(28)

04.3.22

ARKAJAIN University
Jharkhand

1st Semester Examination –2021-22

Subject: Introduction to Computer Science **Roll No: .....**
Course: BCA
Full Marks: 70 **Time: 3 Hours.**

Instructions to the Candidates:

- **Read the question paper very carefully.**
- **Start writing from 2nd page onwords, Do Not Write On The 1st Page Back Side**
- **Question Paper is divided into Three Parts –A, B & C.**
- **Part-A is containing 12 multiple choice questions.**
- **Part- B containing SIX questions out of which FOUR questions are to be answered.**
- **Part C containing FOUR questions out of which TWO questions are to be answered.**
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PART A

MULTIPLE CHOICE QUESTIONS **(12x1=12)**

1. How many entries will be in the truth table of a 3 input NAND gate?
   a) 6 b) 8 c) 9 d) None of these

2. How many bits are required to store one Hexadecimal digit?
   a) 10 b) 4 c) 8 d) 9

3. Which one has the fastest speed
   a) Cache memory b) Register c) Hard disk d) Main memory

4. Which of the following memories uses one transistor and one capacitor as basic memory unit
   a) SRAM b) DRAM c) Both a) & b) d) None of these

5. (170)10 is equivalent to
   a) (FD)16 b) (DF)16 c) (AA)16 d) (AF)16

6. The two digits hexadecimal number which has largest value is ___ which corresponds to _____
   a) FE, 255 decimal b) FF, 254 decimal
   c) FF, 255 decimal d) EF, 245 decimal

7. To reset a state in a circuit we use AND with a mask of
   a) 1 b) 0 c) 5 V d) 3.3 V

8. Which of the following is an example of a bounded medium?
   a) Coaxial cable b) wave guide c) fiber optic cable d) all of these

9. _____ refers to the physical or logical arrangement of a network.
   a) Topology b) Mode of operation c) Data flow d) None of the above

10. A _____ connection provides a dedicated link between two devices.
   a) Primary b) multipoint c) point-to-point d) secondary

11. Using Boolean Expression minimize the given equation:

$$AB + A(B + C) + B(B + C)$$

   a) AB+ AC+B b) AB + BC + CA c) A + BC + CA d) None of these

12. De-Morgan's theorem states that _____
   a) (AB)' = A' + B' b) (A + B)' = A' * B
   c) A' + B' = A'B' d) (AB)' = A' + B

PART B

ANSWER ANY FOUR OUT OF SIX **(4x7=28)**

1. What is a domain name system?
2. What is switching? Name the different types & subtypes of Switching.
3. Explain ROM & its different types.
4. Explain all basic gates by using NAND gate & truth table.
5. Convert from
   a. (345.345)10 = ( )2
   b. (01011.1011)2 = ( )10
   c. (246.37)8 = ( )10
   d. (8B3F)16 = ( )10
6. Draw the schematic block diagram of basic computer organization.

PART C

ANSWER ANY TWO OUT OF FOUR **(2x15=30)**

1. What is the necessity of flowchart in computer programming? Describe the different symbols used in drawing a flowchart?
2. Explain all the types of topologies with their advantages, disadvantages & neat & clean diagram.
3. Write short notes on:
   a) Magnetic Tape,
   b) Magnetic Disk,
   c) Optical Disk,
   d) Magneto Optical disk
4. What is Computer? Write its advantages & functionalities of Computer.

ARKAJAIN University
Jharkhand

1st Semester Examination –2021-22

Subject	**: PROGRAMMING IN C**	**Roll No**	**: .....**
Course	**: BCA**		
Full Marks	**: 70**	**Time**	**: 3 Hours.**

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PART A

MULTIPLE CHOICE QUESTIONS (12x1=12)

1. Every C Program should contain which function?
   a. prints () b. show() c. scanf() d. main()
2. Arguments passed to a function in C language are called ___ arguments.
   a. Formal arguments c. Actual Arguments
   b. Definite Arguments d. Ideal Arguments
3. What is the valid range of numbers for int type of data?
   a. 0 to 256 c. -32768 to +32767
   b. -65536 to +65536 d. No specific range
4. The associativity of! operator is
   a. Right to Left c. Left to Right
   b. For Arithmetic and (b) for Relational d. For Relational and (b) for Arithmetic
5. What is the 16-bit compiler allowable range for integer constants
   a. -3.4e38 to 3.4e38 c. -32767 to 32768
   b. -32668 to 32667 d. -32768 to 32767
6. The process of translating a source program into machine language is a function
   a. Compiler b. Translator c. Assembler d. None of these.
7. Which function is necessary to exist in each & every program?
   a. void b. sum c. main d. None of these.
8. What is the control character for "a decimal integer".
   a. %c b.%d c. %i d. %p

9. Where in C the order of precedence of operators do not exist?

a. Within conditional statements, if, else
b. Within a macro definition
c. Within while, do-while
d. None of the mentioned

10. Which of following is not accepted in C?

a. static a = 10; //static as
b. static int a;
c. static int func (int); //parameter as static
d. all of the mentioned

11. Where in C the order of precedence of operators do not exist?

a. Within conditional statements, if, else
b. Within a macro definition
c. Within while, do-while
d. None of the mentioned

12. Functions in C Language are always _____

a. Internal
b. Both Internal and External
c. External
d. External and Internal are not valid terms for functions

PART B

ANSWER ANY FOUR OUT OF SIX **(4x7=28)**

1. Differentiate the operators '&&' and '&'. How can the size of a structure be determined? What is meant by string handling library? What is conditional compilation?
2. Write a C program to count the number of vowels, consonants and special characters in a file and replace all the occurrences of 'a' to 'A' and write it into a separate file.
3. Write the various format codes in scanf() function. Define preprocessors and its directives. How do you pass command line arguments? Explain with illustration.
4. The value of a macro name cannot be changed during the running of a program. Comment on it. What is data type? Explain any four data types used in C language with suitable example.
5. If a four-digit number is taken as input through the keyboard, write a C program to obtain the sum of the first and last digit of this number. Explain switch case statement with syntax.
6. Write a C program to find the second Maximum in an array. Explain the decision making statements in C.

PART C

ANSWER ANY TWO OUT OF FOUR **(2x15=30)**

1. What is meant by pointer arithmetic? Write a C program that will calculate the sum of every third integer, beginning with i = 2(i.e., calculate the sum = 2 + 5 + 8+…) for all values of I that are less than 100. Write your C program using,
   a) While statement b) Do-while statement c) For statement
2. Summarize the rules governing the use of fopen () function. Describe the information that is returned by this function. Write a program that takes input as a numeric check and writes the word version equivalent of the number. For example the number is 112.43 should be written as ONE HUNDRED TWELVE and 43 PAISE. (String manipulation operations can be used)
3. Explain the syntax and purpose of fgets () and fputs () functions. Write example programs to illustrate. State the rules that determine the order in which initial values are assigned to multi-dimensional array elements. Briefly explain the relationship between arrays and pointers. List any two common pointer mistakes in C while using pointer in C programming.
4. Write down the list of arithmetic operators in C with its precedence. Write a C program to search a particular roll no. in an array. If that roll no. exist in an array print "number is present" else print "number is absent". Write a program to determine whether a person is eligible to vote.

ARKAJAIN University
Jharkhand

First Semester Examination –2021-22

Subject	**: Business Communication**	**Roll No**	**:**
Course	**: B.C.A.**		
Full Marks	**: 70**	**Time**	**: 3 Hours.**

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PART A

MULTIPLE CHOICE QUESTIONS (12x1=12)

1. Communication between HR manager and salesman is an example of -
   A. Horizontal communication C. Lateral communication
   B. Diagonal communication D. Vertical communication

2. Communication problems otherwise known as –
   A. Enquire. C. Barriers.
   B. Encoding. D. Decoding.

3. Communication starts with -
   A.Encoding C. Sender
   B. Channel D. Feedback

4. Down ward communication and upward communication is -
   A. Vertical communication C. Horizontal communication
   B. Diagonal communication D. None of these

5. Gestural communication is a _____.
   A.Non-Verbal Message. C. Direct conversation.
   B. Oral communication D. Written.

6. Horizontal communication flows through _____.
   A. Face-to-face discussion. C. Telephonic talk.
   B. Periodical meeting. D. All the above.

7. Lateral communication is between -
   A. Superior and subordinate. C. Same cadre of personal.
   B. Subordinate and superior. D. Among all.

8. What step in the communication process allows you to evaluate your message's effectiveness?
   A. Selection of the communication medium. C. Feedback sent by the receiver to the sender.
   B. Decoding of the message by the receiver. D. Encoding of the message by the sender.

9. A memo is an example for -
   A. Internal communication. C. External communication.
   B. Lateral communication. D. Written communication.

10. _____ channel of communication called the grapevine.
   A. Formal. B. Informal. C. Horizontal. D. Vertical.

11. _____ is the essential aspect of communication.
   A. Enclosure. B. Letter. C. Telephone. D. Feedback.

12. A GD is highly structured because -
   A. It is coordinated by a moderator
   B. It measures group communication skills
   C. Members have to listen to the views of others
   D. The topic, time and number of participants are all decided in advance

PART B

ANSWER ANY FOUR OUT OF SIX **(4x7=28)**

1. Discuss the Importance of nonverbal communication.
2. What skills are judged in a group discussion?
3. Differentiate between Gesture and Posture.
4. Discuss the various types of nonverbal communication.
5. Describe the Functions of communication.
6. What are the Elements in process of communication?

PART C

ANSWER ANY TWO OUT OF FOUR **(2 x15=30)**

1. Discuss the various types on communication on different basis.
2. Discuss the various characteristics of communication.
3. What are the various components of communication?
4. Describe, in detail, the different Barriers to communication.

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Jharkhand

1st Semester Examination –2021-22

Subject	**Discrete Mathematics:**	**Roll No**	**.....**
Course	**BCA**		
Full Marks	**70**	**Time**	**3 Hours.**

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PART A

MULTIPLE CHOICE QUESTIONS

(12x1=12)

1. let S be the set of all lines in a plane and let $R=\{(l_1,l_2): l_1 \perp l_2\}$ is
   (a) Reflexive and transitive (b) Symmetric (c) Equivalence (d) None of these

2. $(n+2)! = 2550 \times n!$
   (a) 45 (b) 49 (c) 50 (d) 51

3. If there are n points then total no of lines be
   (a) $\frac{n(n-1)}{2}$ (b) $\frac{n(n+1)}{2}$ (c) $\frac{n(n-1)(n-2)}{2}$ (d) None of these

4. If n is natural number then $1^2 + 2^2 + 3^2 \ldots\ldots\ldots n^2$ is equal to
   (a) $\frac{n(n+1)}{2}$ (b) $\left\{\frac{n(n+1)}{2}\right\}^2$ (c) $\frac{n(n+1)(2n+1)}{6}$ (d) None of these

5. If the function f: R→ R and f(x) =$\lceil x \rceil$ is
   (a) One-one (b) Onto
   (c) Neither one-one nor onto (d) None of these

6. Suppose that F is defined recursively by f (0) =3 and f (n+1) =2f (n) +3 then f (3) =?
   (a) 9 (b) 21 (c) 45 (d) None of these

7. $25 \cong 4 \pmod 7$ =?
   (a) 3 (b) 4 (c) 1 (d) None of these

8. The statement p↔ q is true if
   (a) P is false and q is true (b) P is false and q is true (
   (c) P is false and q is false (d) None of these

9. If n(A) =p and n(B)=q then total no of relation is given by
(a) P×q (b) $2^{p\times q}$ (c) $2^{p\times q}-2$ (d) None of these

10. Minimum Number of the edges in a connected graph with n vertices
(a) n-1 (b) n+1 (c) n (d) None of these

11. The set [0, 1] is
(a) Uncountable (b) Countable (c) Enumerable (d) None of these

12. An inverse of 7 modulo 26 is
a) 3 (b) 15 (c) 12 (d) None of these

PART B

ANSWER ANY FOUR OUT OF SIX **(4x7=28)**

1. Let S be the set of all points in a plane and let R be the relation in S defined by R={(A,B):d(A,B)< $2units$ }, where d(A,B) is the distance between the points A and B. show that R is reflexive and symmetric but not transitive.

2. Prove that A× (B∩ C)=A× $B \cap A \times C$.

3 Let f: R → R be defined by f(x) =2x-3.then prove that f is one-one and onto, hence find inverse of function f.

4. Define converse, inverse and contrapositive of conditional statement p→ q with truth table.

5. Express the greatest common divisor of the integers 101 and 203 as linear combination

6. A can hit a target 3 times in 5 shots, B can 2 times in 5 shots and C 3 times in 4 shots. What is the Probability that two shots hit.

PART C

ANSWER ANY TWO OUT OF FOUR **(2x15=30)**

1. State and prove that de Morgan's theorem in general form?

2. Use mathematical induction to show that show that $1^3+2^3+3^3 \ldots\ldots\ldots n^3=\left\{\frac{n(n+1)}{2}\right\}^2$ for all n∈ N.

3. Let f: X→ Y be a mapping and let A, B ⊆Y. then
Prove that (i) $f^{-1}(A\cap B)=f^{-1}(A)\cap f^{-1}(B$ (ii) $f^{-1}(A\cup B)=f^{-1}(A)\cup f^{-1}(B)$.

4. Bag A contains 2 white and 3 red balls and a bag B contains 4 white and 5 red balls.one ball is drawn at random from one of the bag and it is found to be red. Find the probability that it was drawn from bag B.