

Roll No. ....

**E-3890**

**B. C. A. (Part I) EXAMINATION, 2021**

**(New Course)**

Paper First

DISCRETE MATHEMATICS

**(BCA-101)**

*Time : Three Hours ]*

*[ Maximum Marks : 80*

*[Minimum Pass Marks : 27*

**Note :** All questions are compulsory. Attempt any *two* parts from each question. All questions carry equal marks.

**Unit—I**

1. (a) Construct truth table for the following function and check whether it is a tautology or contradiction :

$$\left[ p \wedge q \vee q \wedge r \vee r \wedge p \right]$$

$$\Leftrightarrow \left[ p \vee q \wedge q \vee r \wedge r \vee p \right]$$

- (b) If  $p \equiv$  Ram is beautiful,  $q \equiv$  Ram is mixable,  $r \equiv$  His friends like Ram, then write the following statements in language :

(i)  $p \Rightarrow q \vee p \Rightarrow r$

(ii)  $p \Rightarrow q \vee r$

Examine, are the above statements equivalent.

**P. T. O.**

- (c) Test the validity of the following argument :

“If Ashok wins then Ram will be happy. If Kamal wins Raju will be happy. Either Ashok will win or Kamal will win. However if Ashok wins, Raju will not be happy and if Kamal wins Ram will not be happy. So Ram will be happy if and only if Raju is not happy.”

### Unit—II

2. (a) Show that the identity element in a Boolean algebra are unique.
- (b) In a Boolean algebra B, prove that  $x \cdot y \geq z$  if and only if  $x \geq z$  and  $y \geq z$ , where  $x, y, z \in B$ .
- (c) Draw a simpler circuit for the following diagram and verify the equivalent circuits by truth tables :



### Unit—III

3. (a) Show that complete canonical form in  $n$  variables is always equal to 1. Explain it by giving examples in 2 and 3 variables.

- (b) Change the following Boolean function to conjunctive normal form :

$$f(x, y, z, t) = x'y + xyz' + xy'z + x'y'z't + t'$$

- (c) Design a 4-terminal circuit which gives the real forms to the following three functions :

$$f = a b + cd \quad x + y$$

$$g = a bc + cd$$

$$h = a bc' + b'cd$$

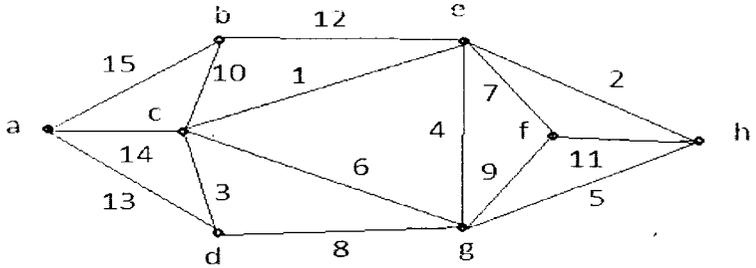
#### Unit—IV

4. (a) If  $A = \{2, 4, 6\}$ ,  $B = \{1, 4, 5, 6\}$ , then find out the relation from  $A$  to  $B$  defined by “is less than or equal to”. Find out the domain and range of the relation.
- (b) If  $R$  and  $S$  be an equivalence relation in the set  $X$ , then prove that  $R \cap S$  is an equivalence relation in  $X$ .
- (c) If  $f : A \rightarrow B$  and  $g : B \rightarrow C$  be two one-one onto maps, then show that  $g \circ f : A \rightarrow C$  is also one-one onto and  $(g \circ f)^{-1} = f^{-1} \circ g^{-1}$ .

#### Unit—V

5. (a) Show that a connected planar graph with  $n$  vertices and  $e$  edges has  $e - n + 2$  regions.

- (b) Show that every tree with two or more vertices is 2-chromatic.
- (c) Determine the minimal spanning tree for the graph given below :



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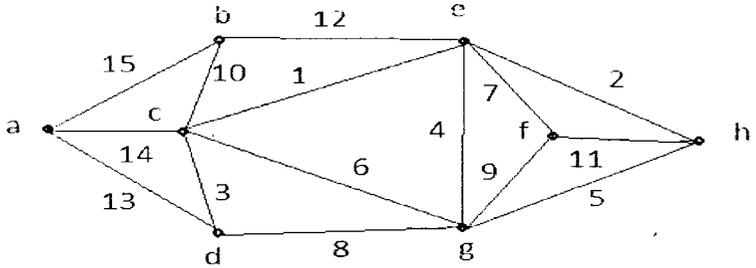
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**E-3891**

**B. C. A. (Part I) EXAMINATION, 2021**

**(New Course)**

**COMPUTER FUNDAMENTALS**

**(102)**

*Time : Three Hours ]*

*[ Maximum Marks : 80*

*[Minimum Pass Marks : 27*

**Note :** Attempt any *two* Parts from each Unit. All questions carry equal marks.

**Unit—I**

1. (a) What do you understand by Computer ? Write the characteristics of computer. 8
- (b) What do you mean by the term computer generation ? Discuss the salient features of IV<sup>th</sup> generation computers. 8
- (c) Write short notes on the following : 8
  - (i) Logic Gate
  - (ii) Data Processing
  - (iii) Binary Number
  - (iv) Hardware and Software

**P. T. O.**

**Unit—II**

2. (a) What do you mean by scanning devices ? Explain any *two* scanning devices. 8
- (b) What do you mean by printer ? What is the difference between impact and non-impact printer ? Explain it. 8
- (c) Write short notes on the following : 8
- (i) Direct Entry
  - (ii) Flat Screen Technologies
  - (iii) Plotters
  - (iv) Pointing Deceives

**Unit—III**

3. (a) What do you mean by storage devices ? What are difference between Primary and Secondary Storage ? 8
- (b) What is the Central Processing Unit ? Explain with all components of Central Processing Unit. 8
- (c) Write short notes on the following : 8
- (i) CD ROM
  - (ii) Mass storage system
  - (iii) Indexed sequential
  - (iv) Tape storage devices

**Unit—IV**

4. (a) What is the Operating System ? How many types of operating system are there ? Explain. 8

**[ 3 ]**

- (b) What do you mean by language processors ? Explain the different type of language processors. 8
- (c) Write short notes on the following : 8
  - (i) BIOS
  - (ii) Utility Program
  - (iii) Trends in PC Software
  - (iv) Program and Package

**Unit—V**

- 5. (a) What is Physical Structure of the Disk ? Explain it. 8
- (b) What is WINDOWS ? Explain the various versions of WINDOWS. 8
- (c) Write short notes on the following : 8
  - (i) Booting process
  - (ii) Creating batch files
  - (iii) Activating windows
  - (iv) Control panel

E-3892

**B.C.A.(Part-I) EXAMINATION,2021**  
**(New Course)**  
Programming in "C" Language  
(BCA-103)

Time: Three Hours]

[Maximum Marks:80  
[Minimum Passing Marks:27

*Note:* Attempt any two parts from each Unit. All questions carry equal marks.

**Unit-I**

- 1 (a) Explain the structure of C Program with necessary details.  
(b) What are the different keywords in C. Specify?  
(c) Write the guidelines to use getchar() function in C language.

**Unit-II**

- 2 (a) Write a program in C to print all Fibonacci series up to n terms.  
(b) Clearly specify Nested loop with example.  
(c) Differentiate between call by value and call by reference with example.

**Unit-III**

- 3 (a) Explain the declaration and initialization of Multidimensional array with example.  
(b) Explain array within structure with suitable examples.  
(c) Specify with example difference between structure and union.

**Unit-IV**

- 4 (a) What do you understand by Void pointer. Briefly describe.  
(b) Differentiate between malloc, calloc and realloc with examples?  
(c) Write a note on pointer to pointer with proper example?

**Unit-V**

- 5 (a) Specify Pre-Processor Directives with example.  
(b) Discuss fseek and ferror with examples?  
(b) Write a program in C to create file Automobile database in C Lang.

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**E-3893**

**B. C. A. (Part I) EXAMINATION, 2021**

**(New Course)**

**PC SOFTWARE AND MULTIMEDIA**

**(BCA-104)**

*Time : Three Hours ]*

*[ Maximum Marks : 80*

*[Minimum Pass Marks : 27*

**Note :** Attempt any *two* Parts from each Unit. All questions carry equal marks.

**Unit—I**

1. (a) What is macro ? How macros are created and run ? Explain with example.
- (b) What is illustration in MS-Word ? Explain the purpose of clip art and smart art ?
- (c) Explain with example table in MS-Word.

**Unit—II**

2. (a) Explain about data validation and sorting features of MS Excel with examples.
- (b) Differentiate between absolute and relative cell addressing.
- (c) Explain sort and filter features of MS-Excel.

**P. T. O.**

**Unit—III**

3. (a) What is MS power point ? Explain the procedure for creation of slides and assigning animations to these slides.
- (b) Discuss the significance of outline and slide sorter views.
- (c) Explain custom animation in detail.

**Unit—IV**

4. (a) What is the application of database management system ?
- (b) What are reports ? Write the steps of creating a report in MS-Access.
- (c) Differentiate between page template and frame template.

**Unit—V**

5. (a) What is purpose of mask layer ? Explain with example.
- (b) Describe the features of 2D and 3D animation.
- (c) Explain hardware and software resource required for animation.

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**E-3894**

**B. C. A. (Part I)  
EXAMINATION, 2021**

**(New Course)**

**WEB TECHNOLOGY AND E-COMMERCE**

**(BCA-105)**

*Time : Three Hours ]*

*[ Maximum Marks : 80*

*[Minimum Pass Marks : 27*

**Note :** Attempt any *two* Parts from each Unit. All questions carry equal marks.

**Unit—I**

1. (a) Write short notes on the following :

- (i) WWW
- (ii) Search engine
- (iii) Web browser
- (iv) TELNET

**P. T. O.**

- (b) Explain domain name system (DNS) and Internet service provider in brief.
- (c) Explain OSI and TCP/IP model in detail.

### Unit—II

- 2. (a) Explain internal and external hyperlinking with example.
- (b) Explain <from> tag with example.
- (c) Explain <table> tag with example.

### Unit—III

- 3. (a) Explain DHTML document object model.
- (b) Write short notes on the following :
  - (i) Cascading style sheets
  - (ii) VB script
- (c) Explain function in Javascript and objects of Java script in detail.

### Unit—IV

- 4. (a) Write down steps to accessing database through PHP with example.
- (b) Explain the following PHP functions :
  - (i) fprintf ( )
  - (ii) rtrim ( )
  - (iii) strchr ( )
  - (iv) substr ( )
- (c) Explain the features of PHP.

**[ 3 ]**

**Unit—V**

5. (a) Define E-commerce and scope of E-commerce.
- (b) Explain E-payment system and security threats with E-commerce.
- (c) Explain the types of E-commerce.

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**E-3895**

**B. C. A. (Part I) EXAMINATION, 2021**

**(New Course)**

**COMMUNICATION SKILLS**

**(BCA—106)**

*Time : Three Hours ]*

*[ Maximum Marks : 80*

**Note :** Attempt all questions.

**Unit—I**

1. (a) Fill in the blanks with modals : 5  
(can, could, may, might, shall, should, will, must or dare)
- (i) You ..... be punctual.
  - (ii) ..... I assist you ?
  - (iii) It ..... rain tomorrow.
  - (iv) I ..... swim across the river.
  - (v) She wondered whether it ..... be true.

**P. T. O.**

- (b) Complete the sentence given below by using ought to, should or must : 5
- (i) You ..... improve your spelling.
  - (ii) We ..... help our neighbours.
  - (iii) Children ..... obey their parents.
  - (iv) You ..... keep your promise.
  - (v) She ..... have left already.
- (c) Convert the following simple sentences into compound sentences : 5
- (i) He must work very hard to win the first prize.
  - (ii) He was rejected owing to ill-health.
  - (iii) The teacher punished the boy for disobedience.
  - (iv) Besides robbing the poor child, he also murdered her.
  - (v) By his pleasant manners he gained many friends.
- (d) Convert the simple sentences into complex sentences : 5
- (i) Can you tell me the time of his arrival ?
  - (ii) I will meet you at any place convenient for you.
  - (iii) He alone entered, the rest of us waiting outside.
  - (iv) He can prove his innocence.
  - (v) He saved the child at the risk of his life.

**Unit—II**

2. (a) Convert the following sentences to passive voice : 10

- (i) The hunter shot the lion.
- (ii) He scored twenty runs.
- (iii) Why did he defraud you of your earnings ?
- (iv) The people regarded him as an imposter and called him a villain.
- (v) Shall I ever forget those happy days ?
- (vi) We must listen to his words.
- (vii) He promised me a present.
- (viii) I am watching you very carefully.
- (ix) You cannot pump the ocean dry.
- (x) Somebody has put out the light.

(b) Change the following sentences into negative sentences :

5

- (i) He lived many years in India.
- (ii) Every man makes mistakes sometimes.
- (iii) I am a little tired.
- (iv) Everybody will admit that he did his best.
- (v) He must have seen the Taj Mahal when he went to Agra.

- (c) Combine the following pairs of sentences by using 'too to' ..... . 5
- (i) The news is so good that it cannot be true.
  - (ii) These mangoes are so cheap that they cannot be good.
  - (iii) He drove so fast that the police could not catch him.
  - (iv) He is so proud that he cannot beg.
  - (v) The tree is so high that I cannot climb.
- (d) Change the following sentences to indirect speech : 10
- (i) He said to me, "I have often told you not to play with fire."
  - (ii) The teacher promised, "If you will come before school tomorrow, I will explain it."
  - (iii) "What do you want ?" he said to her.
  - (iv) "Are you coming home with me ?" he asked.
  - (v) "Don't you know the way home ?" asked I.
  - (vi) "Bring me a glass of milk", said the Swami to the villagers.
  - (vii) He said to me, "Wait until I come."
  - (viii) He said, "My God ! I am ruined."
  - (ix) He said, "How cruel of him !"
  - (x) The prince said, "It gives me great pleasure to be here this evening."

**Unit—III**

3. (a) Write a letter to Transport Commissioner to issue a driving license. 5

*Or*

Write a letter to your friend, describing a book you have just read and strongly recommending it to him.

- (b) You state government has banned the use of plastic bags. You are Amarjeet, a reporter of The National Herald. Write a report in 100-125 words on how the ban is being ignored and what damage the indiscriminate use of plastic bags is causing to the environment. 5

*Or*

Write a report for your college magazine describing a cultural fest held in your college in which various colleges of your city took part.

**Unit—IV**

4. (a) Write a short paragraph on the given topics in **150** words (any *one*) : 10
- (i) Five Virtues I Admire Most
  - (ii) Causes of Accidents in Indian cities
  - (iii) My Favourite Sport
  - (iv) The Pleasures of Reading
  - (v) Smoking is Harmful to Health

- (b) Write the meaning of the given phrases and make a sentence of using the phrase (any *five*) : 5
- (i) A bird's eyes view
  - (ii) Last straw
  - (iii) Ball is in your court
  - (iv) Icing on the cake
  - (v) Apple of one's eye
  - (vi) Once in a blue moon
  - (vii) Let the cat out of the bag

### Unit—V

5. Read the following passage carefully and answer the questions given below : 5

“The literature of Swami Vivekananda has multiplied my sense of patriotism a thousand times”, said Mahatma Gandhi. Rabindranath Tagore said, “If you want to understand India try to understand Swami Vivekananda.” By these words, we can easily understand the huge and towering personality of this great saint of later nineteenth century. Swami Vivekananda was born on 2th January, 1863 in Calcutta. In his childhood and boyhood, he was Bireshwar (Bile) and Narendra (Naren). He became the disciple of a great saint, Ramkrishna Paramhansa and was given the name of Swami Vivekananda. He proved himself to be the most dazzling star

in the Parliament of Religionism, Chicago in the year 1893. All young generation must try to understand Swamiji. If we want to make our country free from corruption, superstitions, idleness, we must make him our model.

*Questions :*

- (a) Name the *two* great men who wrote words in praise of Swami Vivekananda.
- (b) When was Swami Vivekananda born ?
- (c) What were his early names ?
- (d) Who was Swami Vivekananda's guru ?
- (e) Why must we make Swami Vivekananda our model ?