Exam. Code : 105704
Subject Code : 1552

B.Sc. Information Technology Semester—IV

DATABASE MANAGEMENT SYSTEM & ORACLE

Paper–I

Time Allowed—3 Hours]   [Maximum Marks—75

Note : There are **EIGHT** questions in the question paper. The candidates are required to attempt any **five** of them. Each question carries 15 marks.

1. What is a database management system (DBMS) ? Discuss the architecture and levels of DBMS.   15

2. Compare Relational model, Hierarchical model and Network model with each other.   15

3. Explain the similarities and dissimilarities between BCNF and 3rd normal form. Explain the cases where fourth normal form is applicable and how it removes the anomalies.   15

4. Why Built-in functions are required in Oracle ? What is single-row class of Built-in functions ? Explain the various categories of single-row functions with the help of suitable SQL queries.   15

3061(2517)/STB-14028   1   (Contd.)

5. What are the problems associated with two-phase locking protocols ? Briefly discuss the solutions to these problems. 15

6. Consider the following relational database.

   employee (employee-name, street, city)

   works (employee-name, company-name, salary)

   company (company-name, city)

   manages (employee-name, manager-name)

   Give an expression in SQL to express each of the following queries :

   (i) Find the names and cities of residence of all employees who work for XYZ Bank and draw salary more than 10000.

   (ii) Find the names, street address, and cities of residence of all employees who work for ABS Bank and earn less than average salary of the employees of bank.

   (iii) Find the names of all employees in this database who do not live in the same city as the company for which they work.

   (iv) Find the names of all employees who live in the same city and not on the same street as do their managers.

   (v) Find the names of those employees whose first name matches with the first names of their managers. 15
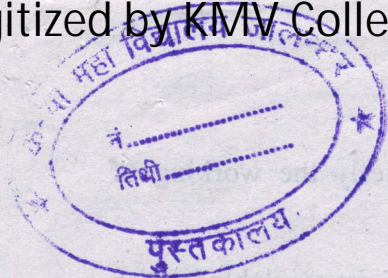
7. What are joins ? Explain various types of joins with the help of suitable examples. 15

8. Write short notes on the following :

   (i) Binary and shared locks

   (ii) Database triggers. 2×7.5=15

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B.Sc. Information Technology Semester—IV
INTERNET APPLICATIONS
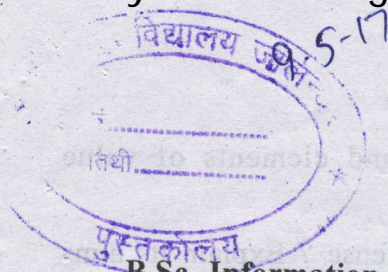### Paper–II

Time Allowed—3 Hours]   [Maximum Marks—75

Note : (i) Attempt any **five** questions. All questions carry equal marks.

(ii) Students can use only non-programmable and non storage type calculators.

1. Define Internet. Explain its working. Discuss the business use of Internet.   15

2. What are the advantages and disadvantages of E-Mail ? What is the structure of an email message ? Discuss the features used for managing emails.   15

3. (a) How implementation of Outlook Express takes place ? Write steps.

    (b) What is the purpose of using ISP and DNS ?

                                                                        8,7

4. Write briefly on the following : File Transfer Protocol, Telnet, HTTP, TCP/IP.   15

3062(2517)/STB-14029   (Contd.)

5. (a) Define WWW. Discuss briefly the working of WWW.

   (b) Discuss various features/options available in Web browser to help its users. 8,7

6. (a) What is the difference between HTML and DSTML ?

   (b) Discuss any 10 different types of tags used for web designing using HTML. 5,10

7. Discuss various components of a search engine ? Also explain working of a search engine. 15

8. Define : Intranet. Discuss the role of intranet in a business house. Explain its working. How does it differ from Extranet ? 15

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B.Sc. Information Technology 4ᵗʰ Semester

ENVIRONMENTAL STUDIES—II

Paper—IV

Time Allowed—Three Hours]   [Maximum Marks—50

Note :— Section-A (15 marks) : It consists of **FIVE** short answer type questions. Candidates are required to attempt any **THREE** questions, each carrying **5** marks. Answer to any of the questions should not exceed **2** pages.

Section-B (20 marks) : It consists of **FOUR** essay type questions. Candidates are required to attempt any **TWO** questions, each carrying **10** marks. Answer to any of the questions should not exceed **4** pages.

Section-C (15 marks) : It consists of **TWO** questions. Candidates are required to attempt **ONE** question which carries **15** marks. Answer to the question should not exceed **5** pages.

SECTION—A

1. What are Biosphere Reserves ?

2. Give an account of indoor air pollution ?

3064(2517)/STB-17010   1   **(Contd.)**

3. Why do earthquakes occur ?

4. What are the objectives and elements of value education ?

5. What is meant by Civil Defense ? Explain its aims and objectives.

SECTION—B

6. Comment upon the Indian biodiversity with special reference as megadiversity nation.

7. Write short notes on :—

   (a) Biomagnification

   (b) Nuclear pollution

   (c) Population explosion

   (d) Traffic signs

8. What do you understand by disasters ? Discuss the significance of Disaster management.

9. How does Information Technology play role in dissemination of Environmental information ?

SECTION—C

10. Explain in detail about the threats to biodiversity. How can the biodiversity be conserved ?

11. What do you understand by Solid waste management ? Discuss in detail the ways of managing the solid waste.

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Subject Code : 1556

B.Sc. Information Technology Semester—IV

COMPILER DESIGN

Paper–V

Time Allowed—3 Hours]   [Maximum Marks—75

Note : Attempt any **five** questions. All questions are of equal marks.

1. Describe the various phases of compiler and trace it with the program segment (position : = initial + rate * 60).

2. (a) Differentiate between top-down and bottom-up parsing.

   (b) Explain the role of Lexical analyzer.

3. What is a Symbol Table ? What are its contents ? Discuss the operations on symbol tables.

4. Compare and discuss static and dynamic storage management techniques.

5. What do you mean by code optimization ? What are its advantages and disadvantages ? Discuss various types of code optimization schemes in detail.

6. Explain code generator algorithm. Given the expression : W : = (a–b) + (A–C) + (A–C). Translate into three-add-code sequence showing code generated, register descriptor and add descriptor.

7. What are the various types of compilers ? Discuss the features of Incremental Compilers in detail.

8. Write short notes on the following :

   (a) Shift reduce parsing

   (b) Dead code elimination

   (c) Peephole optimization.