

# उत्तर प्रदेश राजर्षि टण्डन मुक्त विश्वविद्यालय,इलाहाबाद

Bachelor of Computer Application

कार्यक्रम अधिन्यास सत्र 2023–24

कोर्सकोड : Course Code: <b>BCA-111</b>	कोर्स शीर्षक:- (Course Title) <b>DBMS</b>	अधिकतमअंक : 30 <b>Maximum Marks : 30</b>
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खण्ड अ

अधिकतम अंक : 18

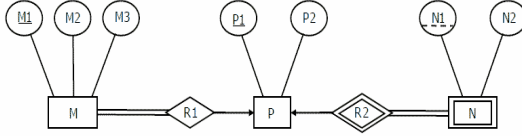
Section-A

Maximum Marks: 18

**नोट-(Instructions): Section A consists of long answer questions. Answer should be in 800 to 1000 words. Attempt all three questions from this section.**

प्रश्न संख्या 1से 3 तक दीर्घ उत्तरीय प्रश्न है जिनका उत्तर 800 से 1000 शब्दों में लिखना है।

1. Consider a car-insurance company whose customers own one or more cars each. Each car has associated with it zero to any number of recorded accidents.
  - (i) Draw an E-R diagram
  - (ii) Transform the E-R diagram to a Relational Schema.
2. Consider the following ER diagram.



Explain how many tables are needed to represent M, N, P, R1, R2?

3. Consider the relation  $R(A,B,C,D,E,G)$  with functional dependencies given by  $\{AB \rightarrow C, AC \rightarrow B, AD \rightarrow E, B \rightarrow D, BC \rightarrow A, E \rightarrow G\}$ . Consider the decomposition of  $R$  into  $\{AB, BC, ABDE, EG\}$ .
  - a) Is this decomposition lossy or lossless? Explain why?
  - b) Is this decomposition is dependency preserving or not? Explain why?

खण्ड ब

अधिकतम अंक : 12

Section –B

Maximum Mark : 12

**नोट-(Instructions): Section B consists of short answer questions. Answer should be in 200 to 300 words. Attempt all four questions from this section.**

प्रश्न संख्या 4 से 7 तक लघु उत्तरीय प्रश्न हैं जिनका उत्तर 200 से 300 शब्दों में लिखना है।

4. Identify the Normal Forms of the relation R(ABCDEF) Functional dependencies given by  $\{AB \rightarrow C, C \rightarrow D, B \rightarrow E, B \rightarrow F\}$
5. Let R (ABCDEF) is a relational schema having FDs  $\{A \rightarrow BCDEF, BC \rightarrow ADEF, B \rightarrow C, D \rightarrow E\}$  Find out the Candidate Key ?
6. What is derived attribute? Explain the differences between single-valued attributes and multi-valued attributes.
7. The employee information in a company is stored in the relation.

Employee:(name,sex,salary,deptName)

Assume name is primary key and consider the following SQL query:

```
SELECT deptName FROM Employee WHERE sex='M' GROUP BY deptName  
HAVING AVG (salary)> (SELECT AVG(salary) FROM Employee);
```

Explain the output of above SQL query?

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कोर्सकोड : Course Code: <b>BCA-112</b>	कोर्स शीर्षक:— (Course Title) <b>Operating System</b>	अधिकतमअंक : 30 <b>Maximum Marks : 30</b>
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खण्ड अ

अधिकतम अंक : 18

Section-A

Maximum Marks: 18

**नोट—(Instructions): Section A consists of long answer questions. Answer should be in 800 to 1000 words. Attempt all three questions from this section.**

प्रश्न संख्या 1 से 3 तक दीर्घ उत्तरीय प्रश्न है जिनका उत्तर 800 से 1000 शब्दों में लिखना है।

1. Consider the following page reference string: 1,2,3,4,2,1,5,6,1,2,3,7,6,3,2,1,2,3,6. How many page faults would occur for the LRU, FIFO, LFU and optimal page replacement algorithms assuming three and five frames?
2. Consider the following table of arrival time and burst time for three processes P0, P1 and P2.

Process	Arrival time	Burst Time
P0	0 ms	9 ms
P1	1 ms	4 ms
P2	2 ms	9 ms

The pre-emptive shortest job first scheduling algorithm is used. Scheduling is carried out only at arrival or completion of processes. What is the average waiting time for the three processes?

3. Assuming the current disk cylinder to be 50 and the sequence for the cylinders to be 1,36,49,65,53,12,3,20,55,16,65 and 78 find the sequence of servicing using
  - (a) Shortest seek time first (SSTF)
  - (b) SCAN disk scheduling policies.

खण्ड ब

अधिकतम अंक : 12

Section –B

Maximum Mark : 12

**नोट—(Instructions): Section B consists of short answer questions. Answer should be in 200 to 300 words. Attempt all four questions from this section.**

प्रश्न संख्या 4 से 7 तक लघु उत्तरीय प्रश्न है जिनका उत्तर 200 से 300 शब्दों में लिखना है।

4. How does thrashing occurs? Explain with an example.
5. How does a deadlock happens in a system?
6. What are the minimum requirements that should be satisfied by a solution to critical section problem?
7. What is purpose of Process Control Block?

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कोर्सकोड : Course Code: <b>BCA-113</b>	कोर्स शीर्षक:– (Course Title) <b>Software Engineering</b>	अधिकतमअंक : 30 <b>Maximum Marks : 30</b>
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खण्ड अ

अधिकतम अंक : 18

Section-A

**Maximum Marks: 18**

**नोट–(Instructions): Section A consists of long answer questions. Answer should be in 800 to 1000 words. Attempt all three questions from this section.**

प्रश्न संख्या 1से 3 तक दीर्घ उत्तरीय प्रश्न है जिनका उत्तर 800 से 1000 शब्दों में लिखना है।

1. What is Risk Management? How does software risk management related to software process improvement?
2. Define Software Development life cycle (SDLC). List the advantage and disadvantage of spiral model.
3. What is Software Testing? What are the various characteristics of a good testable software?

खण्ड ब

अधिकतम अंक : 12

Section –B

**Maximum Mark : 12**

**नोट–(Instructions): Section B consists of short answer questions. Answer should be in 200 to 300 words. Attempt all four questions from this section.**

प्रश्न संख्या 4 से 7 तक लघु उत्तरीय प्रश्न है जिनका उत्तर 200 से 300 शब्दों में लिखना है।

4. Explain differences between prototype model and spiral model.
5. Discuss the role of PERT Chart in software development.
6. What is Cohesion? How it is different from of coupling?
7. What do you understand by Software Configuration Management?

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कोर्सकोड : Course Code: <b>BCA-114</b>	कोर्स शीर्षक:– (Course Title) <b>Principle of Programming Languages</b>	अधिकतमअंक : 30 <b>Maximum Marks : 30</b>
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खण्ड अ

अधिकतम अंक : 18

Section-A

Maximum Marks: 18

**नोट–(Instructions): Section A consists of long answer questions. Answer should be in 800 to 1000 words. Attempt all three questions from this section.**

प्रश्न संख्या 1से 3 तक दीर्घ उत्तरीय प्रश्न है जिनका उत्तर 800 से 1000 शब्दों में लिखना है।

1. Write any four important uses of programming languages. List the design principles of imperative languages.
2. Write brief notes on following:  
(a) Abstract data types (b) Polymorphism (c) Recursive sub-programs (d) Encapsulation
3. Write three applications of functional programming. Outline the pros and cons of procedures and functions.

खण्ड ब

अधिकतम अंक : 12

Section –B

Maximum Mark : 12

**नोट–(Instructions): Section B consists of short answer questions. Answer should be in 200 to 300 words. Attempt all four questions from this section.**

प्रश्न संख्या 4 से 7 तक लघु उत्तरीय प्रश्न है जिनका उत्तर 200 से 300 शब्दों में लिखना है।

4. Distinguish between dangling pointers and memory leakage.
5. List the benefits of modular development approach.
6. What are the differences between static and dynamic allocation?
7. Discuss the important features of a programming language.

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कोर्सकोड : Course Code: <b>BCA-116</b>	कोर्स शीर्षक:— (Course Title) <b>Computer Network</b>	अधिकतमअंक : 30 <b>Maximum Marks : 30</b>
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खण्ड अ

अधिकतम अंक : 18

Section-A

Maximum Marks: 18

**नोट—(Instructions): Section A consists of long answer questions. Answer should be in 800 to 1000 words. Attempt all three questions from this section.**

प्रश्न संख्या 1 से 3 तक दीर्घ उत्तरीय प्रश्न है जिनका उत्तर 800 से 1000 शब्दों में लिखना है।

1. Describe the differences between the following:  
(i) Half Duplex and Full Duplex (ii) multicast addressing and Unicast addressing. (iii) packet switching and Circuit Switching.
2. Explain the OSI reference model with the help of a diagram. List the important functions of each layer of the model.
3. Assume message M: 1010101010 bits and generator G: 10001 bits. Explain how CRC is used for error detection using above message bits and generator bits.

खण्ड ब

अधिकतम अंक : 12

Section –B

Maximum Mark : 12

**नोट—(Instructions): Section B consists of short answer questions. Answer should be in 200 to 300 words. Attempt all four questions from this section.**

प्रश्न संख्या 4 से 7 तक लघु उत्तरीय प्रश्न है जिनका उत्तर 200 से 300 शब्दों में लिखना है।

4. How classful addressing is different from class-less addressing? Give the range of IP addresses used in different classes in class addressing mode.
5. Write the similarities between TCP/IP and OSI model.
6. Explain the format of TCP header through illustration.
7. Explain the working of Link State Routing Algorithm using an example.

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कोर्सकोड : Course Code: <b>BCA-117</b>	कोर्स शीर्षक:– (Course Title) <b>Java Programming</b>	अधिकतमअंक : 30 <b>Maximum Marks : 30</b>
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खण्ड अ

अधिकतम अंक : 18

Section-A

**Maximum Marks: 18**

**नोट–(Instructions): Section A consists of long answer questions. Answer should be in 800 to 1000 words. Attempt all three questions from this section.**

प्रश्न संख्या 1से 3 तक दीर्घ उत्तरीय प्रश्न है जिनका उत्तर 800 से 1000 शब्दों में लिखना है।

1. What is overloading of methods? Explain with an example how overloading of methods is different from overriding of methods.
2. What is a constructor? Write a Java program to explain how super class constructors are called in their subclasses.
3. How Access Control Mechanism is implemented in Java? What Method does subclass inherit from superclass.

खण्ड ब

अधिकतम अंक : 12

Section –B

**Maximum Mark : 12**

**नोट–(Instructions): Section B consists of short answer questions. Answer should be in 200 to 300 words. Attempt all four questions from this section.**

प्रश्न संख्या 4 से 7 तक लघु उत्तरीय प्रश्न है जिनका उत्तर 200 से 300 शब्दों में लिखना है।

4. Explain the use of 'this' keyword with an example.
5. Write down a java program to display number in word format, for Example: 123 will be shown as "One Two Three".
6. Differentiate between components and containers in AWT
7. What is the difference between Overloading and Overriding? Is it possible to override a inner classes.



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कार्यक्रम अधिन्यास सत्र 2023–24

कोर्सकोड : Course Code: <b>BCA-118</b>	कोर्स शीर्षक:– (Course Title) <b>Windows Programming</b>	अधिकतमअंक : 30 <b>Maximum Marks : 30</b>
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खण्ड अ

अधिकतम अंक : 18

Section-A

Maximum Marks: 18

**नोट–(Instructions): Section A consists of long answer questions. Answer should be in 800 to 1000 words. Attempt all three questions from this section.**

प्रश्न संख्या 1से 3 तक दीर्घ उत्तरीय प्रश्न है जिनका उत्तर 800 से 1000 शब्दों में लिखना है।

1. What are the advantages and disadvantages of Visual Basic over any other object-oriented language? Explain with suitable examples.
2. Write a program in VB for adding List Box, List Items, Check Box, Radio Button and Menus to your Window.
3. What are the important features of Visual Basic? Explain various control structures in Visual Basic?

खण्ड ब

अधिकतम अंक : 12

Section –B

Maximum Mark : 12

**नोट–(Instructions): Section B consists of short answer questions. Answer should be in 200 to 300 words. Attempt all four questions from this section.**

प्रश्न संख्या 4 से 7 तक लघु उत्तरीय प्रश्न है जिनका उत्तर 200 से 300 शब्दों में लिखना है।

4. What is event? Discuss any four events supported by visual basic.
5. What are the basic differences between checkbox and radio buttons?
6. Write a Visual Basic program to design a digital clock.
7. Explain the concept of database connectivity.

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कार्यक्रम अधिन्यास सत्र 2023–24

कोर्स कोड : Course Code: BCA-119	कोर्स शीर्षक:— (Course Title) <b>Computer Organization</b>	अधिकतम अंक : 30 <b>Maximum Marks : 30</b>
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खण्ड अ

अधिकतम अंक : 18

Section-A

Maximum Marks: 18

**नोट—(Instructions): Section A consists of long answer questions. Answer should be in 800 to 1000 words. Attempt all three questions from this section.**

प्रश्न संख्या 1 से 3 तक दीर्घ उत्तरीय प्रश्न है जिनका उत्तर 800 से 1000 शब्दों में लिखना है।

1. (a) Implement the following Boolean Expression with NOR GATE only.  
 $F(A, B, C) = \Pi(0, 2, 4, 6, 7)$   
(b) Why NAND and NOR gates are called as Universal gate.
2. What do you mean by Flip-Flop? Discuss the functions and circuits diagram of different type of flip flop?
3. What is the difference between combinational and sequential circuit? Explain with appropriate example.

खण्ड ब

अधिकतम अंक : 12

Section –B

Maximum Mark : 12

**नोट—(Instructions): Section B consists of short answer questions. Answer should be in 200 to 300 words. Attempt all four questions from this section.**

प्रश्न संख्या 4 से 7 तक लघु उत्तरीय प्रश्न है जिनका उत्तर 200 से 300 शब्दों में लिखना है।

4. Differentiate Hardware and Micro-programmed control unit with their advantages and disadvantages.
5. What is instruction cycle? When will be any interrupt processed during the instruction cycle?
6. What is DMA? Explain DMA transfer modes in detail.
7. What do you mean by memory hierarchy? Why registers are present in CPU?

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कार्यक्रम अधिन्यास सत्र 2023–24

कोर्स कोड : Course Code: <b>BCA 121</b>	कोर्स शीर्षक:— (Course Title) <b>Information and Network Security</b>	अधिकतम अंक : 30 <b>Maximum Marks : 30</b>
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खण्ड अ

अधिकतम अंक : 18

Section-A

Maximum Marks: 18

**नोट—(Instructions): Section A consists of long answer questions. Answer should be in 800 to 1000 words. Attempt all three questions from this section.**

प्रश्न संख्या 1 से 3 तक दीर्घ उत्तरीय प्रश्न है जिनका उत्तर 800 से 1000 शब्दों में लिखना है।

1. Differentiate between the following:
  - a. Authentication and Authorization
  - b. Active Attack and Passive Attack
  - c. Direct and arbitrated digital signatures
  - d. Session key and master key
2. i) What does Triple DES use and what does triple DES guarantee?  
ii) Show the steps involved in DES round key generation for key: OIFE OIFE OIFE OIFE.
3. i) What is a replay attack? Show various approaches against it.  
ii) Mention properties and requirements of digital signatures.

खण्ड ब

अधिकतम अंक : 12

Section –B

Maximum Mark : 12

**नोट—(Instructions): Section B consists of short answer questions. Answer should be in 200 to 300 words. Attempt all four questions from this section.**

प्रश्न संख्या 4 से 7 तक लघु उत्तरीय प्रश्न है जिनका उत्तर 200 से 300 शब्दों में लिखना है।

4. What are the overall goals of information security?
5. For the intercepted ciphertext  $C = 10$  and public key  $e = 5$  and  $n = 35$ , identify the plaintext  $M$ .
6. What are the key features and characteristics of secure hash function?
7. Encrypt the message "Russians are Indian friends" using Hill Cipher with the following key.

(11 05 07 08

13 01 12 06

04 09 14 17

18 03 19 02)

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कोर्स कोड :	कोर्स शीर्षक:- (Course Title)	अधिकतम अंक : 30
Course Code:BCA-122	Design and Analysis Of Algorithms	Maximum Marks : 30

खण्ड अ

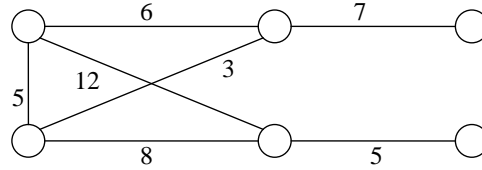
अधिकतम अंक : 18

Section-A

Maximum Marks: 18

**नोट-(Instructions): Section A consists of long answer questions from 1 to 3. Answer should be in 800 to 1000 words.**

1. Show the results of inserting the keys: F, S, Q, K, C, L, H, T, V, W, M, R and N in order to an empty B-Tree with minimum degree 2.
2. Solve the recurrence relation by iteration  
 $T(n) = T(n-1) + n^4$
3. Find the minimum spanning tree using Prims algorithm for the following graph.



खण्ड ब

अधिकतम अंक : 12

Section -B

Maximum Mark : 12

**नोट-(Instructions): Section B consists of short answer questions from 4 to 7. Answer should be in 200 to 300 words.**

4. Solve the following recurrence. :  
 $T(1) = 1$   
 $T(n) = 4T(n/3) + n^2$  for  $x \leq 2$
5. Show the trace of heapsort algorithm for following input data :  
30, 50, -100, 200, 50, 30, 60, 80, 200 in order.
6. Give an algorithm for Strassens's multiplication. Explain how a divide and conquer strategy is applicable to it? Also analyze your algorithm.
7. Find the optimal solution using greedy criterion for a knapsack having capacity 50 kg. The list of items having values and weight as are shown in the table:

Item	I <sub>1</sub>	I <sub>2</sub>	I <sub>3</sub>	I <sub>4</sub>	I <sub>5</sub>
Profit	10	20	24	9	8
weight	8	14	34	5	4

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कोर्स कोड : Course Code: <b>BCA-123</b>	कोर्स शीर्षक:– (Course Title) <b>Computer Graphics</b>	अधिकतम अंक : 30 <b>Maximum Marks : 30</b>
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खण्ड अ

अधिकतम अंक : 18

**Section-A**

**Maximum Marks: 18**

**नोट–(Instructions): Section A consists of long answer questions from 1 to 3. Answer should be in 800 to 1000 words.**

1. List the hardware and software components essential for professional multimedia development. Also, justify the need of each of the hardware components.
2. Describe the matrix formulation of 2D Translation, Scaling and Rotation.
3. Define following terms:
  - a) Refresh buffer/frame buffer.
  - b) Pixel?
  - c) Aspect ratio.

खण्ड ब

अधिकतम अंक : 12

**Section –B**

**Maximum Mark : 12**

**नोट–(Instructions): Section B consists of short answer questions from 4 to 7. Answer should be in 200 to 300 words.**

4. Explain the various digital movie tools.
5. Write short note on:
  - (a) MPEG
  - (b) MP3
6. What are the differences between the GIF and JPEG?
7. Explain Bresenham's circle generating algorithm.

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कार्यक्रम अधिन्यास सत्र 2023–24

कोर्स कोड : Course Code: <b>BCA-EA</b>	कोर्स शीर्षक:– (Course Title) <b>Web Technology</b>	अधिकतम अंक : 30 <b>Maximum Marks : 30</b>
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खण्ड अ

अधिकतम अंक : 18

**Section-A**

**Maximum Marks: 18**

**नोट–(Instructions): Section A consists of long answer questions from 1 to 3. Answer should be in 800 to 1000 words.**

1. Explain the servlet API life cycle methods in brief.
2. Discuss the basic differences between Servlet and JSP.
3. Explain in detail the creation, instantiation and usage of java beans objects.

खण्ड ब

अधिकतम अंक : 12

**Section –B**

**Maximum Mark : 12**

**नोट–(Instructions): Section B consists of short answer questions from 4 to 7. Answer should be in 200 to 300 words.**

4. Explain the way in which a DNS server resolves addresses.
5. Give some advantages of using cascading style sheets.
6. Compare DOM and SAX in XML processing.
7. Write a CSS which adds background images and indentation?

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Bachelor of Computer Application

कार्यक्रम अधिन्यास सत्र 2023–24

कोर्स कोड : Course Code: <b>BCA-EB</b>	कोर्स शीर्षक:– (Course Title) <b>Client Server Technology</b>	अधिकतम अंक : 30 <b>Maximum Marks : 30</b>
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खण्ड अ

अधिकतम अंक : 18

**Section-A**

**Maximum Marks: 18**

**नोट–(Instructions): Section A consists of long answer questions from 1 to 3. Answer should be in 800 to 1000 words.**

1. Draw the block diagram of client/server architecture and explain the advantages of client/server computing with the help of suitable example.
2. Explain about network management and remote system management. How can security be provided to network?
3. Explain Connectivity and Communication Interface Technology in client/server application. How does transmission protocol work in client/server application?

खण्ड ब

अधिकतम अंक : 12

**Section –B**

**Maximum Mark : 12**

**नोट–(Instructions): Section B consists of short answer questions from 4 to 7. Answer should be in 200 to 300 words.**

4. Why OLE is needed? Explain its importance.
5. Why Network Management is needed? Explain.
6. Differentiate between stateful and stateless servers.
7. Explain asynchronous Transfer mode (ATM) in detail.

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Bachelor of Computer Application

कार्यक्रम अधिन्यास सत्र 2023–24

कोर्स कोड : Course Code: <b>BCA 127</b>	कोर्स शीर्षक:– (Course Title) <b>Python Programming</b>	अधिकतम अंक : 30 <b>Maximum Marks : 30</b>
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खण्ड अ

अधिकतम अंक : 18

Section-A

Maximum Marks: 18

**नोट–(Instructions): Section A consists of long answer questions. Answer should be in 800 to 1000 words. Attempt all three questions from this section.**

प्रश्न संख्या 1 से 3 तक दीर्घ उत्तरीय प्रश्न है जिनका उत्तर 800 से 1000 शब्दों में लिखना है।

- i) What is type casting? How are the variables types casted in Python?
  - ii) What are the major in-built data structures in Python? Explain with their features and associated operations and methods.
- i) What do you understand by data types? What are the major categories of data types in Python? Give some examples of data types in each category.
  - ii) What is the utility of selection or conditional statements in a program? What are different conditional statements in Python?
- i) How do you create a module in Python? Explain with the help of suitable programs.
  - ii) Write a Python program to demonstrate NumPy, Pandas, and SciPy packages in a single program.

खण्ड ब

अधिकतम अंक : 12

Section –B

Maximum Mark : 12

**नोट–(Instructions): Section B consists of short answer questions. Answer should be in 200 to 300 words. Attempt all four questions from this section.**

प्रश्न संख्या 4 से 7 तक लघु उत्तरीय प्रश्न है जिनका उत्तर 200 से 300 शब्दों में लिखना है।

4. Explain the role of lambda function in Python. Illustrate with the help of a Python program.
5. Create a list of number and perform major operations with built-in functions.
6. Demonstrate the creation of a dictionary in Python. Perform the allowed the operations on the created dictionary.
7. Explain the usage of import and from statements. What is the purpose of \_\_init\_\_.py file in module package directory?



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Bachelor of Computer Application

कार्यक्रम अधिन्यास सत्र 2023–24

कोर्स कोड : Course Code: <b>BCA 128</b>	कोर्स शीर्षक:— (Course Title) <b>Soft Computing</b>	अधिकतम अंक : 30 <b>Maximum Marks : 30</b>
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खण्ड अ

अधिकतम अंक : 18

Section-A

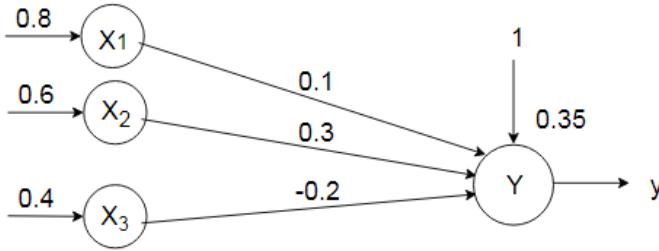
Maximum Marks: 18

नोट—(Instructions): Section A consists of long answer questions. Answer should be in 800 to 1000 words. Attempt all three questions from this section.

प्रश्न संख्या 1 से 3 तक दीर्घ उत्तरीय प्रश्न है जिनका उत्तर 800 से 1000 शब्दों में लिखना है।

1. List any four activation functions with their equations and graphs. Obtain the output of neuron Y in following network using activation functions as:

- i) Sigmoid
- ii) Rectified Linear Unit (ReLU)



2. Consider two fuzzy sets  $A = \{ 0.2/0 + 0.3/1 + 1/2 + 0.1/3 + 0.5/4 \}$

$$B = \{ 0.1/0 + 0.25/1 + 0.9/2 + 0.7/3 + 0.3/4 + 0.2/5 \}$$

Find the following: (a) Algebraic sum (b) Bounded sum (c) Bounded Difference

3. Consider the fuzzy relation

$$R = \begin{bmatrix} 1 & 0.8 & 0 & 0.1 & 0.2 \\ 0.8 & 1 & 0.4 & 0 & 0.9 \\ 0 & 0.4 & 1 & 0 & 0 \\ 0.1 & 0 & 0 & 1 & 0.5 \\ 0.2 & 0.9 & 0 & 0.5 & 1 \end{bmatrix}$$

Perform  $\lambda$ -cut operations for the values of  $\lambda = 0.9, 0+$

खण्ड ब

अधिकतम अंक : 12

Section –B

Maximum Mark : 12

नोट—(Instructions): Section B consists of short answer questions. Answer should be in 200 to 300 words. Attempt all four questions from this section.

प्रश्न संख्या 4 से 7 तक लघु उत्तरीय प्रश्न है जिनका उत्तर 200 से 300 शब्दों में लिखना है।

4. Explain the differences between supervised and unsupervised learning in artificial neural network?
5. Explain the architecture of Adaptive Linear Neural Element Network (ADALINE) and Many ADALINE (MADALINE) Network.
6. Draw the architecture of Back-Propagation network. List all the tuning parameters of Back propagation Neural Network and their selection criteria.
7. What is Fuzzy Inference System (FIS)? Illustrate Mamdani FIS and Sugeno FIS with examples?

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Bachelor of Computer Application

कार्यक्रम अधिन्यास सत्र 2023–24

कोर्स कोड : Course Code: BCA-EC	कोर्स शीर्षक:— (Course Title) <b>Computer Architecture</b>	अधिकतम अंक : 30 <b>Maximum Marks : 30</b>
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खण्ड अ

अधिकतम अंक : 18

Section-A

Maximum Marks: 18

**नोट—(Instructions): Section A consists of long answer questions from 1 to 3. Answer should be in 800 to 1000 words.**

प्रश्न संख्या 1 से 10 तक दीर्घ उत्तरीय प्रश्न है जिनका उत्तर 800 से 1000 शब्दों में लिखना है। इस खंड से किसी भी तीन प्रश्नों का उत्तर दें।

1. What are the similarities and differences between multiprocessor and multicomputer system? Explain the classification of multiprocessor system.
2. Explain the Pipeline scheduling in detail.
3. Identify the dependences in the following code snippet:  
ADD R1, R2, R3  
DIV R4, R1, R5  
ADD R5, R7, R4  
AND R5, R4, R2

खण्ड ब

अधिकतम अंक : 12

Section –B

Maximum Mark : 12

**नोट—(Instructions): Section B consists of short answer questions from 4 to 7. Answer should be in 200 to 300 words.**

4. What is cache coherency and how is it eliminated?
5. What are different pipelining hazards and how are they eliminated?
6. Suppose a cache is 10 times faster than main memory & suppose the cache can be used 70% of the time. How much speedup do we gain by using cache?
7. Assume that for a certain processor, a read request takes 50 nanoseconds on a cache miss and 5 nanoseconds on a cache hit. Suppose while running a program, it was observed that 80% of the processor's read requests result in a cache hit. Find the average read access time in nanoseconds.

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Bachelor of Computer Application

कार्यक्रम अधिन्यास सत्र 2023–24

कोर्स कोड :	कोर्स शीर्षक:— (Course Title)	अधिकतम अंक : 30
Course Code: <b>BCA-ED</b>	<b>Microprocessor and its Applications</b>	<b>Maximum Marks : 30</b>

खण्ड अ

अधिकतम अंक : 18

Section-A

Maximum Marks: 18

**नोट—(Instructions): Section A consists of long answer questions from 1 to 3. Answer should be in 800 to 1000 words.**

प्रश्न संख्या 1 से 9 तक दीर्घ उत्तरीय प्रश्न हैं जिनका उत्तर 800 से 1000 शब्दों में लिखना है।

1. Explain the following.  
(i) Data Bus. (ii) Address Bus. (iii) Control Bus.
2. Explain I/O addressing scheme used in 8086 with neat block diagram.
3. With block diagram describe the working of a DMA controller.

खण्ड ब

अधिकतम अंक : 12

Section –B

Maximum Mark : 12

**नोट—(Instructions): Section B consists of short answer questions from 4 to 7. Answer should be in 200 to 300 words.**

4. What do you mean by Conditional Flag?
5. What are the advantages of segmented memory scheme?
6. What are the flags in machine status word?
7. What is the difference between a microprocessor and a CPU?