TED (15) – 3132
(REVISION — 2015)

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DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/ MANAGEMENT/COMMERCIAL PRACTICE — OCTOBER, 2018

DATABASE MANAGEMENT SYSTEM

[*Time* : 3 hours

(Maximum marks : 100)

PART — A

(Maximum marks : 10)

Marks

I Answer *all* questions in one or two sentences. Each question carries 2 marks.

1. Define database system.
2. List any two keys in relational database.
3. Mention the use of CHECK keyword.
4. Define database View.
5. Define data warehouse. (5×2 = 10)

PART — B

(Maximum marks : 30)

II Answer any *five* of the following questions. Each question carries 6 marks.

1. Explain the merits of DBMS.
2. Describe Centralized and Client-Server Database Systems.
3. Draw an E-R diagram corresponding to the relation: BOOK(B_NO, B_NAME, PRICE, AUTHOR, PHONE_NO); Where B_NO is a primary key and PHONE_NO is a multivalued attribute.
4. Differentiate relational algebra operations SELECT and PROJECT.
5. Describe different datatypes in SQL.
6. Explain how to create and use trigger in DBMS.
7. Describe the need of database normalization. (5×6 = 30)

Marks

PART — C

(Maximum marks : 60)

(Answer *one* full question from each unit. Each full question carries 15 marks.)

Unit — I

III (a) Explain three schema DBMS architecture with diagram. 9

(b) Describe different database users. 6

Or

IV (a) Explain different data models. 9

(b) Describe different DBMS languages. 6

Unit — II

V (a) Explain generalization and specialization in enhanced E-R model. 8

(b) Describe different JOIN operations in relational algebra. 7

Or

VI (a) Explain following relational algebra concepts :

(i) Domain (ii) Relational Schema (iii) Attribute (iv) Degree of relation 8

(b) Describe set operations in relational algebra. 7

Unit — III

VII (a) Explain DML commands with syntax. 8

(b) Describe any five DBMS constraints. 7

Or

VIII (a) Given a relational database table STUDENT (Reg. No, Name, Age, Mark). Write the following queries.

(i) Display details of students whose age greater than 20.

(ii) Display details of students whose name start with letter 'S'.

(iii) Find the total Mark of all the students.

(iv) Display details of students with highest Mark. 8

(b) Explain JDBC database connectivity. 7

Unit — IV

IX (a) Explain the features of Object Oriented Database. 9

(b) Write a short note on Mobile databases. 6

Or

X (a) Explain various Parallel DBMS architectures. 9

(b) Describe the features of data warehouses. 6

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DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/ MANAGEMENT/COMMERCIAL PRACTICE — OCTOBER, 2018

ENVIRONMENTAL SCIENCE AND DISASTER MANAGEMENT

[*Time* : 3 hours

(Maximum marks : 100)

PART — A

(Maximum marks : 10)

Marks

I Answer *all* questions in one or two sentences. Each question carries 2 marks.

1. Define Eutrophication.
2. What is an ecological pyramid ?
3. Define air pollution.
4. What is a landslide ?
5. Define vulnerability. (5×2 = 10)

PART — B

(Maximum marks : 30)

II Answer any *five* of the following questions. Each question carries 6 marks.

1. Explain landslide and its causes.
2. Discuss various problems affecting food security.
3. Explain different types of ecosystem.
4. What are the sources of Marine pollution ?
5. Describe various sources of thermal pollution.
6. List out the environmental effect of drought.
7. Describe the mitigation strategy for flood disaster. (5×6 = 30)

Marks

PART — C

(Maximum marks : 60)

(Answer *one* full question from each unit. Each full question carries 15 marks.)

UNIT — I

III (a) Demonstrate the problem due to deforestation. 8

(b) Appraise the effect of modern agricultural technology. 7

OR

IV (a) Analyse the disadvantage of large dams. 8

(b) Explain the uses of minerals. 7

UNIT — II

V (a) Discuss the basic concept of food chain. 8

(b) Write down the characteristics of a forest eco system. 7

OR

VI (a) Describe ecological succession. 8

(b) Explain consumers based on their mode of consumption. 7

UNIT — III

VII (a) What are the sources of water pollution ? 8

(b) Describe briefly on sewage treatment process. 7

OR

VIII (a) Discuss various methods of waste management. 8

(b) What are the sources of pollution ? 7

UNIT — IV

IX (a) What is a TREM card and explain the emergency procedure in Truck/Tanker accidents. 8

(b) List out causes and consequences of nuclear explosion. 7

OR

X (a) Discuss Bhopal tragedy. 8

(b) Explain land use zoning. 7

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DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/ MANAGEMENT/COMMERCIAL PRACTICE — OCTOBER, 2018

OBJECT ORIENTED PROGRAMMING THROUGH C++

[*Time* : 3 hours

(Maximum marks : 100)

PART — A

(Maximum marks : 10)

Marks

I Answer *all* questions in one or two sentences. Each question carries 2 marks.

1. Define enumerated datatype in C++
2. Define default argument.
3. What is the use of constructors in C++ classes ?
4. Discuss composition in C++
5. Define multiple inheritance in C++ (5×2 = 10)

PART — B

(Maximum marks : 30)

II Answer any *five* of the following questions. Each question carries 6 marks.

1. Write a short note on the basic structure of a C++ program.
2. Discuss structure as heterogeneous aggregate.
3. Explain different parameter passing methods in C++
4. What are the limitations of operator overloading ?
5. Explain multilevel inheritance with example
6. Write a note on class templates in C++
7. Discuss pure virtual functions in C++ (5×6 = 30)

Marks

PART — C

(Maximum marks : 60)

(Answer *one* full question from each unit. Each full question carries 15 marks.)

Unit — I

III (a) Define functions. What are the different types of functions in C++ 9

(b) Describe the concept of memory management in C++ 6

Or

IV (a) Discuss with an example about recursion in C++ 9

(b) Write a program in C++ to find the sum of even numbers up to 'n'. 6

Unit — II

V Explain the basic concepts of Object Oriented Programming. 15

Or

VI (a) Discuss inline functions with suitable example. 9

(b) Write a note on constructors in C++ 6

Unit — III

VII (a) Write a program in C++ to overload relational operator (= =) to compare two strings. 9

(b) With the help of a sample program, explain hierarchical inheritance. 6

Or

VIII (a) With the help of an example, explain how to overload unary operator. 9

(b) Explain virtual base class. 6

Unit — IV

IX (a) Explain how the constructor of the base class can be invoked when the object of the derived class is created. 9

(b) What are the rules for using virtual functions ? 6

Or

X (a) Explain multiple inheritance in C++ with an example program. 9

(b) Discuss how to use multiple catch statement for handling exception in C++ 6

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DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/ MANAGEMENT/COMMERCIAL PRACTICE — OCTOBER, 2018

COMPUTER ARCHITECTURE (CT)

[*Time* : 3 hours

(Maximum marks : 100)

PART — A

(Maximum marks : 10)

Marks

I Answer *all* questions in one or two sentences. Each question carries 2 marks.

1. Define PC.
2. What are the various methods of bus arbitration ?
3. Define CAV.
4. Mention any two categories of user-visible registers.
5. Define SIMD. (5×2 = 10)

PART — B

(Maximum marks : 30)

II Answer any *five* of the following questions. Each question carries 6 marks.

1. Draw and explain a typical memory hierarchy.
2. Draw the memory cell structures of static RAM and Dynamic RAM.
3. Explain the block format of a CD-ROM.
4. Draw the internal Structure of CPU.
5. Draw and explain the micro-architecture of the control unit.
6. Explain different types of data hazards.
7. Explain different I/O commands that an I/O module receive when it is addressed by a processor. (5×6 = 30)

Marks

PART — C

(Maximum marks : 60)

(Answer *one* full question from each unit. Each full question carries 15 marks.)

Unit — I

III (a) List and explain two approaches to dealing with multiple Interrupts. 6

(b) Draw the timing diagrams of synchronous bus operations and asynchronous bus operations. 9

Or

IV (a) List and explain the characteristics of computer memory system. 10

(b) Draw the structure of single cache organization and three level cache organization. 5

Unit — II

V Explain data organization and formatting mechanism in magnetic data. 15

Or

VI (a) Compare RAID levels. 9

(b) What are major functions of I/O module. 6

Unit — III

VII (a) A pipelined processor has a clock rate of 5GHz and execute a program with 10 instructions. The pipeline has 5 stages and instructions are issued at a rate of one per clock cycle. Ignore penalties due to branch instruction and out of sequence execution. What is the speed up of this processor for this program compared to a non-pipelined processor ? 9

(b) If the last operation performed on a computer with 8-bit word was an addition in which two operands are 00001100 and 01001010. What would be the value of Carry, Zero, Overflow, Even parity, Half Carry, Sign flags after the operation ? 6

Or

VIII (a) With a neat sketch explain about instruction cycle state diagram. 12

(b) Explain about resource hazards. 3

Unit — IV

IX (a) Explain symbolically the different sequence of events occur during Fetch, Indirect, Interrupt, Execute Cycle. 12

(b) Outline a three step process leads to the characterization of control unit. 3

Or

X (a) Draw and explain the architecture of cpu with internal bus. 7

(b) List and explain Flynn's classification of parallel processing system. 8

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DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/ MANAGEMENT/COMMERCIAL PRACTICE — OCTOBER, 2018

DIGITAL COMPUTER PRINCIPLES

[*Time* : 3 hours

(Maximum marks : 100)

PART — A

(Maximum marks : 10)

Marks

I Answer *all* questions in one or two sentences. Each question carries 2 marks.

1. Write one example each for weighted and unweighted number system.
2. What is Karnaugh map ?
3. What are the applications of encoder ?
4. Name any two asynchronous inputs of a flip-flop.
5. What is a counter ? (5×2 = 10)

PART — B

(Maximum marks : 30)

II Answer any *five* of the following questions. Each question carries 6 marks.

1. Draw the truth table and logic symbol for an Ex-OR and NAND gates.
2. Simplify AB+A(B+C)+B(B+C)
3. Explain sum of product and product of sum expression.
4. Design a half adder circuit.
5. Draw the truth table of binary to gray code converter.
6. Explain RS flip-flop with the help of truth tables.
7. Distinguish between synchronous and asynchronous counters. (5×6 = 30)

Marks

PART — C

(Maximum marks : 60)

(Answer *one* full question from each unit. Each full question carries 15 marks.)

UNIT — I

III (a) Convert the following binary numbers into decimal and hexadecimal.

(i) 1101101

(ii) 11101.011 8

(b) Convert the following numbers into octal and binary.

(i) 98_{10}

(ii) 125_{10} 7

OR

IV A hamming code received by a receiver in even parity scheme is 1110101. Check any error occurred. If so correct it and explain the reason clearly. 15

UNIT — II

V Simplify the following Boolean function using k-map.

(i) $F(A,B,C,D) = \sum m(0,1,6,7,8,9,14,15)$ (ii) $F(x,y,z) = \sum (0,2,4,5,6)$ 15

OR

VI (a) Explain the working of TTL inverter with a neat diagram. 10

(b) Write the features of CMOS logic gates. 5

UNIT — III

VII (a) Design a full subtractor circuit. 10

(b) Explain the application of multiplexers. 5

OR

VIII Explain BCD to excess-3 code converter. 15

UNIT — IV

IX With the help of a logic diagram, draw the truth table and timing diagram explain the working of a JK flip-flop. 15

OR

X (a) Explain serial in serial out shift register. 10

(b) Differentiate between synchronous and asynchronous inputs. 5