

[Time : 3:00 Hours]

[Max. Marks : 70]

I Long Question : Answer Any Three

[10×3=30]

1. Test the series $\frac{1}{3} + \frac{1.2}{3.5} + \frac{1.2.3}{3.5.7} + \frac{1.2.3.4}{3.5.7.9} + \dots$
2. If a function f is continuous in a closed bounded interval $[a, b]$, then show that it is bounded.
3. Show that a sequence converges iff it is a Cauchy sequence.
4. Test for convergence the following series $1 + \frac{2^n}{2!} + \frac{3^n}{3!} + \frac{4^n}{4!} + \dots$
5. Prove that Triangle inequality $|x + y| \leq |x| + |y|$ For all $x, y \in \mathbb{R}$

II. Short Question: Answer any five:

[5×5=25]

1. Describe the properties of the set of real numbers as a complete order field.
2. Show that intersection of two closed sets is a closed set.
3. Evaluate- $\lim_{x \rightarrow 0} \frac{e^{1/x} - 1}{e^{1/x} + 1}$.
4. Show that- $\lim_{n \rightarrow \infty} n^{1/n} = 1$.
5. Prove that- $\lim_{n \rightarrow \infty} \left(\frac{n}{(n!)^{1/n}} \right) = e$.
6. Define of closed sets with properties
7. Discuss geometrical interpretation of Rolle's theorem.
8. prove that the union of an arbitrary family of open sets is open.

II. Objectives Question: Answer All Question

[15×1= 15]

(I) The series $\sum 1/\sqrt{n}$ is

- (A) absolutely convergent (B) Conditionally convergent
(C) Both A and B (D) none of these

(II) Nbd of $1/2$ is the set

- (A) $[-1/2, 1/2]$ (B) $(0, 1/2]$ (C) $(-\infty, \infty)$ (D) none of these

(III) Any non-empty sub-set of real numbers which is bounded below has

- (A) Infimum (B) both infimum and supremum
(C) Supremum (D) neither infimum nor supremum

(IV) Any non-empty sub-set of real numbers which is bounded above has

- (A) Infimum (B) both infimum and supremum
(C) Supremum (D) neither infimum nor supremum

(V) If A and B are sets and $A \cup B = A \cap B$, then

- (A) A is empty set (B) B is empty set
(C) $A = B$ (D) none of these

(VI) The sequence $\langle (-1)^{n-1} \rangle$ is

- (A) bounded above, not bounded below
(B) not bounded above, bounded below
(C) bounded above, bounded below
(D) none of these

(VII) The sequence $\langle 1 + (-1)^n / n \rangle$ is

- (A) convergent (B) divergent (C) oscillatory (D) none of these

(VIII) The sequence $\langle (-1)^n \rangle$ is

- (A) convergent (B) divergent (C) oscillatory (D) none of these

(IX) The sequence $\langle 1, -1, 1, -1, 1, -1, \dots \rangle$ has

- (A) no limit point (B) only one limit point
(C) two limit point (D) an infinite number of limit points

(X) The least upper bound of the sequence $\langle 1 - (1/n) \rangle$ is

- (A) 0 (B) -1 (C) 1 (D) none of these

(XI) The infinite series $\sum 1/n^p$ is convergent if

- (A) $p < 1$ (B) $p > 1$ (C) $p = 1$ (D) $p \geq 1$

(XII) The series $1 + r + r^2 + r^3 + \dots$ is oscillatory if

- (A) $r < 1$ (B) $r > 1$ (C) $r = 1$ (D) $r = -1$

(XIII) Which of the following is nbd of each of its points?

- (A) Set Q of rational numbers (B) Set Q' of irrational numbers
(C) Set N of natural numbers (D) open interval (a, b)

Printing Pages :2

Paper Code: BCA-202

B (SVSU:2023-24/R)

Enrollment No.																			
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COURSE NAME: BCA

I YEAR/II SEM EXAMINATION

SUBJECT NAME: DATABASE MANAGEMENT SYSTEM

SUBJECT CODE: BCA-202

[Time: 3:00 Hours]

[Max. Marks: 70]

Section A: Objectives Question: Answer All Questions.

[1x15=15]

1. Processed data is called ____
A Raw data B Source C Information D Useful data
2. The primary key must be
a) Unique b) Not null
c) Both Unique and Not null d) Either Unique or Not null
3. How to write the database schema?
a) HLL b) DML c) DDL d) None of the above
4. Which of the following cannot be used to modify the data in a database
a) delete b) update c) drop d) insert
5. Database catalog or dictionary defining descriptive information which is stored in database is called
a) Constrained data b) Metadata
c) Basic data d) filtered data
6. Which one of the following commands is used to restore the database to the last committed state?
a) Savepoint b) Rollback c) Commit d) Both A & B
7. Which type of data can be stored in the database?
a) Image oriented data b) Text, files containing data
c) Data in the form of audio or video d) All of these
8. Which clause is required in an SQL query for getting information from a database
a) Update b) Display c) Select d) Create
9. Which one of these is an advantage of database?
a) Storage Space duplication is eliminated
b) All application share centralized files
c) Data are stored once in database and are easily accessible when needed
d) All of these

10. Which of the following is not a database
a) MySQL b) Base c) SQL Server d) Spreadsheet
11. Which of the following is not a type of database
a) Hierarchical b) network
c) Distributed d) Decentralized
12. Which language can be used to get information from database?
a) ASP.NET b) Java c) SQL d) C++
13. Which of the following is not a modification of the database
a) deletion b) insertion c) sorting d) updating
14. Which database concept describes the structure inside the database
a) Primary key b) Cell c) View d) Schema
15. A _____ name must be unique within a database
a) Table b) Field c) Record d) Character

Section B: Long Questions: Attempt any three

[10×3=30]

1. Discuss about view level architecture
2. Explain BCNF with example
3. Create a relation EMPLOYEE with following attribute:-
EMP_ID, EMP_NAME, EMP_SALARY
(i) Write a command to alter column EMP_ID to EMPNO.
(ii) find out the name of employee whose salary lies between 1000 and 3000.
4. Differentiate file system approach and DBMS .
5. Explain different types of integrity constraint.

Section C : Short Questions: Attempt any five

[5×5=25]

1. Define the DBMS
2. What is data abstraction?
3. Differentiate data and information.
4. Write the SQL command to view structure of relation.
5. What is composite key?
6. Tell about authorization in DBMS.
7. Explain the normalization