Instructions:** 1) All questions are compulsory.  
 2) Figures to right indicate full marks.

**Q.1 A) Choose the correct alternative. 10**

- 1) Which of the following is not an ASP.NET page event?
  - a) Init
  - b) Load
  - c) Import
  - d) None of the above
  
- 2) Which validation control in ASP.NET can be used to determine if the data is entered into entered into Textbox control is of type Currency?
  - a) Validation Summary
  - b) CompareValidator
  - c) RequiredFieldValidator
  - d) None of the above
  
- 3) WSDL stands for \_\_\_\_?
  - a) Web Server Description Language
  - b) Web Server Descriptor Language
  - c) Web Services Description Language
  - d) Web Services Descriptor Language
  
- 4) Which object data is included in bookmarks and e-mailed URLs?
  - a) ViewState
  - b) Cookies
  - c) Query strings
  - d) All of the above
  
- 5) What server support Ajax?
  - a) WWW
  - b) SMTP
  - c) HTTP
  - d) All of the above
  
- 6) If a developer of Asp.Net defines style information in a common location Then that Location is called \_\_\_\_\_.
  - a) Master Page
  - b) Theme
  - c) Customization
  - d) None of the Above
  
- 7) Which of the following languages are used to write server side scripting in ASP.NET?
  - a) C-sharp
  - b) VB
  - c) Both C-sharp and VB
  - d) C++

- 8) Which of the following assemblies can be stored in Global Assembly Cache?  
 a) Private Assemblies                      b) Friend Assemblies  
 c) Shared Assemblies                      d) Public Assemblies
- 9) Caching type supported by ASP.Net \_\_\_\_\_  
 a) Output Caching                      b) Data Caching  
 c) Both a and b                      d) None of the above
- 10) ADO.NET stands for?  
 a) ActiveX Data Object                      b) All Data Object  
 b) Access Data Object                      d) ActiveX Dataset Object

**B) Fill in the blanks. 06**

- 1) In ASP.Net page directives \_\_\_\_\_ attribute specifies the language used in the Code-declaration blocks.
- 2) In Asp.Net web server controls \_\_\_\_\_ displays a link to another Web page.
- 3) The web application written in Asp.Net will consists native asp.net files having extension \_\_\_\_\_.
- 4) In .Net architecture CTS means \_\_\_\_\_.
- 5) AJAX stand for\_\_\_\_\_.
- 6) In Asp.Net \_\_\_\_\_ state enables you to store and retrieve values for a user as the user navigates.

**Q.2 Solve of the following. (Any Eight) 16**

- a) What is Ado.Net?
- b) What is AJAX?
- c) Define Validation.
- d) What is content area?
- e) Write difference between Radiobutton & checkbox.
- f) What is Web service?
- g) Which property of does the RangeValidator Control support?
- h) What do you mean by cookies?
- i) Write use of IsPostBack Property.

**Q.3 A) Attempt of the following. (Any Two) 10**

- 1) Explain architecture of AJAX.
- 2) What is Inline code & code behind?
- 3) Explain Nested Master page.

**B) Short Note: 06**

- i) Compilation
- ii) file upload control

**Q.4 A) Attempt the following. (Any Two) 08**

- 1) Explain Tree view control in asp.net.
- 2) What is Theme & write how to apply theme.
- 3) Explain any two-validation control with suitable example.

**B)** Write a code to insert & update data into Sqlserver database from an asp.net. **08**

**Q.5 Attempt the following. (Any Two)** **16**

- a)** What are benefits using AJAX? Explain Update Progress control in AJAX.
- b)** Explain state management.
- c)** What is folder? Explain any five folders in asp.net.

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**B.C.A. (Semester - VI) (New) (CBCS) Examination: March/April-2026  
Cryptography and Network Security (19409605)**

Day & Date: Monday, 20-04-2026  
Time: 12:00 PM To 03:00 PM

Max. Marks: 80

- Instructions:**
- 1) All questions are compulsory.
  - 2) Draw neat labelled diagrams wherever necessary
  - 3) Figures to right indicate full marks.

**Q.1 A) Choose correct alternative from the following: 10**

- 1) Which principle ensures timely access to resources?
 

a) Availability	b) Confidentiality
c) Integrity	d) Authentication
  
- 2) Which algorithm is based on elliptic curves?
 

a) DES	b) RSA
c) AES	d) ECC
  
- 3) Which protocol secures domain resolution?
 

a) FTP	b) DNSSEC
c) HTTP	d) SMTP
  
- 4) Which intruder pretends to be an authorized user?
 

a) Masquerader	b) Misfeasor
c) Clandestine	d) Debugger
  
- 5) Which algorithm is widely used in blockchain?
 

a) DES	b) IDEA
c) Blowfish	d) ECC
  
- 6) Which firewall maintains connection state information?
 

a) Packet-filtering	b) Stateful firewall
c) Proxy	d) Application
  
- 7) Which biometric method uses iris patterns?
 

a) Voice	b) Face
c) Fingerprint	d) Iris recognition
  
- 8) Main drawback of symmetric cryptography is \_\_\_\_\_.
 

a) Speed	b) Key distribution
c) Complexity	d) Block size
  
- 9) Which is NOT a cryptographic attack?
 

a) Brute force	b) Traffic analysis
c) Encryption	d) Replay



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**B.C.A. (Semester - VI) (New) (CBCS) Examination:  
March/April – 2026  
Advanced Python (19409606)**

Day & Date: Tuesday, 21-04-2026  
Time: 12:00 PM To 03:00 PM

Max. Marks: 80

- Instructions:**
- 1) All questions are compulsory.
  - 2) Draw neat, labeled diagrams wherever necessary.
  - 3) Figures to right indicate full marks.
  - 4) Use of log tables and calculators is allowed.

**Q.1 A) Multiple choice questions.**

**10**

- 1) \_\_\_\_\_ will accept TCP client connection.
  - a) bind()
  - b) accept()
  - c) listen()
  - d) connect()
- 2) The TKinter \_\_\_\_\_ widget is used to group all other widgets.
  - a) Frame
  - b) Label
  - c) Root
  - d) Scale
- 3) Django is type of \_\_\_\_\_.
  - a) Programming language
  - b) tool
  - c) software
  - d) Web framework
- 4) \_\_\_\_\_ widget is used to draw anything on application window.
  - a) Frame
  - b) Message
  - c) Button
  - d) Canvas
- 5) \_\_\_\_\_ widget are used to get the data from the user.
  - a) Button
  - b) Label
  - c) Entry
  - d) None of these
- 6) \_\_\_\_\_ is a numerical input field, used to select a value from a predefined range.
  - a) Spinbox
  - b) RadioButton
  - c) Entry
  - d) Label
- 7) \_\_\_\_\_ widget scroll the window up and down.
  - a) Scrollbar
  - b) RadioButton
  - c) Entry
  - d) Spinbox
- 8) XML Is Designed To Store Data And \_\_\_\_\_.
  - a) Delete
  - b) Verify
  - c) Transport
  - d) None of these

9) Which of the following can be deleted by destroy() function?

- a) Label
- b) Frame
- c) Button
- d) All of these

10) \_\_\_\_\_ method used to visit an URL and fetch it's contain.

- a) request.urlopen()
- b) request.fetch()
- c) request.fetchurl()
- d) fetch()

**B) Fill in the blank**

**06**

- 1) In Django framework \_\_\_\_\_ file is used to configure application settings.
- 2) GUI stands for \_\_\_\_\_.
- 3) \_\_\_\_\_ command is used to run a Django project.
- 4) \_\_\_\_\_ widget allows us to select multiple options or a single option at a time.
- 5) Tk stands for \_\_\_\_\_.
- 6) \_\_\_\_\_ command is used to apply database migrations in Django.

**Q.2 Solve the following. (Any Eight)**

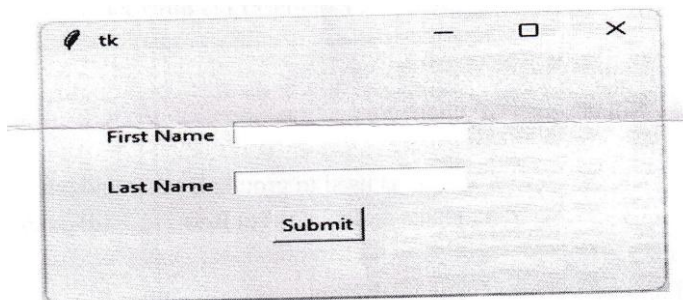
**16**

- a) What is Label widget? Write syntax to create a Label.
- b) What is web framework?
- c) What is Radiobutton? Write syntax to create a Radiobutton.
- d) What is scrollbar? write a syntax to create scrollbar.
- e) What is Django admin interface?
- f) What is geometry management?
- g) What is IP Address?
- h) What is Button widget? Write syntax to create a Button.
- i) For which purpose socket.recv(size) is used?
- j) What is XML parser?

**Q.3 A) Attempt the following. (Any Two)**

**10**

- 1) Write any four advantages of Django framework.
- 2) Write any four advantages of GUI.
- 3) Write a python program to create following GUI.



**B) Write a note on MVT architecture.**

**06**

- Q.4 A) Attempt the following. (Any Two) 08**
- 1) Write any two advantages and two disadvantages of Simple API for XML parser.
  - 2) Explain pack() Layout Manager with any simple program.
  - 3) Write a python program to create TCP IP client.
- B) Write a program to create a simple Django project with one app which prints any message on browser. 08**
- Q.5 Answer the following. (Any Two) 16**
- a) What is Django model form? Write any program to create Django model form.
  - b) Write any four Advantages and four Disadvantages of DOM parser.
  - c) Explain following terms:
    - i) Socket.
    - ii) Port.
    - iii) URL.
    - iv) TCP.

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**B.C.A. (Semester - II) (New) (CBCS) Examination: March/April – 2026**  
**Probability Theory (BCA1207)**

Day & Date: Saturday, 18-04-2026  
 Time: 12:00 PM To 02:00 PM

Max. Marks: 40

- Instructions:** 1) All questions are compulsory.  
 2) Figures to the right indicate full marks.  
 3) Use of calculator is allowed.

**Q.1 Choose the correct alternatives from the options.****08**

- 1) Permutation is the \_\_\_\_\_ of objects.
  - a) arrangement
  - b) selection
  - c) both (a) & (b)
  - d) None of these
- 2) Normal distribution is symmetric about \_\_\_\_\_.
  - a) A.M.
  - b) median
  - c) mode
  - d) All of these
- 3) For a discrete random variable  $X$  if  $E(X) = 4$ , then  $(4X + 3) =$  \_\_\_\_\_.
  - a) 10
  - b) 7
  - c) 4
  - d) 19
- 4) A deterministic experiment resulted into \_\_\_\_\_ outcomes.
  - a) only one
  - b) only two
  - c) more than one
  - d) None of these
- 5) A family of a parametric distribution in which mean is greater than variance is \_\_\_\_\_.
  - a) Binomial distribution
  - b) Hypergeometric distribution
  - c) Uniform distribution
  - d) Poisson distribution
- 6) Probability of certain event is always \_\_\_\_\_.
  - a) zero
  - b) one
  - c) lies between 0 & 1
  - d) None of these
- 7) If  $X \rightarrow B(10, 0.6)$  then  $E(X) =$  \_\_\_\_\_.
  - a) 6.5
  - b) 6
  - c) 10
  - d) 0.25
- 8) If  $X \rightarrow N(0, 1)$  then mean of  $X$  is \_\_\_\_\_.
  - a) 0
  - b) 1
  - c) 10
  - d) None of these

**Q.2 Answer the following. (Any Four) 08**

- Define elementary event with illustration.
- For a discrete random variable  $X$  if  $E(X) = 4$  &  $E(X^2) = 100$  then find  $V(X)$ .
- If p.d.f. of continuous random variable is  $f(x) = 3x; 0 < x < 1$ , then find  $E(X)$ .
- State multiplication principle of counting with illustration.
- State mean & variance of Binomial distribution.
- Write sample space for the experiment of rolling two dice simultaneously.

**Q.3 Answer the following. (Any Two) 08**

- Distinguish between permutation & combination.
- State any four properties of Normal distribution.
- state addition & multiplication law of probability.

**Q.4 Answer the following. (Any Two) 08**

- Verify whether the function  $f(x) = 5x^4; 0 < x < 1$  is p.d.f. or not?
- Given:  $P(A) = 0.4$   $P(B) = 0.3$  then find  $P(A \cup B)$  if events  $A$  &  $B$  are
  - mutually exclusive events
  - independent events
- How many numbers can be formed using the digits 1, 3, 5, 7, 9 if
  - repetition of digit is allowed
  - repetition of digit is not allowed

**Q.5 Attempt the following. (Any One) 08**

- Define Probability. Prove that probability of any event is always lies between 0 & 1.
- The probability distribution of r.v.  $X$  is as follows

$X$	-2	-1	0	1	2	3
$P(x)$	$k$	$2k$	$3k$	$2k$	$k$	$k$

Find:

- the value of  $k$
- c.d.f. of r.v.  $X$
- $E(X)$
- $V(X)$

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**B.C.A. (Semester - II) (New) (CBCS) Examination:  
March/April – 2026  
Web Programming – II (BCA1205)**

Day & Date: Monday 20-04-2026  
Time: 12:00 PM To 02:00 PM

Max. Marks: 40

**Instructions:** 1) All questions are compulsory.  
2) Figures to the right indicate full marks.

**Q.1 Choose the correct alternative from the options. 08**

- 1) Integer variable is declared using following syntax in JavaScript \_\_\_\_\_.
  - a) integer num;
  - b) var num;
  - c) int num;
  - d) None of these
- 2) Which of the following is not a logical operator?
  - a) !
  - b) |
  - c) &&
  - d) ||
- 3) jQuery's main focus is \_\_\_\_\_.
  - a) AJAX
  - b) DOM
  - c) Animation
  - d) All of the above
- 4) Which of the following keywords is used to define a variable in JavaScript?
  - a) var
  - b) let
  - c) Both a and b
  - d) None of these
- 5) How can a datatype be declared to be a constant type?
  - a) const
  - b) let
  - c) constant
  - d) var
- 6) What is a block of statement?
  - a) Conditional block
  - b) block that combines a number of statements into a single compound statement
  - c) both conditional block and a single statement
  - d) block that contains a single statement
- 7) Which method of jQuery can be used to deal with the name conflicts?
  - a) The conflict() method
  - b) ThenameConflict() method
  - c) ThenoConflict() method
  - d) None of the above
- 8) jQuery is a \_\_\_\_\_.
  - a) JavaScript method
  - b) JavaScript library
  - c) JSON library
  - d) PHP method

- Q.2 Answer the following. (Any Four) 08**
- a) Advantages of JavaScript.
  - b) What is event?
  - c) Use of Break statement.
  - d) What is operator?
  - e) What is variable?
  - f) Script tag.
- Q.3 Write Short Notes. (Any Two) 08**
- a) Write a program of validation in JavaScript.
  - b) Primitive datatypes in JavaScript.
  - c) Describe document object model with example.
- Q.4 Answer the following. (Any Two) 08**
- a) Explain jQuery remove method with example.
  - b) Explain While and Do. While loops in JavaScript with syntax and examples.
  - c) Describe jQuery animation with example.
- Q.5 Answer the following. (Any One) 08**
- a) Explain sort method to sort an array in JavaScript with example.
  - b) Write a program of hide and show method of jQuery.

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**B.C.A. (Semester - II) (New) (CBCS) Examination: March/April – 2026**  
**Graph Theory (BCA1206)**

Day & Date: Friday, 24-04-2026  
 Time: 12:00 PM To 02:00 PM

Max. Marks: 40

- Instructions:** 1) All questions are compulsory.  
 2) Draw neat diagrams wherever necessary.  
 3) Figures to the right indicate full marks.

**Q.1 Multiple choice questions:****08**

- 1) A connected circuit free graph is called \_\_\_\_\_ graph.
  - a) simple
  - b) null
  - c) Tree
  - d) None of these
- 2) A walk in which there is no repetition of any vertices is called \_\_\_\_\_.
  - a) path
  - b) trail
  - c) tour
  - d) None of these
- 3) A graph having parallel edges but not loop is called \_\_\_\_\_ graph.
  - a) pseudo
  - b) multi
  - c) simple
  - d) None of these
- 4) A graph having only one component is called \_\_\_\_\_ graph.
  - a) disconnected
  - b) multi
  - c) connected
  - d) None of these
- 5) The number of edges incidence of vertex V is called \_\_\_\_\_ of a vertex.
  - a) degree
  - b) order
  - c) vertex
  - d) None of these
- 6) The total edges of K<sub>3</sub> graph is \_\_\_\_\_.
  - a) 10
  - b) 42
  - c) 3
  - d) 8
- 7) If both the set of vertices and edges are finite then the graph is called \_\_\_\_\_.
  - a) Finite
  - b) Infinite
  - c) Vertex deleted
  - d) None of these
- 8) \_\_\_\_\_ algorithm is used to find shortest spanning tree.
  - a) Dijkstra's
  - b) Kruskal's
  - c) Warshalls
  - d) None of these

Q.2 Answer the following. (Any Four)

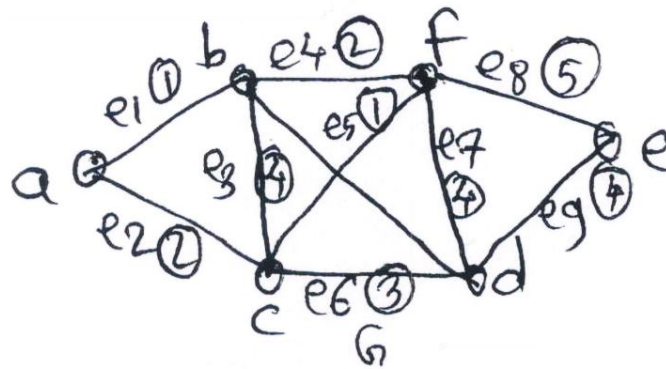
08

- a) Define Multi graph with one suitable example.
- b) Define Binary Tree with one suitable example.
- c) Define Simple graph with one suitable example.
- d) Draw the graph  $K_3$  and  $N_3$ .
- e) Define Eulerian graph with one suitable example.
- f) Define Path.

Q.3 Answer the following. (Any Two)

08

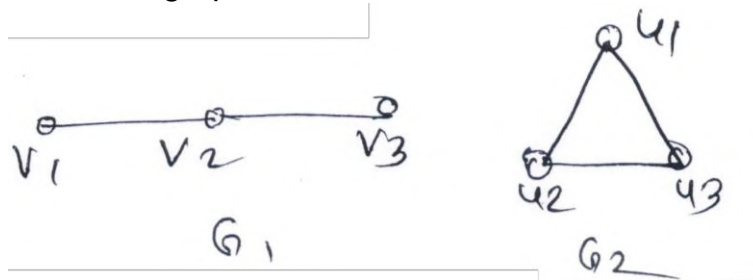
- a) Write note on matrix representation of graph.
- b) Define Trail and circuit with suitable example.
- c) Solve the Chinese postman problem of the following graph.



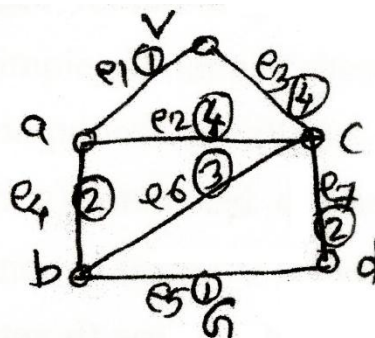
Q.4 Answer the following. (Any Two)

08

- a) Find  $G_1 \times G_2$  of two graphs.



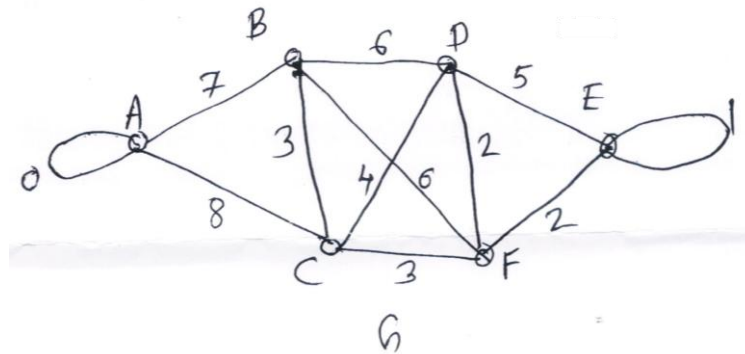
- b) Verify Hand-Shaking lemma with suitable examples.
- c) Solve the traveling salesman problem of the following graph  $G$ .



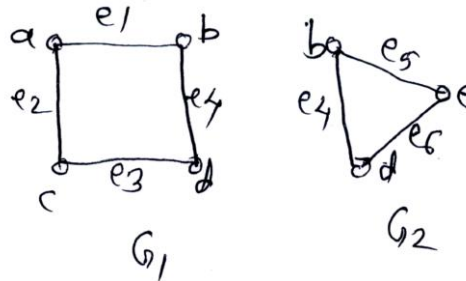
Q.5 Answer any one of the following.

08

- a) By using Kruskal's algorithm find shortest spanning tree of the graph give below.



- b) Find  $G_1 \cup G_2$ ,  $G_1 \cap G_2$  and  $G_1$  ring sum of  $G_2$  of following two graphs.



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**B.C.A. (Semester - II) (New) (CBCS) Examination:  
March/April - 2026**

**Introduction of Microprocessor and Interfacing (BCA1209)**

Day & Date: Saturday, 25-04-2026  
Time: 12:00 PM To 02:00 PM

Max. Marks: 40

- Instructions:** 1) All questions are compulsory.  
2) Draw neat diagrams and give equations wherever necessary.  
3) Figures to the right indicate full marks.

**Q.1 Select the correct alternatives from the options. 08**

- 1) Which of the following is a special-purpose register of microprocessor?
  - a) Program counter
  - b) Instruction register
  - c) Accumulator
  - d) Temporary register
- 2) Which of the following circuit is used as a special signal to demultiplex the address bus and data bus?
  - a) Priority Encoder
  - b) Decoder
  - c) Address Latch Enable
  - d) Demultiplexer
- 3) How many address lines are present in 8086 microprocessor?
  - a) 16
  - b) 20
  - c) 32
  - d) 40
- 4) How many buses are connected to the 8085 microprocessor?
  - a) Five
  - b) Three
  - c) Two
  - d) Four
- 5) Which I/O technique allows the CPU to execute a program to move data between an I/O device and main memory, involving the CPU in the entire transfer?
  - a) DMA Controller
  - b) Programmed I/O
  - c) Interrupt-driven I/O
  - d) Asynchronous transfer
- 6) Which type of memory is accessed based on content rather than address?
  - a) Cache Memory
  - b) Virtual Memory
  - c) Associative Memory
  - d) RAM
- 7) The example of output device is \_\_\_\_\_.
  - a) CRT display
  - b) 7 segment display
  - c) Printer
  - d) All of the above

- 8) In memory-mapped I/O \_\_\_\_\_.
- a) The I/O devices and the memory share the same address space
  - b) The I/O devices have a separate address space
  - c) The memory and I/O devices have an associated address space
  - d) A part of the memory is specifically set aside for the I/O operation

**Q.2 Answer the following. (Any Four) 08**

- a) Define Microprocessor.
- b) Which are the buses in system bus architecture?
- c) What is the instruction format for microprocessor?
- d) Define instruction cycle.
- e) What is the meaning of interfacing?

**Q.3 Write short notes. (Any Two) 08**

- a) Addressing Modes
- b) Assembly language programming
- c) DMA Controller

**Q.4 Answer the following. (Any Two) 08**

- a) Differentiate between I/O mapped I/O and Memory mapped I/O.
- b) Explain interfacing of keyboard with microprocessor.
- c) Explain the concept of cache memory.

**Q.5 Answer the following. (Any One) 08**

- a) Explain with neat diagram internal architecture of 8085 microprocessor.
- b) Explain with diagram Associative memory.