

2013

**INTRODUCTION TO DBMS COMPUTER NETWORK
AND NUMERICAL ANALYSIS**

Time Allotted : 3 Hours

Full Marks : 70

The figures in the margin indicate full marks.

*Candidates are required to give their answers in their own words
as far as practicable.*

GROUP – A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for the following : $10 \times 1 = 10$

i) In a DBMS, SQL is used to

- a) retrieve stored data
- b) removing records
- c) define database schema
- d) all of these.

ii) In ER diagram, the derived attribute is graphically represented as

- a) Pentagon b) Ellipse
- c) Dotted ellipse d) Triangle.

iii) A transaction is said to be in committed state only after

- a) final statement has been executed
- b) successful completion
- c) it has been rolled back
- d) none of these.

iv) The logical structure of a database is termed as

- a) schema b) instance
- c) table d) atomicity.

- v) The task of data encryption belongs to
- a) application layer b) presentation layer
 - c) data-link layer d) session layer.
- vi) Which of the following is fibre-optic connector ?
- a) RJ45 b) BNC
 - c) BNCT d) MTRJ.
- vii) In a frequency-domain plot, the vertical axis measures the
- a) peak amplitude b) frequency
 - c) phase d) slope.
- viii) In a time-domain plot, the vertical axis is a measure of
- a) amplitude b) frequency
 - c) phase d) time.
- ix) In a time-domain plot, the horizontal axis is a measure of
- a) signal amplitude b) frequency
 - c) phase d) time.
- x) In Newton's forward and backward interpolation formula, points are
- a) equally spaced b) unequally spaced
 - c) both (a) & (b) d) none of these.

GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following. $3 \times 5 = 15$

2. Why cladding is used in fibre-optic cable ? Explain the advantages of fibre-optic cable. 2 + 3
3. What do you mean by functional dependency ? Explain with examples.

4. Evaluate $\int_0^1 (4x + 3x^2) dx$, taking 10 intervals by trapezoidal rule.

5. Describe two-tier database architecture.

6. Consider the net id — 192.168.0.1/28, find out no. of subnet, no. of hosts, last host of 3rd subnet and broadcast address of 2nd subnet.

GROUP – C

(Long Answer Type Questions)

Answer any three of the following. $3 \times 15 = 45$

7. Write the advantages of DBMS over traditional file system.

Which one is better-3NF or BCNF, explain. Define MVD.

8 + 5 + 2

8. Draw an ERD on 'Hospital Management System' with proper key attribute. Write a short note on SELECT & PROJECT operation. 7 + 8

9. a) Apply the method of Bisection to find the positive root of the equation $x^4 + x^2 + 3x + 4 = 0$ correct upto two significant figure.

b) Describe the physical structure of optical fibre & state its transmission characteristics. Give two advantages & disadvantages of it.

c) Find $y(0.2)$ by taking $h = 0.1$ using Runge-Kutta 4th order method given that $dy/dx = xy + y^2$, $y(0) = 1$ 5 + 5 + 5

10. a) What is a protocol? Compare between TCP/IP & OSI model.

b) What are the various services provided by internet?

Name the five current IP address classes.

c) What is fundamental difference between circuit switching & packet switching ?

d) What are bridges & routers ? In which layers are they used ?

e) Differentiate among LAN, MAN, WAN. 3 + 3 + 3 + 3 + 3

11. a) What is the reason for transmission impairment ?

Discuss about three types of transmission impairment.

b) Explain different types of data transfer modes.

c) Define guided & unguided media. Give example. Write short note on IP address. 7 + 4 + 4

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