

Total No. of Questions : 5]

SEAT No. :

PE5767

[Total No. of Pages : 2

[6592]-1

S.Y. B.C.A. (Management)

**CA-200-IKS : INDIAN KNOWLEDGE SYSTEM FOR COMPUTING
(2024 Credit Pattern) (Semester - III)**

Time : 2 Hours]

[Max. Marks : 35

Instructions to the candidates:

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

Q1) Write Answer of the following 4 out of 6.

[8]

- a) What is one of the major contribution of Indian Numeral System?
- b) Who is the author of the *Aṣṭādhyāyī* ? Discuss it in detail.
- c) What is Phonetics study?
- d) Name the two mathematicians, whose contributions is known for their significant work in ancient Indian mathematics.
- e) Explain the meaning of *Samśaya* in Indian philosophy with an example.
- f) What does *Pramāṇa* mean?

Q2) Write Answer of the following 2 out of 3.

[8]

- a) Describe the knowledge triangle in IKS with example.
- b) Explain recursive operations with respect to the Kaprekar Constant 6174, demonstrating how it works in a rule-based system.
- c) Discuss the computational aspects of Sanskrit and explain its growing role in natural language processing (NLP).

P.T.O.

Q3) Write Answer of the following 2 out of 3.

[8]

- a) Describe the process of word generation in Sanskrit focusing on the combination of roots, prefixes, and suffixes.
- b) Explain contributions of Aryabhata, Brahmagupta and Buddhist logico-epistemology.
- c) Define Indian Knowledge Systems (IKS) and explain its major components.

Q4) Write Answer of the following 2 out of 3.

[8]

- a) Compare the salient features of the Indian numeral System and Roman numeral system.
- b) Explain Steganography as detailed in Kautilya's Arthashastra providing an example of how secret intelligence was hidden.
- c) Differentiate between Dravyas (substances) and Attributes (properties) according to the Vaiśeṣikan approach to physical reality.

Q5) Write short note 1 out of 2.

[3]

- a) Aṣṭādhyāyī
- b) Prameya



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SEAT No. :

PE-5768

[Total No. of Pages : 2

[6592]-3
B.C.A.
MANAGEMENT
CA-211-VSC : C++ PROGRAMMING
(2024 Credit Pattern) (Semester - III)

Time : 2 Hours]

[Max. Marks : 35

Instructions to the candidates:

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

Q1) Write Answer the following 4 out of 6 :

[4 × 2 = 8]

- a) What are the access specifiers used in C++.
- b) Define reference variable with syntax.
- c) What are manipulators? Give examples.
- d) What is extraction and insertion operator?
- e) What is scope resolution operator?
- f) What is Base Class and Derived Class?

Q2) Write Answer the following 2 out of 3 :

[2 × 4 = 8]

- a) What are memory management operators? Explain with examples.
- b) Define Constructor. Explain any two types of constructors with example.
- c) What is inheritance and explain the hierarchical inheritance.

Q3) Write Answer the following 2 out of 3 :

[2 × 4 = 8]

- a) Write a program in C++ to find minimum of two numbers using inline function.
- b) Write a program to display student (s-id, s-name, course) data using array of objects.
- c) Write a program to overload function area() to calculate:
Area of circle and Area of rectangle.

P.T.O.

Q4) Write Answer the following 2 out of 3 :

[2 × 4 = 8]

- a) Explain Friend class with suitable example.
- b) Write a program to read contents from one text file and write into another.
- c) What is purevirtual function? Explain with the help of example program.

Q5) Write short note on any 1 out of 2 :

[1 × 3 = 3]

- a) Late binding and Early binding
- b) Static data member



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SEAT No. :

PE-5769

[Total No. of Pages : 2

[6592]-4

B.C.A.

COMMERCE & MANAGEMENT

CA-241-MN : Programming With Python

(2024 Credit Pattern) (Semester - III)

Time : 2 Hours]

[Max. Marks : 35

Instructions to the candidates:

- 1) Q.1 & Q.5 are compulsory.
- 2) Solve any 2 from remaining.

Q1) Solve any 5 Questions :

[5 × 2 = 10]

- a) What are identity operators?
- b) Define class & object.
- c) What is recursive function?
- d) What is slicing operator? Give example.
- e) Write any 2 functions of random module.
- f) What are the file opening modes in python.

Q2) a) Create a class Employes with (empno, name, dept, salary) using constructor.

- Write display () method to display the employes details.
- Calculate the total salary department wise & display.

b) Write a python program to generate following pattern.

```
1
1 2
1 2 3
1 2 3 4
1 2 3 4 5
```

[10]

Q3) a) Explain any 5 string methods using example. [built-in string functions].

b) Write user defined function to calculate summation of entered numbers using multiple argument to implement concept of over loading (Hint : * args)

[10]

P.T.O.

- Q4)** a) Write a program to (Copy) read the contents of one file to another.
b) Explain any 5 data visualization methods of matplotlib with example.

[10]

Q5) Solve any one :

[1 × 5 = 5]

- a) Write a python program to use math module (any 5 methods)
b) Write a python program to create dictionary with key as 1 to 10 numbers & squares as values.



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SEAT No. :

PE-5770

[Total No. of Pages : 2

[6592]-5
S.Y. B.C.A. (Management)
CA - 201 - MJ: DATA STRUCTURES
(2024 Credit Pattern) (Semester - III)

Time : 2 Hours]

[Max. Marks : 35

Instructions to the candidates :

- 1) All Questions are compulsory.*
- 2) Figures to the right indicate full marks.*

Q1) Write Answer of the following 4 out of 6

[8]

- a) Explain the different types of Searching methods?
- b) What does Time Complexity measure?
- c) Differentiate Array and Linked List?
- d) Define tree in data structures.
- e) Give one example of a Linear Data Structure and one example of a Non-Linear Data Structure.
- f) What is stack in data structures?

Q2) Write Answer the following 2 out of 3

[8]

- a) What is the linked list? Explain different operations performed on linked list.
- b) List out operations on queue briefly.
- c) Explain Merge Sort technique with example

Q3) Write Answer the following 2 out of 3

[8]

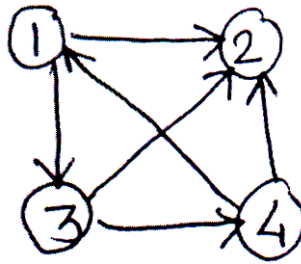
- a) Sort the following data by using quick sort. 32,25,3,15,80,7,90
- b) Differentiate between DFS and BFS.
- c) Write a 'C' program for bubble sort.

P.T.O.

Q4) Write Answer the following 2 out of 3

[8]

- a) Write a function to search the element from array using binary search
- b) Convert the following from infix to postfix
 - i) $A + B - C * D + (E \wedge F) * G / H$
 - ii) $A + B * C + D$
- c) What is the degree of vertex? Find in-degree & out degree of following graph for each node.



Q5) Write short note 1 out of 2

[3]

- a) Graph and its types.
- b) Abstract data type (ADT)



Total No. of Questions : 5]

SEAT No. :

PE-5771

[Total No. of Pages : 2

[6592]-6

B.C.A. (Management)

ELS - 241 - MN : Data Communications

(2024 Pattern) (Semseter - III)

Time : 2 Hours]

[Max. Marks : 35

Instructions to the candidates:

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

Q1) Write Answer the following 4 out of 6 : **[8]**

- a) Name any two physical topology?
- b) Give two examples of communication protocols?
- c) What is data representation?
- d) Mention two differences between wifi & Bluetooth?
- e) Mention two advantages of coaxial cable?
- f) What is pulse code modulation?

Q2) Write Answer the following 2 out of 3: **[8]**

- a) Explain different types of Analog to analog Encoding?
- b) Explain different types of transmission impairments with example?
- c) Explain the evaluation of mobile communication from 1G to 5G?

Q3) Write Answer the following 2 out of 3: **[8]**

- a) Explain twisted pair cable with diagram.
- b) Explain PCM.
- c) Describe the working of Ring topology with example.

P.T.O.

Q4) Write Answer the following 2 out of 3: **[8]**

- a) Explain NR2 & manchester encoding.
- b) Explain the importance of protocols & standards in Data Communication.
- c) Discuss the causes remedies for transmission impairments.

Q5) Write Short Note 1 out of 2 : **[3]**

- a) Satellite Communication.
- b) Router.



Total No. of Questions : 5]

SEAT No. :

PE12852

[Total No. of Pages : 2

[6592]-11

First Year B.C.A. (Management)

**CA-101-T : PROBLEM SOLVING AND PROGRAMMING IN C
(NEP) (2024 Credit Pattern) (Semester-I)**

Time : 2 Hours]

[Max. Marks : 30

Instructions to the candidates:

- 1) *All questions are compulsory.*
- 2) *Figures to the right indicates full marks.*

Q1) Trace the output of the following (solve any 2 out of 4).

[2×2=4]

a) # include <stdio.h>

```
int main() {  
    int a = 5;  
    a = a + 1;  
    printf ("The value is : %d\n",a);  
    return 0;  
}
```

b) # include <stdio.h>

```
int main() {  
    int i ;  
    for (i = 1; i <= 3; i++) {  
        printf ("%d",i);  
    }  
    return 0;  
}
```

c) # include <stdio.h>

```
int main() {  
    int x = 7;  
    if (x>5)  
        print ("Hello");  
    else  
        print ("Hi");  
    return 0;
```

P.T.O.

```

d)  # include <stdio.h>
    int main() {
        int n = 2;
        Switch (n){
            Case 1 : printf ("One"); break;
            Case 2 : printf ("Two"); break;
            Case 3 : printf ("Three"); break;
        }
        return 0;
    }

```

Q2) Write answer of the following (Solve any 4 out of 5). **[4×1=4]**

- a) What is a flowchart?
- b) Define problem solving.
- c) What is data type?
- d) What is function?
- e) Define single dimensional array.

Q3) Write answer of the following (Solve any 3 out of 5). **[3×2=6]**

- a) Write an algorithm of finding the sum of first n numbers.
- b) What are keywords in C? Give two examples.
- c) Differentiate between while & do while loop.
- d) What is an increment operator? Give example.
- e) Write any two advantages of an Array.

Q4) Write answer of the following (Solve any 2 out of 3). **[2×4=8]**

- a) Write a program to find whether the number is positive or negative.
- b) Write a program to find the factorial of a number using for loop.
- c) Explain looping statements with suitable example.

Q5) Write answer of the following (Solve any 2 out of 3). **[2×4=8]**

- a) Write a program to print numbers from 1 to 5 using for loop.
- b) Write a program to find Area of square using user defined function.
- c) Explain conditional statements in C with an example.



Total No. of Questions : 4]

SEAT No. :

PE-12853

[Total No. of Pages : 3

[6592]-12

F.Y.B.C.A. (Management)

**CA-103-T: Computer Organization & Architecture
(NEP 2020) (2024 Credit Pattern) (Semester - I)**

Time : 2 Hours]

[Max. Marks : 30

Instructions to the candidates :

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

Q1) Answer the following questions (Solve any 6 out of 8)

[6 × 1 = 6]

- a) The hexadecimal number 'D' corresponds to ____ decimal number.
 - i) 11
 - ii) 12
 - iii) 13
 - iv) 14
- b) The full form of EBCDIC is ____
 - i) Extended Binary converted Decimal Interchange code
 - ii) Extended Binary coded Decimal Interchange code
 - iii) Expanded Binary coded Decimal Interchange code
 - iv) Extended Binary coded Data Interchange code
- c) Which of the following is an universal gate?
 - i) OR
 - ii) NOR
 - iii) Ex-oR
 - iv) None of above
- d) Which of the following is application of K-map?
 - i) To remember logic circuits
 - ii) To simplify Boolean expressions
 - iii) To design flip - flop circuits
 - iv) To design memory units.

P.T.O.

- e) Full adder is used for addition of _____
- i) 2 bits
 - ii) 3 bits
 - iii) 4 bits
 - iv) any bits
- f) A combinational circuit is _____
- i) A circuit having memory element
 - ii) A circuit which uses flip flops
 - iii) A circuit in which output depends on present input only
 - iv) A circuit in which output depends on past & present inputs.
- g) What is the primary function of ALU?
- i) Store data
 - ii) Control input devices
 - iii) Perform arithmetic and logic operations
 - iv) Fetch instruction
- h) For 4-variable k-map no. of cells will be _____
- i) 8
 - ii) 16
 - iii) 4
 - iv) 6

Q2) Write answer of the following (solve any 4 out of 5).

[4 × 2 = 8]

- a) Find excess-3 code of 1001
- b) Draw symbol & write truth table of Ex-OR gate.
- c) Define parity with its applications
- d) Explain D-flip flop with its truth table
- e) Write difference between RISC and CISC.

Q3) Write answers of the following (solve any 2 out of 3).

[2 × 4 = 8]

a) Perform the following conversion

i) $(58)_{10} = (?)_2$ ii) $(110101)_2 = (?)_{10}$

b) Simplify following using k-map.

$P = \text{TIM} (1,2,5,6).$

c) Explain 8:3 encoder with its truth table.

Q4) Write answer of the following (solve any 2 out of 3).

[2 × 4 = 8]

a) Define shift register. List its types & explain any one type with neat diagram.

b) Perform following subtraction in binary

$(27 - 21)$

c) Prove the following using Boolean algebraic rules

$\overline{A}B + A\overline{B} + AB + BC = \overline{A} + B$



Total No. of Questions : 4]

SEAT No. :

PE12854

[Total No. of Pages : 3

[6592]-13

F.Y.B.C.A. (Management)

CA -105-T : DISCRETE MATHEMATICS AND STATISTICS

(2024 Credit Pattern) (Semester-I)

Time : 2 Hours]

[Max. Marks : 30

Instructions to the candidates:

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

Q1) Choose the correct alternative (any 6 out of 8).

[6×1=6]

- a) A set which has no elements is called.
 - i) Universal set
 - ii) Singleton set
 - iii) Empty set
 - iv) Power set
- b) Relation that is reflexive symmetric and transitive called.
 - i) Partial order relation
 - ii) Equivalence relation
 - iii) Identity relation
 - iv) Universal relation
- c) The formula for conditional probability of event a given B is
 - i) $P(A) P(B)$
 - ii) $\frac{P(A)}{P(B)}$
 - iii) $\frac{P(A \cap B)}{P(B)}$
 - iv) $P(A) + P(B)$
- d) In a discrete probability distribution the sum all probabilities is always?
 - i) 1
 - ii) 0
 - iii) Undefined
 - iv) Infinite
- e) Which of the following is not a decile?
 - i) D_2
 - ii) D_4
 - iii) D_7
 - iv) Q_3
- f) The arithmetic mean of grouped data is calculated using.
 - i) Midpoints
 - ii) Frequencies only
 - iii) Class limits
 - iv) Cumulative frequency

P.T.O.

- g) When the values of two variables move in the same direction, correlation is said to be _____
- i) Linear ii) Non-linear
iii) Positive iv) Negative
- h) If $r = +1$, the correlation is :
- i) Negative ii) Zero
iii) Perfect positive iv) Perfect negative

Q2) Write answer of the following (solve any 4 out of 5).

[4×2=8]

- a) Define a set.
- b) Explain binary and n-ary relations with example?
- c) A box contains 4 red balls and 6 blue balls. One ball is drawn at random. Find the probability that the ball drawn is?
 - i) Red
 - ii) Blue
- d) The following data shows the number of hours spent on the internet by 8 students in a day: 2, 3, 5, 4, 6, 3, 4, 5 find the Arithmetic Mean of the data?
- e) How many permutations can be formed using all the letters of the word MATHEMATICS?

Q3) Write answer of the following (solve any 2 out of 3).

[2×4=8]

- Verify DeMorgan's law using truth table?
- Explain injective, surjective and bijective functions?
- The following data shows the frequency distribution of daily wages of workers?

Daily wages (Rs.)	Number of workers
100-200	5
200-300	9
300-400	14
400-500	12

- i) Draw Histogram
- ii) Draw an Ogive

Q4) Write answer of the following (solve any 2 out of 3).

[2×4=8]

- a) Calculate the coefficient of correlation from the following given information and comment.

$$n = 10, \Sigma x = 608, \Sigma y = 640, \Sigma xy = 39965, \Sigma x^2 = 39054 \text{ and } \Sigma y^2 = 42096$$

- b) State and explain binomial coefficients write any two binomial identities?
- c) Consider the following propositions.

p : “The students studies”.

q : “The student passes a scholarship”.

r : “The student gets a scholarship”.

Answer the following.

- i) Write the compound proposition for:

1) “If the student studies, then the student passes the exam”.

2) “The student studies and the student gets a scholarship”.

- ii) Write the negation of the statement.

“The student passes the exam or gets or scholarship”.

- iii) Construct the truth table for the compound proposition $(p \wedge q) \rightarrow r$

- iv) Using logical equivalences, simplify the expression $\neg (p \vee q)$



Total No. of Questions : 3]

SEAT No. :

PE-12855

[Total No. of Pages : 2

[6592]-14

F.Y.B.C.A. (Management)

**ACE-101 English : Professional Communication Skills
(Credit System) (2024 Pattern) (Semester - I)**

Time : 2 Hours]

[Max. Marks : 30

Instructions to the candidates :

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

Q1) Multiple choice question (Solve any 4 out of 6)

[4 × 1 = 4]

- a) Please _____ your shoes before entering (take off/take in/take up)
- b) They _____ the guests with great warmth. (looked for/looked up/looked after)
- c) The teacher asked him to sit _____ the first bench (on/at/in)
- d) She has long _____ hair (fair/fare)
- e) Please don't _____ the rules (brake/break)
- f) The child was afraid of the dark _____ (knight/night)

P.T.O.

Q2) Long answer questions (solve any 2 out of 4).

[2 × 7 = 14]

- a) Write a group discussion on the topic “Air pollution”.
- b) What is tense? Explain types of tenses with examples.
- c) Explain the speaking strategies for effective communication.
- d) What are prefix and suffix? Explain in detail with examples.

Q3) Write a short notes on: (solve any 4 out of 6).

[4 × 3 = 12]

- a) Idioms with examples.
- b) Antonyms with examples.
- c) One word substitutes with examples.
- d) Homonyms with examples
- e) Synonyms with examples
- f) Collocation with examples.

