## PRE-BOARD EXAMINATION – 2080 (2024)

Grade: XII        **SCIENCE**      F.M.: 50

Time: 2 hrs.    COMPUTER SCIENCE (COM. SCI. 4281)    P.M.: 20

*Candidates are required to give their answer in their own words as far as practicable. The figures is the margin indicate full marks.*
*Attempt all questions.*

### Group A

**Multiple choice questions.**        (1×9=9)

1. A ...... is an association among several .......
   a) relationship, entities
   b) data, attributes
   c) attributes, entities
   d) relationship, data

2. Which one of the following given statements is accurate?
   a) ALTER students MODIFY COLUMN class VARCHAR
   b) ALTER students MODIFY COLUMN class
   c) ALTER TABLE students MODIFY COLUMN class
   d) ALTER TABLE students MODIFY COLUMN class VARCHAR

3. Which layer processes data sent by the application layer and prepares it for transmission over the session layer?
   a) Application layer
   b) Presentation layer
   c) 2-tier
   d) Data layer

4. For the IP address 192.168.123.132, assuming a subnet mask of 255.255.255.0, what would be the network address and host address?
   a) Network Address: 192.168.123.0 Host Address: 0.0.0.132
   b) Network Address: 192.168.0.0 Host Address: 0.0.123.132
   c) Network Address: 192.0.123.0 Host Address: 0.168.132.132
   d) Network Address: 0.0.0.0 Host Address: 192.168.123.132

5. Which event happens when the user presses a key that generates a character value?
   a) onkeypress
   b) onkeydown
   c) onkeyup
   d) none

6. What is the output of the following C program?
```c
#include <stdio.h>
int calc(int start, int end);
int main() {
printf("%d", calc(4, 10));
return 0;
}
int calc(int start, int end) {
if (start > end)
return 0;
else if (start % 3 == 0)
return start * end + calc(start + 3, end);
else if (start % 5 == 0)
return start * end * start + calc(start + 5, end);
else
return calc(start + 1, end);
}
```
   a) 1350
   b) 2250
   c) 1125
   d) 1250

7. Objects are the variables of the type ____
   a) String
   b) Boolean
   c) Class
   d) All data types can be included

8. Black box testing is also known as......
   a) Functional testing
   b) Glass box testing
   c) Non-functional testing
   d) none

9. What is the goal of AI?
   a) To solve artificial problems
   b) To explain various sorts of intelligence
   c) To extract scientific causes
   d) To solve real-world problems

## Group B

Give short answer to the following questions. (5×5=25)

1. Explain the anomalies associated with Insertion, Update, and Deletion in the context of database management. Additionally, elucidate the concept of Second Normal Form (2NF) with illustrative examples. [2.5+2.5]

**OR**

Write SQL query to Create the Employee table with the specified fields and perform the following operations. [5]

| Emp_ID | Emp_Name | Emp_Age | Emp_Post | Emp_Salary |
|--------|----------|---------|--------------|------------|
| 1 | Ram | 26 | Manager | 65456 |
| 2 | Shyam | 30 | Officer | 63000 |
| 3 | Sunil | 35 | System admin | 60000 |
| 4 | Rita | 32 | Accountant | 45000 |
| 5 | Dipa | 34 | Officer | 63000 |

a) Insert the given 5 records in the table Employee.

b) Retrieve the details of employees earning a salary greater than 60000 and are above 30 years of age.

c) Retrieve the names and salaries of employees in descending order of salary.

d) Delete the record of employee having Emp_ID as 4.

2. Design a webpage containing a form with several fields including Username, Password, and Confirm Password. Ensure that the Password field requires a minimum of 8 characters. Utilize JavaScript-based form validation methods to guarantee the correctness and completeness of user-entered information, thereby improving user experience and upholding data integrity. [5]

**OR**

Compose a PHP script for inserting data into a database called 'student', which includes a table named 'std_details' containing columns for Name, Address, Class, Section, and Roll. The PHP code should facilitate the insertion process into this database table. [5]

3. Define the concept of OOPs? Define the terms Polymorphism, Inheritance and its types. [1+1+3]

4. What do you mean by System Analyst? Explain any 3 roles of System Analyst. List out any 2 characteristics of System Analyst. [1+3+1]

5. What do you mean by E-governance? Explain the types of E-governance. List out any 4 challenges of E-governance. [1+2+2]

## Group C

Give long answer to the following questions. (8×2=16)

6. a) Explain the OSI reference model of networking in detail. [4]

   b) Provide an explanation of star and ring network topologies accompanied by relevant diagrams. Also, enumerate the advantages offered by each of these topologies. [4]

7. Create a file named 'exam.dat' that stores information for multiple students. Each student's information includes their ID, Name, Address, and marks for five subjects. Write a C program to input and store details for 10 students in the 'exam.dat' file. The program should then display the records of students residing in 'Kathmandu' as well as calculate and display their total marks.

**OR**

Explain how call by reference works in C using a simple program. Write a C program to input n numbers and display the largest number using pointer. [4+4]

***ALL THE BEST ***