

## B.C.A. (Part-II) EXAMINATION - 2022

100115

(Faculty of Science)

(Three-Year Scheme of 10+2+3 Pattern)

## BUSINESS ACCOUNTING

Time Allowed : Three Hours

Maximum Marks : 100

Question paper consists of three parts. All three parts are compulsory.

**PART - I :** (Very Short Answer) consists of 10 questions of 2 marks each. Maximum limit for each question is upto 40 words.**PART - II :** (Short Answer) consists of 5 questions of 4 marks each. Maximum limit for each question is upto 80 words.**PART - III :** (Long Answer) consists of 5 questions of 12 marks each with internal choice.

Write your roll number on question paper before start writing answer of questions.

## PART - I

10x2=20

1. (a) What is meant by concept ?
- (b) What are Compound Entries ?
- (c) When Suspense Account is opened ?
- (d) State any two needs of accounting for depreciation.
- (e) Define Provisions.
- (f) Give two examples of the errors of omission.
- (g) What is shown by the Trading Account ?
- (h) What do you mean by Depreciation ?
- (i) Give the three examples of intangible assets.
- (j) What is the meaning of Under Insurance ?

12

## PART - II

5x4=20

2. (a) "Every debit has equal credit", to which concept this rule is related ?
- (b) Write two advantages of total method of trial balance.
- (c) Give two differences between fixed instalment method and reducing Balance method.
- (d) Write the rule for making opening entry in Journal.
- (e) What would be the rate of gross profit under loss of profit policy ?

12

**PART - III**

3. Write a detailed note on "Persons Interested in Accounting". 12  
**OR**  
 ✓ Explain the distinction between Trade discount and Cash discount. 12

4. Explain various types of Subsidiary Books. 12  
**OR**

Journalise the transactions given below in the books of S. and Company 2022 : 12

1. S. Nath started business with a capital of Rs. 3,00,000
2. He purchased a portable typewriter for office use Rs. 35,400
3. He bought goods on credit from M/s. Kalash agencies for Rs. 10,000
4. He purchased postage stamps with Rs. 500
5. He sold goods for cash Rs. 2,700
6. He sold goods on credit to M/s. Asha stores for Rs. 7,500
7. Goods worth Rs. 1,000 being defective were returned to M/s. Kalash Agencies.
8. Cash amounting to Rs. 8,000 was paid to M/s. Kalash Agencies.
9. He opened a bank Account with Rs. 1,00,000
10. He received cash from Asha stores Rs. 6,500
11. Asha stores returned goods worth Rs. 1,000
12. Paid insurance premium by cheque Rs. 3,250

36  
24  
60

5. From the following balances taken from the books of M/s N & Sons on 31<sup>st</sup> March, 2022 prepare a Trial Balance : 12

Name of Account	Rs.
Cash Balance	28,00
Opening Stock	1,28,000
Purchases	5,12,000
Purchases Return	12,800
Sales	8,83,200
Sales Return	32,000
Machinery	1,53,600
Land & Building	3,20,000
Discount Allowed	15,360
Discount Received	9,600
Debtors	1,17,760
Creditors	54,400
Bills Receivable	18,240
Bills Payable	10,560
Capital	3,84,000
Drawings	38,400
Rent	23,680
Salaries	23,040
Loan	64,000
Interest Payable on Loan	7,680

**OR**

✓ Describe the Causes and Needs for Charging Depreciation.

4+8=12

6. From the particulars, prepare Trading and Profit & Loss Account for the year ending 31<sup>st</sup> March, 2022 : 12

Wages	4,68,850
Discount allowed	39,600
Bank charges	1,050
Purchases	19,90,800
Stock	6,02,250
Interest paid on Loan	56,120
Bad debts	13,800
Salaries	64,200
Carriage on Purchases	51,800
Carriage on Sales	24,300
General Expenses	25,550
Rent, Rates & Taxes	36,300
Discount received	29,850
Insurance premium	7,050
Sales	28,29,600
Commission (Cr.)	8,400

Closing stock (on 31-03-2022) Rs. 6,37,000

**OR**

What do you mean by fictitious assets? Explain with examples.

4+8=12

7. Explain the meaning and importance of Final Accounts.

6+6=12

**OR**

Write a short notes on :

4+4+4=12

- Adjusted Standard Sales
- Claim for increased cost of working ; and
- Indemnity period

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(Faculty of Science)

(Three-Year Scheme of 10+2+3 Pattern)

## DISCRETE MATHEMATICS

Maximum Marks : 100

Time Allowed : Three Hours

No supplementary answer-book will be given to any candidate. Hence the candidates should write their answers precisely in the main answer-book only.

All the part of one question should be answered at one place in the answer-book. One complete question should not be answered at different places in the answer-book.

Write your roll number on question paper before start writing answers of questions.

**Part - I :** (Very short answer) consists of 10 questions of 2 marks each. Maximum limit for each question is upto 40 words.

**Part-II :** (Short answer) consists of 5 questions of 4 marks each. Maximum limit for each question is upto 80 words.

**Part-III :** (Long answer) consists of 5 questions of 12 marks each with internal choice.

## PART - I

Attempt all parts of the question.

1. (a) Convert  $(101011)_2$  into decimal form.
- (b) Expand  $(1+x)^5$  using Binomial theorem.
- (c) What is power set ?
- (d) What is domain and range in function ?
- (e) What is tautology and contradiction ?
- (f) Prove the proposition  $\sim(P \wedge Q)$ .
- (g) Define simple graph.
- (h) What is order and size of graph ?
- (i) Define Tree.
- (j) What is eccentricity of a vertex.

## PART - II

Attempt all the parts of the question.

2. (a) (i) Convert  $(36.125)_{10}$  into binary form.
- (ii) Convert the binary number  $(101.101)_2$  to the decimal form.
- (b) Define equivalence relation with example.
- (c) If p and q are two statements then show that  $(p \Rightarrow q) \Leftrightarrow (\sim q \Rightarrow \sim p)$ .
- (d) Write the definition of complete and Bipartite graph, with example.
- (e) Write all traversal algorithm in tree.

PART - III

Attempt all questions by taking any two parts from each question.

3. (i) Find the coefficient of  $x^{-24}$  in the expansion of  $\left(x^4 - \frac{1}{x^3}\right)^{15}$ .

(ii) By the principle of mathematical induction prove that

$$1.2 + 2.3 + \dots + n(n+1) = \frac{n(n+1)(n+2)}{3} \text{ where } n \in \mathbb{N}.$$

(iii) Consider the recurrence relation :

$$a_n = 2a_{n-1} - a_{n-2}, n = 2, 3, 4$$

Show that (i)  $a_n = 5$  and (ii)  $a_n = 3n$  both are solutions of the given recurrence relation.

4. (i) Show that the relation  $R$  defined by  $(a,b) R (c,d)$  iff  $a+d = b+c$  in the set  $\mathbb{N} \times \mathbb{N}$ , is an equivalence relation.

(ii) Let the function  $f: \mathbb{R} \rightarrow \mathbb{R}$  be defined by  $f(x) = x^2 + 3$  and  $g: \mathbb{R} \rightarrow \mathbb{R}$  be defined by  $g(x) = \frac{x}{x+1}$ .

Find  $f \circ g$  and  $g \circ f$ .

(iii) Define with example.

- (a) Inverse Relation
- (b) Universal set
- (c) Sub set

5. (i) Show that

$$P \rightarrow (Q \wedge R) \equiv (P \rightarrow Q) \wedge (P \rightarrow R)$$

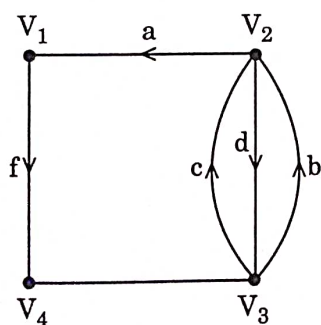
(ii)  $\sim(P \leftrightarrow Q) \equiv \sim P \leftrightarrow Q \equiv P \leftrightarrow \sim Q$

(iii) In a Boolean Algebra to prove that

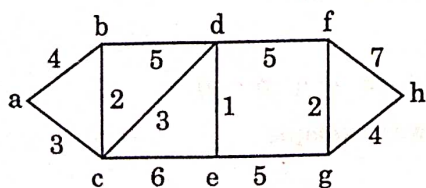
- (a) Additive identity 0 is unique
- (b) Multiplicative identity 1 unique

6. (i) Explain Euler and Hamilton graph with example.

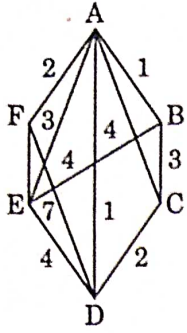
(ii) Find adjacency and the incidence matrix of the following directed graph.



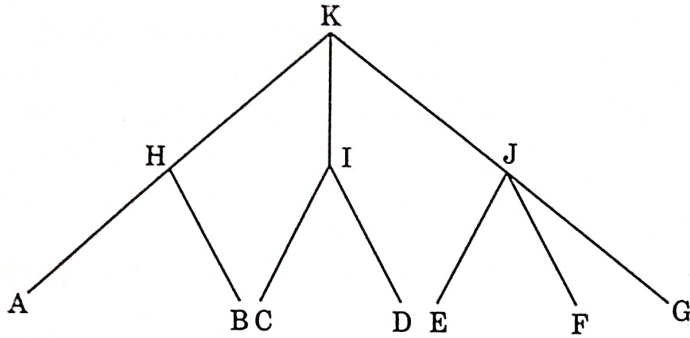
(iii) Find the shortest path and its length between the vertices a and h in the following weighted graph.



7. (i) What is spanning tree, discuss Kruskal algorithm.  
 (ii) Find a minimal spanning tree for a following weighted connected graph using prism's algorithm.



- (iii) Write the Preorder, Inorder and Postorder Traversal of the following graph.



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# B.C.A. (Part-II) EXAMINATION - 2022

(Faculty of Science)

(Three-Year Scheme of 10+2+3 Pattern)

Ope. Sys.

100028

## OPERATING SYSTEM

Time Allowed : Three Hours

Maximum Marks : 100

No supplementary answer-book will be given to any candidate. Hence the candidates should write their answers precisely in the main answer-book only.

All the parts of one question should be answered at one place in the answer-book. One complete question should not be answered at different places in the answer-book.

Write your roll number on question paper before start writing answers of questions.

Question paper consists of three parts. All three parts are compulsory.

**PART-I :** (Very short answer) consists of 10 questions of two marks each. Maximum limit for each question is upto 40 words.

**PART-II :** (Short answer) consists of 5 questions of four marks each. Maximum limit for each question is upto 80 words.

**PART-III :** (Long answer) consists of 5 questions of twelve marks each with an internal choice.

### PART - I

1. (a) What is Operating System ? - 10×2=20
- (b) What is Batch System ? -
- (c) What is Scheduling ? -
- (d) What is Storage Devices ?
- (e) What is Synchronization ? ✓
- (f) Explain Primary Memory.
- (g) What is Swapping ?
- (h) What is Database Management System ? —
- (i) What is Window Server ?
- (j) Explain Directory in file system.

### PART - II

2. (a) What is multi programming system ? 5×4=20
- (b) What is Direct Memory Access Buffering ?
- (c) What is communication ? Explain Inter process communication with example.
- (d) What is Dead locks ? Explain with example.
- (e) What is priority of scheduling ? Explain with example.

PART - III

3. What is Operating System ? Explain evolution of operating system with example. 1x12=12

OR

Explain types of Operating System with example.

4. Explain Dynamic memory for Data Structure with example. 1x12=12

OR

Write short notes on :

3x4=12

- (a) Primary memory
- (b) Virtual memory
- (c) Shared memory multiprocessor

5. Write short notes on : 6+6=12

- (a) Internal and External fragmentation
- (b) Paging and Segmentation

OR

What is segmented paging ? Explain different pieces of the virtual address in a segmented paging.

6. Write notes on the following : 3x4=12

- (a) Virus and Worms
- (b) Memory Mapped Files
- (c) Security Design Principles

OR

What criteria should be adopted for choosing types of file organization ?

7. Explain introduction of parallel processing with example. 6+6=12

OR

Explain the following :

- (a) Linux and Unix
- (b) Distributed Memory Management

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## B.C.A. (Part-II) EXAMINATION - 2022

(Faculty of Science)

100158

(Three-Year Scheme of 10+2+3 Pattern)

## DATABASE MANAGEMENT SYSTEM

Time Allowed : Three Hours

Maximum Marks : 100

*No supplementary Answer-book will be given to any candidate. Hence the candidates should write their answers precisely in the main answer-book only.*

*All the parts of one question should be answered at one place in the answer-book. One complete question should not be answered at different places in the answer-book.*

*Write your roll number on question paper before start writing answers of questions.*

*Question paper consists of three parts. All three parts are compulsory.*

**Part - A :** *(Very short answer) consists of 10 questions of two marks each. Maximum limit for each question is upto 40 words.*

**Part - B :** *(Short answer) consists of 5 questions of four marks each. Maximum limit for each question is upto 80 words.*

**Part - C :** *(Long answer) consists of 5 questions of twelve marks each with an internal choice.*

## PART - A

10x2=20

1. (a) What is RDBMS ?
- (b) Define Instance and Schema in DBMS.
- (c) What is Candidate key ?
- (d) What is the purpose of SQL ?
- (e) What is the difference between CHAR and VARCHAR2 datatypes in SQL ?
- (f) What is a weak entity set ?
- (g) Define concurrency control.
- (h) What is DML (Data Manipulation Language) ?
- (i) Define the BCNF.
- (j) What is Object-Oriented Database ?

## PART - B

5x4=20

2. (a) What is Specialization in DBMS ?
- (b) What are the different types of relationship in DBMS ?
- (c) What is meant by ACID properties in DBMS ?
- (d) What is a Query and Subquery in DBMS ?
- (e) What is Denormalization ?

PART - C

3. (a) What is Database and Database Management System (DBMS) and explain the advantages and disadvantages of DBMS ? 6+6=12  
(b) Explain Codd's Relational Database Rules.

OR

- (a) What is Relational Calculus ? What is the difference between Tuple Relational Calculus (TRC) and Domain Relational Calculus (DRC) ? 6+6=12  
(b) What is E-R Model ? Describe the important components of an E-R diagram.

4. (a) Differentiate the following : 4+2+2+4=12  
(i) DROP, TRUNCATE and DELETE commands  
(ii) UNION and UNION ALL  
(iii) Primary key and Unique key  
(b) Explain the different Integrity constraints with example.

OR

- (a) What is data abstraction and also explain the three levels of data abstraction ? 6+6=12  
(b) What are the different types of languages that are available in the DBMS ?

5. (a) Explain the role and duties of Database Administrator (DBA) in the DBMS. 6+6=12  
(b) What is the use of functional dependency in DBMS ?

OR

- (a) Explain the distributed database design concepts and its components. 6+6=12  
(b) Explain the difference between distributed database and client-server architecture.

Write short notes on : 4x3=12

- (i) Characteristics of Object-Oriented data model  
(ii) State of Transaction  
(iii) Primary key and Foreign key  
(iv) Type of Joins

OR

- (a) Explain Concurrency control with locking method with examples. 6+6=12  
(b) Explain different types of locks with examples.

7. Write Short notes on : 4x3=12

- (i) Operations of Relational Algebra  
(ii) Loss-less decomposition  
(iii) Advantages of SQL  
(iv) Unions, Intersection, Minus in SQL

OR

- (a) What do you understand by Data Model ? 8+4=12  
(b) What are the disadvantages of file processing system ?

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**B.C.A. (Part-II) EXAMINATION - 2022**

(Faculty of Science)

(Three-Year Scheme of 10+2+3 Pattern)

100064

**WEB DESIGNING AND MULTIMEDIA**

Time Allowed : Three Hours

Maximum Marks : 100

*No supplementary answer-book will be given to any candidate. Hence the candidates should write their answer precisely in the main answer-book only.*

*All the parts of one question should be answered at one place in the answer-book. One complete question should not be answered at different places in the answer-book.*

*Write your roll number on question paper before start writing answers of questions.*

*Question paper consists of three parts.*

*All three parts are compulsory.*

**Part - I :** (Very short answer) consists of 10 questions of 2 marks each. Maximum limit for each question is upto 40 words.

**Part - II :** (Short answer) consists of 5 questions of 4 marks each with one question from each unit. Maximum limit for each question is upto 80 words.

**Part - III :** (Long answer) consists of 5 questions of 12 marks each with one question from each unit with an internal choice.

**PART - I**

1. Attempt all questions. Each question carries 2 marks.

10x2=20

- (a) Why JavaScript is known as client-side scripting language ?
- (b) Define web application.
- (c) Tag <A> stands for \_\_\_\_\_.
- (d) What is CorelDraw ?
- (e) Write about HTML comment.
- (f) Define HTML DOM.
- (g) What do you mean by "Home page" ?
- (h) Define ordered and unordered list in HTML.
- (i) Define Portal.
- (j) What is UNIVERSAL selector ?

PART - II

2. (a) What is firewall ? Explain use of firewall in web application. 5x4=20  
(b) What is a tag ? Differentiate between logical and physical tag.  
(c) What is style sheet in CSS ? Explain how to include the external style sheet in CSS with example.  
(d) What is JavaScript ? What are the data types supported by JavaScript ?  
(e) Explain features of CorelDraw.

PART - III

3. Explain different types of web security and privacy issues in detail. 12

OR

Write short note on :

3x4=12

- (a) Subscriptions and channels  
(b) Shopping  
(c) Active - X

4. Explain table tag and its sub tags with suitable example. 12

OR

Explain the following with suitable example :

6+6

- (a) Table properties with CSS  
(b) List properties with CSS

5. What is selector in CSS ? Explain the Pseudo class selector in CSS with suitable example. 12

OR

Create a Web Page of student information form, when the information is submitted message should be displayed. 12

6. What is JavaScript function ? Explain any four JavaScript functions with suitable example. 12

OR

Explain how to use JQuery and what is Ajax tool kit ? 12

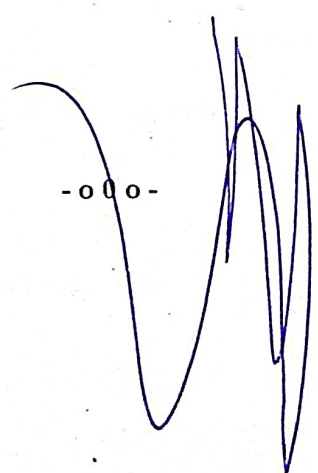
7. Explain different color modes in Photoshop. 12

OR

Write short note on :

4x3=12

- (a) Contour tool  
(b) Envelop tool  
(c) Blend tool  
(d) Power Clip



## B.C.A. (Part-II) EXAMINATION - 2022

(Faculty of Science)

100154

(Three-Year Scheme of 10+2+3 Pattern)

**OBJECT ORIENTED PROGRAMMING  
CONCEPTS ( Through C++)**

Time Allowed : Three Hours

Maximum Marks : 100

Answers of *all* the questions (Short answer as well as descriptive) are to be given in the main answer-book only. Answers of Short answer type questions must be given in sequential order. Similarly all the parts of one question of descriptive part should be answered at one place in the answer-book. One complete question should not be answered at different places in the answer-book.

Write your roll number on question paper before start writing answers of questions.

Question paper consists of *three* parts. *All three parts are compulsory.*

**PART-I :** (Very short answer) consists of **10** questions of **2** marks each. Maximum limit for each question is upto **40** words.

**PART-II :** (Short answer) consists of **5** questions of **4** marks each. Maximum limit for each question is upto **80** words.

**PART-III :** (Long answer) consists of **5** questions of **12** marks each answer **1** question from each part, each question is with internal choice.

**PART - I**

1. Attempt **all** the questions :

**10x2=20**

- (a) What is data oriented approach ?
- (b) Write difference between functional and object oriented programming.
- (c) Write difference between break and continue.
- (d) What is 'this' pointer ?
- (e) What is destructor ?
- (f) Define inline function.
- (g) What is Polymorphism ? Write types of polymorphism.
- (h) What is function overloading ?
- (i) What is function template ?
- (j) Write difference between sequential access and random access file.

**PART - II**

2. Attempt all the questions :

5x4=20

- (a) Explain user defined Data types.
- (b) Explain all looping statements with suitable examples.
- (c) What is a constructor ? Explain types of constructors with suitable example.
- (d) What is operator overloading ? Explain using a suitable example.
- (e) Write a function template to swap two numbers.

**PART - III**

3. What is an Object ? Describe evolution of OOP.

12

**OR**

Explain characteristics of an Object Oriented Programming Languages.

12

4. Explain various type of operator in C++ with example.

12

**OR**

Write a program to read N values in an array and find highest and lowest number.

12

5. Write the characteristics of a friend function. Write a C++ program to find the cube of a given number using friend function.

12

**OR**

Write a program for defining a member function outside a class.

12

6. What is inheritance ? Explain type of inheritances with neat diagram.

12

**OR**

What is pure virtual function ? Write a program to illustrate the use of pure virtual function.

12

7. Write a program to create a binary file with following information :

12

(Roll number, Total marks obtained)

Read the created file and display records of those who got total marks greater than 600.

**OR**

What is exception handling in C++ ? Write a program to handle divide by zero exception.

12

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