

Roll No: -----



## UNIVERSITY OF PETROLEUM AND ENERGY STUDIES

End Semester Examination, December 2017

Program: B.Tech (Electronics, Instrumentation and Control)

Subject (Course): Programming in C & C++

Course Code : INFO401

No. of page/s: 2

Semester – 7

Max. Marks : 100

Duration : 3 Hrs

### Section A

(4x5=20)

- Q1. How do the functions malloc and calloc help in Storage Management?
- Q2. Write in brief the differences between a Statement and an Expression.
- Q3. Write a simple program to remove all occurrences of the character 'c' from any string s.
- Q4. What is a function prototype? Also talk about the structure of a function definition.

### Section B

(4x10=40)

- Q5. Write a program in C++ to print the Fibonacci Series using Recursion.
- Q6. What are Command-line Arguments? Why are they used? How are argc and argv arguments used? Show how the main function is called when one needs to use command line arguments on the environment their program runs on.
- Q7. Write a program to swap two numbers using a function that uses pointers to enable call by reference in C.
- Q8. Write notes on all the capabilities of the C preprocessor. What feature of the C preprocessor is also known by the term Macro Substitution?

## Section C

(2x20=40)

Q9. A) Give an illustration of a common C++ program with:

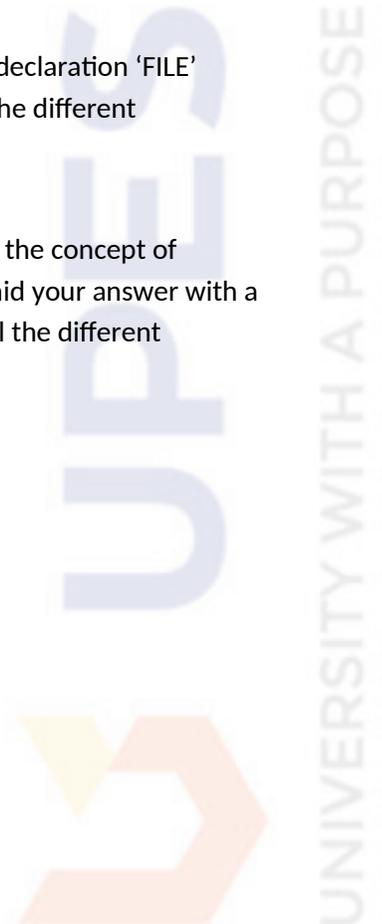
- (i) a class, having
- (ii) private and public access specifiers and
- (iii) two class-functions
- (iv) also make two objects to showcase encapsulation to prove that “objects are instances of a class”.

B) What is a namespace and why is it so essential to fulfill the object-oriented nature of C++. Also explain the four-fold advantage of object-oriented programming, that of inheritance, polymorphism, encapsulation and abstraction.

Q10. A) Explain briefly about how file access is performed in C using the structure declaration 'FILE' explain the fopen, fclose, putc and getc functions that are used in conjunction for the different operations that are performed on files.

OR

B) Explain the use of the Break and Continue Statements. Also answer Yes or No, if the concept of 'Continue' is similar to that of 'fall-through' in a Switch multi-way decision set-up, aid your answer with a suitable explanation as well. Make illustrative notes on the comparison between all the different decision-making statements in C, comparative code snippets are a must.



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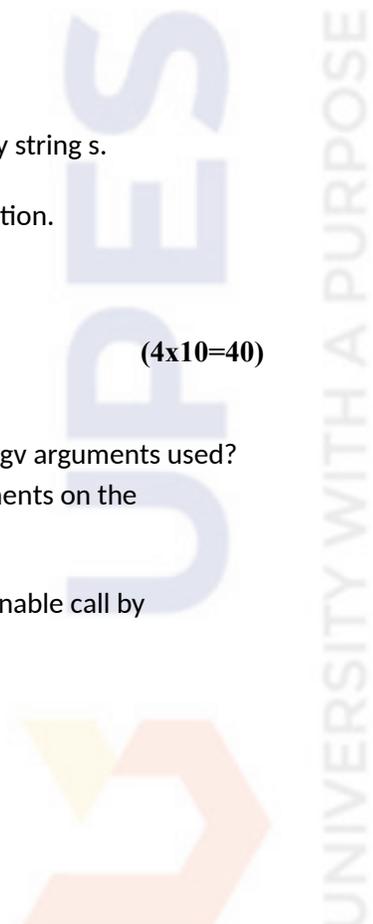
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- Q7. Write a program to swap two numbers using a function that uses pointers to enable call by reference in C.
- Q8. Write the meaning of the following:
- a) %6d
  - b) %f
  - c) %.2f
  - d) %6.2f
  - e) >>
  - f) !=
  - g) \?
  - h) \b
  - i) \"
  - j) \xhh



## Section C

(2x20=40)

Q9. A) Give an illustration of a common C++ program with:

(i) a class,

(ii) having private and public access specifiers and

(iii) two class-functions

(iv) also make two objects to showcase encapsulation to prove that “objects are instances of a class”.

B) What is a namespace and why is it so essential to fulfill the object-oriented nature of C++. Also explain the four-fold advantage of object-oriented programming, that of inheritance, polymorphism, encapsulation and abstraction.

Q10. A) Write and explain briefly about Structures and Unions with a supporting example. Also mention how you would handle the same in the case of using pointers to a structure. Also show an example of Nested Structures.

OR

B) Write a program in C to count digits, white spaces and the remaining characters for an input as three different categories using Switch multi-way decision. Also explain the concept of ‘fall-through’ through your program.

[Use ‘fall-through’ for all the cases of numbers to categorize all of them as digits]