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END TERM EXAMINATION

THIRD SEMESTER [BCA] DEC 2025-JAN 2026

Paper Code: BCA-201(T) ***Subject: Python Programming***

Time: 3 Hours ***Maximum Marks: 60***

Note: Attempt all questions as directed. Internal choice is indicated.

Q1. Attempt **any four** of the following questions: **(4×5=20)**

(a) What do you mean by mutable and immutable? Which datatypes are considered as mutable and immutable in Python?

(b) Explain string methods-lower(), isupper(), len(), find(), count(). Give examples of each.

(c) Elaborate-"Python is interpreted as well as integrated programming environment."

(d) Justify the significance of self keyword? Give an example.

(e) Write the difference between indexing and slicing with example.

(f) Explain the following functions with respect to Numpy: reshape(), arange().

(g) Consider a List L=[15,20,25,30,35,40]. Find the output of the following statements:

a. L[1]= L[1] + 2
b. L= L + 3
c. L[0]=100
d. L = L[::-1]
e. L=L[-2:-4:-1]

(h) Write the python script to find the factorial of a number using Recursion.

Q2. a) Explain membership operator and escape sequence with an example. **(5)**

b) Write a python script to identify whether the given string is a palindrome or not. **(5)**

OR

Q3. a) Explain the keywords, expressions and variables in Python programming with examples. **(5)**

b) What is difference between for loop and while loop in python. Explain using examples. **(5)**

Q4. Explain the List Methods- append(), extend(), remove(), pop(), insert(). How are positive and negative indices used to access the elements of list? **(10)**

OR

Q5. Explain dictionary methods-len, str, clear, copy, update, get. Give an example of each. Write a Python script to remove the duplicate items from a tuple.**(10)**

Q6. a) What are Functions? Explain different types of arguments with suitable examples. Also explain Position-only, key-value arguments only, using suitable examples. **(5)**

b) Create a module 'Calculator' that has the functions for basic arithmetic operations.Write the python script for performing the required arithmetic operations using the module. **(5)**

OR

Q7. Write a Python script to create a binary file having Rollno, Name and Marks of 5 students and perform the following operations: **(2.5×4=10)**

a. Insert a record

P-1|2

P.T.O.

b. Search for a record based on the Rollno
c. Update a record based on the Rollno where Rollno cannot be changed
d. Display all records

Q8. Explain the file modes used to perform all the operations of file handling. Give examples of each type of files. **(10)**

OR

Q9. a) Explain the concept of classes and object in Python? Give an appropriate example showing the usage of Constructor while creating the class. **(5)**

b) Differentiate the concept of overloading and overriding. Explain using appropriate example. **(5)**

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END TERM EXAMINATION

THIRD SEMESTER [BCA] DECEMBER 2025-JANUARY 2026

Paper Code: BCA205T **Subject: Computer Organization & Architecture**

(BATCH 2024)

Time: 3 Hours **Maximum Marks: 60**

Note: Attempt all questions as directed. Internal choice is indicated.

Q1 Attempt **any Four** of the following questions: **(4x5 =20)**

(a) Explain the concept of micro-operations with an example.
(b) State the purpose of control functions in register transfer language (RTL).
(c) Design the logic circuit for $Y = (A + B)' + C'$ using NAND gates.
(d) Convert the expression $F = A'BC + AB'C + ABC'$ into canonical SOP form.
(e) Write the SOP and POS forms for the truth table where $F(A,B,C)$= 1 for minterms (1,3,5,7).
(f) Draw a 4-bit synchronous up/down counter.
(g) Give the symbolic description for the reference instructions: BUN, SKI, STA, BSA and ISZ?
(h) What do you mean by level-triggered and edge-triggered circuits?

Q2 (a) Simplify the following Boolean function for 4-variable F(A,B, C, D)=Σ(0,1,2,5,8,9,10,14). Draw logic gate only using basic gates. **(5)**

(b) Convert the expression $F = A'BC + AB'C + ABC'$ into canonical SOP form. **(5)**

OR

Q3 (a) Design and explain the working of a JK flip-flop using NAND gates. **(5)**

(b) Design a 4-bit binary counter using T flip-flops and explain its working. **(5)**

Q4 (a) Draw and explain the block diagram of a 4-bit Register with Parallel Load Capability. **(5)**

(b) Draw and explain the block diagram of CPU registers and bus structure. **(5)**

OR

Q5 (a) Explain the memory transfer operations and show how read and write operations are executed using registers and control signals. **(5)**

(b) Explain the different data transfer modes in computer systems. **(5)**

Q6 (a) What is Instruction Format? Draw and explain the flowchart of Instruction Cycle. **(5)**

(b) Discuss various types of addressing modes with suitable examples. **(5)**

OR

Q7 (a) Explain I/O mapped I/O and memory-mapped I/O with differences. **(5)**

(b) What is bus arbitration? Describe daisy chaining and parallel priority interrupt methods. **(5)**

Q8 (a) What is virtual memory? Explain its working with the help of a suitable diagram **(5)**

(b) Describe the concept of cache mapping techniques: Direct, Associative, and Set-Associative Mapping. **(5)**

OR

Q9. (a) Draw and explain the block diagram of a DMA controller. **(5)**

(b) Describe the working of DMA during a data transfer operation. **(5)**

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END TERM EXAMINATION

THIRD SEMESTER [BCA] DECEMBER-2025

Paper Code: BCA-221T ***Subject: Principles of Management and Organizational Behaviour***

(2024-2025 Onwords)

Time: 3 Hours **Maximum Marks: 60**

Note: Attempt all questions as directed. Internal choice is indicated.

Q1 Attempt **any four** of the following questions **(4x5=20)**

(a) Define the roles of a midlevel manager.
(b) Define SWOT analysis in management
(c) State the criteria for departmentation in the organizations.
(d) Explain PESTLE analysis.
(e) Explain the major challenges of organizational behaviourin the 21st Century.
(f) Define organizational behavior with an appropriate example.
(g) Differentiate between personality and attitude.
(h) Explain laissez-faire leadership.

Q2 Elaborate on the fourteen principles of management by Henry Fayol. **(10)**

OR

Q3 (a) Define decision-making in management. **(3)**
(b) Enumerate the steps involved in the decision-making process. **(7)**

Q4 (a) Define management. State its functions. **(5)**
(b) 'Management is a continuous process' –do you agree? Give reasons. **(5)**

OR

Q5 (a) Elaborate on the functions of directing. **(5)**
(b) Discuss the principles involved in directing. **(5)**

Q6 Explain Maslow's Hierarchy of Needs Theory with suitable examples. **(10)**

OR

Q7 (a) Define organizational culture. State its importance in the organization. **(5)**
(b) How does organizational culture influence employees' behavior? **(5)**

Q8 (a) Define perception and explain its process. **(4)**
(b) State the factors influencing perception. **(6)**

OR

Q9 'Developing effective leaders is a strategic process that requires deliberate planning, continuous learning, and a supportive organizational culture.' State the role of an organization in this process. **(10)**

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END TERM EXAMINATION

THIRD SEMESTER [BCA] DECEMBER-2025-JANUARY-2026

Paper Code: BCA-207 ***Subject: Discrete Mathematics***

Time: 3 Hours ***Maximum Marks: 60***

Note: Attempt all question as directed. Internal choice is indicated.

Q1 Attempt any **four** of the following **(4x5=20)**

(a) Let R denote the set of all real numbers and f: R→R be defined as f(x) = 2x + 4 ∀ x∈R. Show that f is both one-to- one and onto function. Find the formula for f^{-1}: R→R.

(b) Draw the Hasse Diagram of the Poset (P(S), ⊆) where S = { 1, 2, 3}

(c) Draw 2-regular graphs with 5 and 6 vertices?

(d) Define the symmetric difference of two sets A and B. If A = {1,2,3,4,5 } ; B = { 3,4,7,8,9 } Find A Δ B .

(e) Find the domain and range of the following functions f(x)= (x) / (x+1)

(f) Show that the assertion
(P ∧ (¬Q ∨ ¬R)) → (P→ ¬Q) is neither a tautology nor a contradiction.

(g) Let A= {1,2,3,4} and B = {b1, b2, b3}. Consider the relation
R={(1, b2), (1, b3), (3, b2), (4, b1), (4, b3)}.
Determine the matrix of the relation R.

(h) Use truth table to verify the logical equivalence:
(p → ~ q) ∧ (p → ~ r) ≡ ~ (p ∧ (q ∨ r))

Q2 Let A = {1,2,3,4} and consider the relation R on A defined as **(10)**
R = {(1,2), (2,3), (3,4), (1,3), (2,4), (1,1), (3,1)}.
Draw the digraph representing the relation R. From the digraph, determine whether the relation R is:
(a) Reflexive
(b) Symmetric
(c) Antisymmetric
(d) Transitive

OR

Q3 In a group of 60 students, 25 play cricket, 30 play football, 24 play hockey, 10 play cricket and football, 9 play cricket and hockey, 12 play hockey and football and five play all the three. Find out: **(10)**
(a) How many play only one game
(b) How many play no game.

P.T.O.

P 1/2.

Q4 (a) Prove that the relation of "Divisibility" is a Poset on N (set of natural numbers). **(5)**
Is the relation of divisibility a poset on the set of Integers Z ? Justify your answer.

(b) Let f, g be the functions from N →N (Set of natural numbers) such that: **(5)**

$f(x) = x^2 + 1$; $g(x) = (x + 2)^2$ Find fog and gof

OR

Q5 Draw the Hasse Diagram for D_{60} under divisibility relation and find the following: **(10)**
(a) Maximal, Minimal, Greatest, Least elements
(b) Atoms, Join Irreducible elements
(c) complements of each element
(d) Is L complemented?
(e) Show that the lattice D_{60} is distributive

Q6 Let A = {1, 2, 3, 4, 5, 6 } Let R be a relation defined on A as R = { (x, y) : x+ y is a divisor of 24} **(10)**
(a) Find the matrix of the relation M_R.
(b) Find the Domain and Range of R
(c) Find the inverse relation R^{-1}.
(d) Directed graph of R

OR

Q7 (a) Write the converse, inverse and contrapositive statement of the following statement. "India wins whenever Virat Kohli scores Century". **(5)**
(b) State any four laws of algebra of proposition and prove distributive law with the help of truth table. **(5)**

Q8 (a) Check the logical equivalence of a conditional statement with its converse, inverse and contrapositive. **(5)**
(b) Write short notes on Tautology, Contradiction and Contingency. **(5)**

OR

Q9 (i) Draw the Hasse Diagram for D_{36} under divisibility relation and find the following: **(5)**
(a) Maximal, Minimal, Greatest, Least elements
(b) Atoms, Join Irreducible elements
(c) complements of each element
(d) Supremum of A = {2, 3, 12}
(e) Infimum of B = {2, 4, 18}

(ii) State De-Morgan Laws in Sets. Using Set theory, prove any one. **(5)**

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END TERM EXAMINATION

THIRD SEMESTER [BCA] DEC 2025-JAN 2026

Paper Code: BCA-203T **Subject: Dynamic Web Designing**

Time: 3 Hours **Maximum Marks: 60**

Note: Attempt five questions in all including Q.No.1 which is compulsory. Select one question from each unit.

Q1 Attempt **any Four** of the following questions: **(4x5=20)**

a) Define Web Server and its types. Distinguish among XAMPP, WAMP and LAMP.

b) Define Cookies. Difference between Persistence Cookies and Session/Non-persistence Cookies. Write PHP syntax for creating a cookie which is set for 15 days.

c) Explain various types of PHP errors with example.

d) What is file inclusion? Difference between include and require with suitable example.

e) Explain the concept of Class, Object, Constructor and Destructor using a suitable PHP Script. What isthe usage of $this variable?

f) Explain PHP exception handling with suitable example.

g) Explain MySQLi interface. Write PHP script for connecting and accessing database using MySQLi procedural.

h) What is AJAX? How it works? Explain with proper steps.

UNIT-I

Q2 a) Define PHP Super Global Variables. Explain the usage of any 3super global variables with suitable example. **(5)**

b) Explain different types of arrays in PHP? Write a PHP script to create and display the content of an associative array using for each() loop. **(5)**

Q3 a) "PHP is Weakly/Loosely typed language". Justify the statement. Explain the use of PHP Constants, Variables and Data types with the help of suitable example. **(5)**

b) Explain the difference between $_GET, $_POST and $_REQUEST super global variables using a suitable example while collecting data through a form. **(5)**

UNIT-II

Q4 a) Explain function in PHP? How a function can be defined and called? Explain the difference between call by value and call by reference using a suitable example. **(5)**

b) What is Session? How variables are handled in sessions? Write a PHP script to count the number of visits of web page by the user session. **(5)**

Q5 a) Explain the different types of form methods used in PHP? Write a PHP script to create a Self-processing form that accepts a positive number from the user (apply validation) and display the factorial of the accepted number. **(5)**

P.T.O.

b) Distinguish between the following with example: **(5)**
i) Local and Global variable scope
ii) Client-side and Server-side State Management System

UNIT-III

Q6 a) What is file handling in PHP? Write a PHP script to upload and download a file. **(5)**

b) Explain the difference between the following OOPs concept with example: **(5)**
i) Overriding and Overloading
ii) Single and Multilevel Inheritance

Q7 a) Explain various PHP access modifiers with example. Write PHP script to create a class with the name Compute that perform the two operations Sum() and Multiply() on the set of 2 numbers using the concept of constructor and destructor. **(5)**

b) Explain the following File handling operations with example: **(5)**
i) fopen() ii) fread() iii) fwrite() iv) fgets() v) move_uploaded_file()

UNIT-IV

Q8 a) Write PHP script to create a database named Company and within Company database, create a table named employee with the following fields: Empno, Empname, Designation and Salary and perform the following operations:
i. Insert at least 3 records
ii. Update the third record with the salary 30000
iii. Display the records in tabular format **(5)**

b) What is MySQL? Explain various datatypes and constraints used in MySQL. **(5)**

Q9 a) Write PHP script to insert a student record in a table named student, which include the field names Rollno, Name, Age and Mobileno which is collected from a Student Registration Form. Write various connecting and selecting database statement which is used to connect PHP to MySQL and then display the record in tabular format. **(5)**

b) Create an AJAX application that can demonstrate how a web page can communicate with a web server while a user type characters in an input field. **(5)**

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