

Sai mahavidyalya Bhilai
Half year examination 2021-22

Class – BCA 2nd year

total marks- 50

Subject- calculus & differential equation

Note – Attempt any two question from each unit of section (A) each unit carry 15 marks

Attempt all question from section(B) each unit of section (B) each question carry 1 marks

(Section-A)

Unit -1

a. Show that the function $f(x) = \begin{cases} x^2 - 1 & \text{when } x \geq 1 \\ 1 - x, & \text{when } x < 1 \end{cases}$ is not differentiable at $x=1$

b. Using $\varepsilon - \delta$ method , prove that

$$\lim_{x \rightarrow 1} (2x + 7) = 9$$

c. Show tha the function $f(x)= 3x^2+2x+1$ is continuous at $x=2$

Unit-2

a. If $x^y=e^{y-x}$ then ,prove that $\frac{dy}{dx} = \frac{2-\log x}{(1-\log x)^2}$

b. Investigate for what value of x , $5x^6-18x^5+15x^4-10$ is maximum or minimum

c. If $\sqrt{1-x^2} + \sqrt{1-y^2} = a(x-y)$, than prove that $\frac{dy}{dx} = \sqrt{\frac{1-y^2}{1-x^2}}$

Unit-3

a. Evaluate $\int \frac{x e^x}{(1+x)^2} dx$

b. Evaluate $\int \frac{1-\sin x}{1+\sin x} dx$

c. Evaluate $\int \frac{e^x + e^{-x}}{e^x - e^{-x}} dx$

(section- B)

1. Formula Leibniz theorem

4. $\frac{d^n}{dx^n} \sin(ax + b)$

$$2. \int \sqrt{x^2 - a^2} \, dx$$

$$3. \int \sqrt{1 - \sin 2x} \, dx$$

$$5. \int \frac{dx}{\sqrt{a^2 + x^2}}$$

Sai college sector 6 bhilai

Half yearly exam 2021-22

Class- BCA second year

Sub- English

MM-80

Q.1 How were the arts integral to life in India's past? 20

OR

How were the figures of men and women depicted in Indian art?

Q.2 Mention the five vedangas in detail. 20

OR

Mention the three sacrificial fires in detail.

Q.3 Write shorts notes on. 40

1. Freedom struggle
2. National consciousness
3. Non cooperation movement
4. Quit India movement

SAI COLLEGE SECTOR -6 BHILAI

HALF YEARLY EXAM(2021-2022)

SUBJECT: DATABASE MANAGEMENT SYSTEM

M.M-80

TIME: 3 HOURS

NOTE: Attempt any *three* questions from unit 1&2 & attempt any *two* questions from unit 3. All questions carry equal marks

Unit-1

- | | |
|--|----|
| 1(A) Explain data abstraction & data independence. | 10 |
| (B) Explain data model. | 10 |
| (C) Explain advantage, disadvantage & application area used in DBMS. | 10 |
| (D) Explain Database user & role of database administrator. | 10 |

Unit-2

- | | |
|---|----|
| 2(A) Explain Generalization , specialization & aggregation. | 10 |
| (B) Explain mapping cardinality with example. | 10 |
| (C) Explain types of attribute & types of relationship. | 10 |
| (D) Explain ER diagram of Library management system with each steps .Explain advantage, disadvantage& tips for creating ER diagram. | 10 |

Unit -3

- | | |
|---|----|
| 3(A) Explain equi join, theta join & natural join with example. | 10 |
| (B) Explain Relational algebra & its types. | 10 |
| (C) Explain outer join with example. | 10 |

SAI COLLEGE, SECTOR-6, BHILAI

B.C.A (PART II) HALF YEARLY EXAMINATION 2021-22

OPERATING SYSTEM WITH LINUX

[TIME : THREE HOURS]

[MAXIMUM MARKS: 80]

NOTE : Attempt any three part from each unit. In unit 3 attempt any 2 part. All questions carry equal marks.

UNIT-I

1. Describe the types of Operating System.
2. Describe in detail the function and goals of Operating System.
3. Describe history and evolution of Operating System.
4. Describe the basic concept of OS.

UNIT-II

1. Briefly explain PCB (process Control block).
2. Find average waiting time , response time for pre-emptive shortest job first algorithm for the following ;

Process	CPU Burst	Arrival
P1	5	0
P2	3	1
P3	4	2

3. What is scheduler? Explain first come first serve scheduling algorithm with example.
4. Explain different type of scheduler with example.

UNIT-III

1. What is fragmentation? Explain types of fragmentation with example.
2. Explain preliminaries of memory management.
3. Write short notes on
 - a) Compaction
 - b) Virtual memory

SAI COLLEGE, SECTOR-6, BHILAI

B.C.A (PART II) HALF YEARLY EXAMINATION 2021-22

COMPUTER NETWORK

[TIME : THREE HOURS]

[MAXIMUM MARKS: 80]

NOTE : Attempt any three part from each unit. In unit 3 attempt any 2 part. All questions carry equal marks.

Unit—I

1. Explain data communication and network criteria.
2. What do you mean by Topology? Explain any three topologies with suitable diagram.
3. Explain the following:
 - a) Internetworks
 - b) Distributed processing
4. What do you mean by protocols and standards. Explain any two standard organization.

Unit—II

5. What is benefit of digital communication over analog communication ?
6. Explain DTE-DCE interface with example.
7. What is Modem? Explain their types. Why are modem standards necessary?
8. Explain serial and parallel transmission in communication.

Unit—III

9. What do you understand by ISO ? Explain OSI reference model.
10. What are the various jobs of transport layer? Explain QoS (Quality of Service) of transport layer.
11. What is the benefit of layered architecture?

SAI MAHAVIDYALAYA
HALF YEARLY EXAM, 2021-22
BCA Part II
PROGRAMMING IN C++

Date: 12-01-2022

[Max Marks: 80]

NOTE: All questions carry equal marks

UNIT-1 (Any-3)

- 1) WAP in C++ to take input and add two matrices.
- 2) Explain loop control statement in C++.
- 3) WAP in C++ to a print series: 1,4,9,16,25.....
- 4) What are the benefit of OOPS concept?

UNIT-2 (Any-3)

- 1) What is function? What are its advantage?
- 2) What is array? WAP to take input from user and print value of an array?
- 3) WAP in C++ to sort elements of an array.
- 4) WAP in C++ to print pattern:

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

UNIT-3 (Any-2)

- 1) What are the memory management operator?
- 2) What is a static data member? Explain with example.
- 3) WAP in C++ to display information of a student like name, roll no and marks using class and object.