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Question Paper Code:R2806

B.E./B.Tech. DEGREE EXAMINATION, APRIL / MAY 2025

Second Semester

Civil Engineering

R21UIT206- PROGRAMMING FUNDAMENTALS USING PYTHON

(Regulations R2021)

(Common to IT, CSD, CSE(AIML), CSE(SC) and CSE(CI) Engineering branches)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 2 = 20 Marks)

1. What are the key features of Python that makes it a high-level programming language? CO1- U
2. Write a program to check if the year entered by the user is a leap year or not. CO2-App
3. State the differences between python break and continue statement. CO1- U
4. Create a list of your favorite fruits and print each fruit using a for loop. CO2-App
5. What is a function? Mention the types of functions and its use. CO1- U
6. Create a Python function named calculate_multiply that calculates the multiplication of all numbers in a given list. CO2-App
7. List some built in modules in python. CO1- U
8. Describe the purpose of the strftime() method in the datetime module. CO1- U
9. What is the role of the try, except, and finally blocks in exception handling? Provide an example to illustrate their usage. CO1- U
10. Implement a simple Python script that creates two threads and prints "Thread 1" and "Thread 2" alternately. CO2-App

PART – B (5 x 16= 80 Marks)

11. (a) Explain in detail about the decision making constructs in Python with suitable examples. CO1- U (16)
- Or
- (b) Explain in detail about the operators in Python with suitable examples. CO1- U (16)

12. (a) (i) You have a list of strings representing student names. Write a program to sort the list alphabetically. CO2- App (8)
- (ii) You have a tuple of employee names and their corresponding years of service. Write a program to find and print the employee with the longest tenure. CO2- App (8)
- Or
- (b) (i) Create a program that checks if a given element exists in a tuple and returns its index. If not found, print a message indicating that the element is not in the tuple. CO2- App (8)
- (ii) Given two dictionaries representing the number of items in stock for different products, write a program to create a new dictionary with the total quantity of each product. CO2- App (8)
13. (a) (i) Write a Python function called `calculate_factorial` that takes an integer as input and returns the factorial of a given number using recursive function. CO2- App (8)
- (ii) Implement a function named `remove_duplicates` that takes a list as input and returns a new list with duplicate elements removed. CO2- App (8)
- Or
- (b) (i) Write a Python function called `calculate_discount` that takes the original price of an item and a discount percentage as parameters. The function should return the discounted price. CO2- App (8)
- (ii) Implement a Python function called `find_longest_word` that takes a list of words as a parameter and returns the longest word in the list. CO2- App (8)
14. (a) What is the CSV module in Python used for? Provide an example of how to write data to a CSV file. Explain the significance of the `csv.reader()` and `csv.writer()` objects in the CSV module. CO1- U (16)
- Or
- (b) Describe the purpose of the JSON module in Python. Provide an example of how to encode and decode JSON data. Explain the difference between `json.loads()` and `json.dumps()` in the JSON module. CO1- U (16)

15. (a) (i) Develop a script that validates email addresses stored in a file named "emails.txt." Use regular expressions to check if each email address follows the standard format. Print a message indicating whether each email is valid or not. CO2- App (8)
- (ii) Define a list of numbers and use the map() function with a lambda expression to square each number in the list. Print the resulting squared values CO2- App (8)
- Or
- (b) (i) Write a Python script that reads a text file named "input.txt" and counts the number of occurrences of each unique word. Save the results to a new file named "word_count.txt." CO2- App (8)
- (ii) Create a function that takes two numbers as input and performs division. Handle the Zero Division Error exception by printing a custom error message if the denominator is zero. CO2- App (8)

