Name : .....

Roll No. : .....

Invigilator's Signature : .....

CS/B.Sc. (H)/BT/Gen./Micro.-Bio./Mol.-Bio./SEM-4/CA-401/2013

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 × 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 × 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 $\int_0^1 \left(4x - 3x^2\right) dx$, 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 × 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. Writ 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

   $$\frac{dy}{dx} = xy + y^2 \, , \, y(0) = 1$$ 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