SH-II/CSC/203/GE-2(Pr.)/18

B.Sc. Semester-II (Honours) Practical Examination, 2018

COMPUTER SCIENCE

Subject Code : 21513 **Course Code : SH/CSC/203/GE-2-Pr.**

Course Title : Introduction to Database Systems Lab

Time: 2 Hrs. **Full Marks: 15**

Problem = 10 marks, Viva + LNB = 05 marks

Answer *any one*.

1. Create a database having two tables with specified fields, to computerize a library system of any college.
   (a) Identify primary key and foreign key. Create at least 5 records.
   (b) Delete record of book titled 'DBMS'.
   (c) Change the department of the book titled 'Math' to 'CS'.
   (d) List all books to CS department.
   (e) List all books belong to CS department and authored by 'Korth'.
   (f) List all computer (department = CS) that have been issued.

2. Create a database: student (Roll No., Name, DOB, Address, Marks), paper detail (P–Code, P–Name), Academic (Roll No, P-Code, Internal-marks).
   (a) Identify primary and foreign key. Insert 5 records.
   (b) Write a query to display the name of the students who have got internal marks > 60.
   (c) List all students who live in Delhi and have marks more than 60 in Paper 1.
   (d) List the name of student who has got the highest marks in Paper 2.

3. Create the following tables, enter at least 5 records.
   Supplier (SNo, S name, status, scity), Parts (PNo, PName, color, weight)
   Shipment (SNo, PNo, JNo, Quantity).
   Answer the following:
   (a) Identify primary and foreign key.
   (b) Get suppliers names who do not supply part 2.
   (c) Get all the shipments where the quantity is in the range 300 to 750 inclusive.
   (d) Get the names of cities that store more than five red parts.
   (e) Get the total number of project supplied by a supplier (say S1).

———————

B.Sc. Semester-II (Honours) Practical Examination, 2018

COMPUTER SCIENCE

Subject Code : 21513 **Course Code : SH/CSC/203/GE-2-Pr.**

Course Title : Programming in Visual Basic

Time: 2 Hrs. **Full Marks: 15**

Problem = 10 marks, Viva + LNB = 05 marks

Answer *any one*.

1. Print a table of numbers from 5 to 15 and their squares and cubes.
2. Print the largest of three numbers.
3. Find the factorial of a number *n*.
4. Enter a list of positive numbers. Find the sum and average of these numbers.
5. A person deposits Rs. 1000 in a FD yielding 5% interest. Compute the amount in the A/c at the end of each year for *n* years.
6. Read *n* numbers. Count the number of negative number, positive numbers and zeros in the list without using array.
7. Read *n* numbers. Count the number of negative number, positive numbers and zeros using array.
8. Read a single dimension array. Find the sum and average *f* these numbers.
9. Read two 2D-array. Find the sum of two 2D-array.
10. Create a database Employee and Make a form in VB6.0 to allow data entry to Employee form with details (Emp Name, ID, DOJ, Designation, Department, Address, Basic pay).

SP-II/CSC/201/C-1B(Pr.)/18

B.Sc. Semester-II (Programme) Practical Examination, 2018

COMPUTER SCIENCE

Subject Code : 21514 **Course Code : SP/CSC/201/C-1B-Pr.**

Course Title : Database Management System

Time: 2 Hours **Full Marks: 15**

Experiment = 10 marks and Viva + LNB = 05 marks.

1. Perform *any one* experiment:

(a) Create a table STUDENT (First Name, Sur Name, Student-ID, Course, Supervising-teacher's-ID).
Populate the table with sample data. (at least 5).
List Student's Name and Supervising—
Teacher's IDs for all students of course 'Computer Sc'.

(b) Create a table STUDENT (First Name, Sur Name, Student-ID, Course, Supervising Teacher's ID).
Create another table TEACHER [First Name, Sur Name, Teacher-ID, Department, Highest-Degree (UG/PG/Ph.D)].
Populate the two tables with sample data (at least 5).
Join the two tables over Teacher's-ID.

(c) Create a table STUDENT (First Name, Sur Name, Student-ID, Course, Supervising Teacher's-ID).
Populate the table with sample data (at least 5).
Delete the records of all students of course 'Chemistry'.

(d) Create a table TEACHER [First Name, Sur Name, Teacher-ID, Department, Highest-Degree (UG/PG/Ph.D)]
Populate the table with sample data (at least 5).
List the names of all teachers having 'Ph.D' as Highest-Degree.

(e) Create a table STUDENT (First Name, Sur Name, Student-ID, Course, Supervising-Teacher's ID).
Create another table TEACHER [First Name, Sur Name, Teacher-ID, Department, Highest-Degree (UG/PG/Ph.D)].
Populate the two tables with sample data.
List the First Name of all students who are supervised by 'Mathematics' department's teachers.

———————

SH-II/CSC/201/C3/18

B.Sc. Semester-II (Honours) Examination, 2018

COMPUTER SCIENCE (H)

Subject Code : 21501 **Course Code : SH/CSC/201/C3**

Course Title : Programming in JAVA

Time: 1 Hr. 15 Mins. **Full Marks: 25**

The figures in the margin indicate full marks.
Candidates are required to give their answers in their own words as far as practicable.
The questions are of equal value.

1. Answer *any five* questions: 1×5=5

(a) Why is Java known as platform neutral language?
(b) List two major C++ features that were removed from Java.
(c) Why is the main() method in Java to be declared as public, static, void?
(d) When do we declare a method or class final?
(e) What are the applications of wrapper classes?
(f) What is Java interface?
(g) What is a remote applet?
(h) What is Java thread?

2. Answer *any two* questions: 5×2=10

(a) Why do we need the import statement in a Java program? Design a class to represent a bank account. Include the following members:
Data members: Name of depositer, Account number, type of account, Balance amount in the account.
Methods: To assign initial values, to deposit an amount, to withdraw an amount, to display the name and balance. 1+4=5

(b) What are the major differences between an interface and a class? How does String class differ from String Buffer class? What is a package? Why do applet classes need to be declared as public? 1+1+1+2=5

(c) Describe the complete life cycle of a thread in Java. 5

(d) How does a vector differ from an array? Write a Java program which will read a text and count all occurrences of a particular word. 1+4=5

3. Answer *any one* question: 10×1=10

(a) What are the similarities between interfaces and class? Give an example where interface can be used to support multiple inheritance. Develop a stand-alone Java program for multiple inheritance. How do we set priorities for threads? 2+1+6+1=10

(b) How do Java applet differ from application program? Develop an applet that receives three numeric values as input from the user and then displays the largest of the three on the screen. Write an HTML page to test the applet. 2+8=10

SH-II/CSC/202/C4/18

B.Sc. Semester-II (Honours) Examination, 2018

COMPUTER SCIENCE (H)

Subject Code : 21502 **Course Code : SH/CSC/202/C4**

Course Title : Discrete Structures

Time: 2 Hrs. **Full Marks: 40**

The figures in the margin indicate full marks.

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

1. Answer *any five* questions: 2×5=10

(a) What is countably infinite set?

(b) What is Pigeonhole principle?

(c) What is the use of asymptotic notations?

(d) What is recurrence tree?

(e) What do you mean by a graph?

(f) What is Hamiltonian path?

(g) What is tautology?

(h) Express if-then operator ($\rightarrow$) in terms of the basic propositional operators ($\vee$, $\wedge$, $\neg$).

2. Answer *any four* questions: 5×4=20

(a) Explain bijective relation with an example. What is closure property?

(b) Discuss big–oh (o) and big-omega (Ω) notations with examples.

(c) Solve the recurrence relation:

$a_n = a_{n-1} + 2a_{n-2}$ with $a_0 = 2 \,\&\, a_1 = 7$

(d) Show that for any graph the number of odd-degree vertices is always even.

(e) Write Kruskal's algorithm for finding MST.

(f) What is Hamiltonian path and Hamiltonian circuit? Explain with example. 3+2=5

3. Answer *any one* question: 10×1=10

(a) In how many different ways can the letters of the word 'OPTICAL' be arranged so that the vowels come together? Using mathematical induction prove that $\forall n \geq 1, 8^n - 3^n$ is divisible by 5. 6+4=10

(b) State and prove the propositional logic version of De Morgan's law for two variables.

Consider the following propositions:

p : Mr A is smart

q : Mr A is honest

Express the following statement in terms of p and q.

Mr. A is smart is necessary and sufficient for Mr A to be honest. 6+4=10

SH-II/CSC/203/GE-2/18

B.Sc. Semester-II (Honours) Examination, 2018

COMPUTER SCIENCE

Subject Code : 21503 **Course Code : SH/CSC/203/GE-2**

Time: 1 Hour 15 Minutes **Full Marks: 25**

The figures in the margin indicate full marks.

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

Answer all questions either from Group-A *or from* Group-B

Group–A

Course Title : Introduction to Database Systems

(Marks: 25)

1. Answer *any five*: 1×5=5

(a) What is DBMS?

(b) Define Datamodel.

(c) What is Primary Key?

(d) What is Entity?

(e) Define attribute.

(f) What is SQL?

(g) What do you mean by normalization?

(h) What is the difference between DELETE and TRUNCATE Commands?

2. Answer *any two*: 5×2=10

(a) What are the advantages of DBMS? 5

(b) What is functional dependency? What is 3NF? 2+3=5

(c) Define weak entity, cardinality ratio of a relationship with suitable example. 2.5×2=5

(d) Illustrate Network Datamodel with suitable example. 5

3. Answer *any one*: 10×1=10

(a) What is a query? Write an SQL SELECT statement to display all the columns of the STUDENTS (Name, Dept, Roll No, Grade) table but only those rows where Grade ≥ 60. Name and briefly describe the five SQL built-in functions. 2+3+5=10

(b) Write short notes on: 5+5=10

(i) E-R diagram

(ii) Three level data abstraction

Group–B
Course Title : Programming in Visual Basic

(Marks: 25)

1. Answer *any five*: 1×5=5

(a) What is user interface?

(b) What is function in VB?

(c) What is implicit declaration?

(d) What is Msg Box ( )?

(e) What is data-bound control?

(f) What is OLEDB in VB?

(g) What is IDE?

(h) List out controls which does not have events.

2. Answer *any two*: 5×2=10

(a) Explain difference between Image Control and Picture Control.

(b) How control array is created and used?

(c) Discuss following variable types: Variant type, Boolean type variable 2.5×2=5

(d) Discuss the procedure of creating menu in VB.

3. Answer *any one*: 10×1=10

(a) Explain procedures in VB, with suitable examples.

(b) Write short notes on: 5×2=10

(i) Access key

(ii) Cancel button

(iii) Checkbox control

(iv) Combobox control

(v) Messageboxes

———————

SP-II/CSC/201/C-1B/18

B.Sc. Semester-II (Programme) Examination, 2018

COMPUTER SCIENCE

Subject Code : 21504 **Course Code : SP/CSC/201/C-1B**

Course Title : Database Management System

Time: 1 Hr. 15 Mins. **Full Marks: 25**

The figures in the margin indicate full marks.

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

The questions are of equal value.

1. Answer *any five* questions: 1×5=5

(a) What is a file?

(b) What is database system?

(c) What is Cardinality ratio?

(d) What is the full form of SQL?

(e) What do you mean by Relational data model?

(f) What is foreign key?

(g) What is lossless join?

(h) What do you mean by functional dependency?

2. Answer *any two* questions: 5×2=10

(a) Describe the different forms of data independence in brief.

(b) Draw an ERD for students' information system of a college. [The necessary assumptions are to be made by examinees]

(c) Explain the role of the following two operators in relational algebra with suitable examples:

Projection (Π)

Set-difference (–) 2.5+2.5=5

(d) Describe the different types of anomalies in brief.

3. Answer *any one* question: 10×1=10

(a) Describe the various advantages of database system over the traditional file processing system in brief.

(b) State the step-by-step procedure for normalizing a relation scheme into 3NF. Distinguish between 3NF and BCNF. 6+4=10

SH-II/CSC/201/C-3(Pr.)/18

B.Sc. Semester-II (Honours) Practical Examination, 2018

COMPUTER SCIENCE

Subject Code : 21511 **Course Code : SH/CSC/201/C-3-Pr.**

Course Title : Programming in Java Lab.

Time: 2 Hours **Full Marks: 15**

The figures in the margin indicate full marks.

Experiment = 10 marks and LNB + Viva = 05 marks.

1. Solve *any one* of the following experiments:

(a) Write a program to show the use of static function and to pass variable length arguments in a function.

(b) Write a Java program to find the factorial of a given number.

(c) W.A.P. to check if a number is prime or not, by taking input from keyboard.

(d) Write a program to create your own exception types to handle situations specific to your application.

(e) W.A.P. to demonstrate priorities among multiple threads.

(f) W.A.P. to convert a decimal number to a binary number.

(g) W.A.P. to show the use of static functions and to pass variable length arguments to a function.
