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B.Tech. DEGREE EXAMINATION, JUNE 2024
Fourth Semester

18CSC207J – ADVANCED PROGRAMMING PRACTICE

(For the candidates admitted during the academic year 2018-2019 to 2021-2022)

Note:

- (i) **Part - A** should be answered in OMR sheet within first 40 minutes and OMR sheet should be handed over to hall invigilator at the end of 40th minute.
- (ii) **Part - B & Part - C** should be answered in answer booklet.

Time: 3 hours

Max. Marks: 100

PART – A (20 × 1 = 20 Marks)

Answer **ALL** Questions

1. Prime focus of the paradigm is on the data that is being operated and not on the functions.

(A) Procedure	(B) Function
(C) Declarative	(D) Object oriented
2. What is the output of the code snippet.


```
st = "APP CTS Test"
print(st[2:8])
```

(A) Error	(B) P CTS
(C) PP CTS T	(D) P CTS Te
3. Strings in python are mutable by nature and hence any character in the string can not be altered.

(A) S[1] = 'P'	(B) Ord (S[1])
(C) S[1] == 'P'	(D) S[1] > 'P'
4. What is the output of code snippet?


```
f=[int (x ** 0.5) for x in l if x ** 0.5 - int (x ** 0.5) == 0]
print(f)
l = [0, 8, 16, 10, 36, 44, 49, 83]
```

(A) [0, 8, 16, 10, 36, 44]	(B) [0, 4, 6, 7]
(C) [0, 8, 16, 36, 49]	(D) []
5. Which of the following is incorrect about first class functions in python?

(A) A function is an instance of the object type	(B) Functions can be stored in a variable
(C) Functions can't be stored in data structures such as hash tables	(D) Functions can be passed as a parameter to another function
6. Which of the following is the correct syntax for creating Radiobutton with caption 'C' in GUI tkinter?

(A) R1=Radiobutton (root, caption = 'C' variable = radio, value = 1)	(B) R1=Radiobutton (caption = 'C' variable = radio, value = 1)
(C) R1=Radiobutton (root, text = "C", variable = radio, value = 1)	(D) R1=Radiobutton (root, variable = radio, value = 1)
7. Geometry manager allows us to position a widget with absolute coordinates.

(A) place	(B) pack
(C) grid	(D) table

8. What will be the output of code snippet? 1 3 2 2

```
from functools import reduce
def do_sum (x1,x2):
    return x1+x2
print (reduce (do_sum, [1,2,3,4]))
```

(A) 13 (B) 12
(C) 11 (D) 10
9. Function programming paradigm which primarily focus on 1 2 3 3
(A) expressions and stateless (B) stateful and expression
(C) statements and expressions (D) stateful and statements
10. A function might modify a global variable or static variable and modify one of its arguments, raise an exception, write data to a file. What does this statement is refers. 1 3 3 3
(A) Closure (B) Side effects
(C) Lazy evaluation (D) Referential transparency
11. Which of the following is a valid syntax to clear the contents of entry widget? 1 2 3 3
(A) entry.delete (o, tk.END) (B) entry.delete (ALL = "");
(C) entry.delete (ALL = 0); (D) entry.delete (o, END)
12. Function involving reading file contents, using, global data, random numbers are referred to as 1 2 3 3
(A) First order functions (B) Higher order functions
(C) Impure functions (D) Closure functions
13. Which is the sqlite3 command to retrieve the second largest salary from the work table? 1 3 4 4
(A) conn.execute ("select max(sal) from work where worker_id not in (select max (sal) from work)") (B) conn.execute ("select max(sal) from work where worker_id in (select max (sal) from work)")
(C) conn.execute ("select longest (sal) from work where worker_id in (select largest (sal) from work)") (D) conn.execute ("select sal < max (sal) from work")
14. Choose the correct syntax from the following 1 1 4 4
(A) pyDatalog.createterms ("X,Y") (B) pyDatalog.create_terms ('X,Y')
(C) pyDatalog.terms ('X,Y') (D) pyDatalog.createterms ('X,Y')
15. Bind () needs for binding with socket 1 2 4 4
(A) IP address and port number (B) IP version and IP address
(C) Socket family and port number (D) Socket type and port number
16. What is the output of the code snippet 1 3 4 4

```
import SymPy as sym
sym.simplify ((x+x*y)/x)
```

(A) x+2 (B) x+1
(C) y+1 (D) y+2
17. Let $S = \{a,b,c\}$. The number of string S^* of length 2 such that no symbol is used more than once in a string is 1 4 5 4
(A) 3 (B) 6
(C) 9 (D) 12
18. What will be the value of 'a' variable for the statement? 1 3 5 5

```
C, a = s.accept ( )
```

(A) Server address (B) Host name
(C) Client address (D) IPv4 address

19. What is the way to determine if a given function is dependent type? 1 3 5 5
- (A) Result is independent of the argument (B) Result depends upon the usage in the program
- (C) Result depend on the value of its argument (D) Result depends on available resources
20. Choose the right syntax to display the marks of all students who have passed (marks ≥ 50). 1 3 5 5
- (A) `pyDatalog.create_terms('pass')`
`print (((mark[x] == Y) & pass(Y)): pass(X) <= (X > 50)))`
- (B) `pyDatalog.create_terms('pass': X > 50)`
`print (mark[x] & pass(Y))`
- (C) `pyDatalog.createterms('pass': X <= 50)`
`print ((mark[x]) & (pass[Y]))`
- (D) `pyDatalog.create_terms('pass')`
`pass(X) <= (X > 50) print ((mark[x] == Y) & pass(Y)))`

PART – B (5 × 4 = 20 Marks)
 Answer ANY FIVE Questions

Marks BL CO PO

21. How to ensure data security inside a code block. Illustrate with suitable example. 4 3 1 1
22. Find out the geometry managers for the following option and write the syntax. 4 3 2 2
- (i) A set of radio widgets and to place it next to each other in horizontal axis
- (ii) A button widget, which needs to be placed on a specify coordinates denoting the screen.
23. Given two trending topics and a bunch of tweets write a python code to count the number of tweets that contain each topic. 4 4 3 3
24. Write a python code to solve the given logic relation. 4 4 4 4
- (i) Lucy is a professor
- (ii) Danny is a professor
- (iii) James is a lecturer
- (iv) All professors are dean
- Write a query to retrieve all deans?
25. Write a python code to filter vowels from the sequence using higher order functions. 4 3 3 3
26. Demonstrate race condition and how to prevent it with suitable example. 4 3 4 4
27. Write a python code to implement the following using sympy. 4 3 5 5
- $(x + y) * 3 = x^3 + 3x^2y + 3xy^2 + y^3$

PART – C (5 × 12 = 60 Marks)
 Answer ALL Questions

Marks BL CO PO

28. a. Emma is playing a new mobile game that starts with consecutively numbered clouds. Some of them are thunder (1) and other are cumulus (0). She can jump on any cumulus cloud having number that is equal to the number of current cloud plus 1 or 2. She must avoid thunder clouds. Its always possible to with the game. Determine the minimum number of jumps to complete the game. Identify the suitable paradigm and code the game. 12 4 1 1
- Sample input = [0, 1, 0, 0, 0, 1, 0] output = 3.

(OR)

- b. Kristen is a contender for valedictorian of his high school. He wants to know how many students have secured higher aggregate than him in the exam. Write the code using `read ()` to accept inputs, `calculate totalscore ()` to compute aggregate and `highscore ()` method to identify the possible count. 12 4 1 1

Identify the suitable paradigm for the above scenario and write the code.

29. a. Write a code to implement the simple calculator with basic functions using necessary widget with proper event handling. 12 3 2 2

(OR)

- b. Write a python code to create employee table with field eid, name, dept, salary, date of join. Write a query to retrieve the following 12 3 2 2
- (i) Employee who got second highest salary
 - (ii) Print out the departments that exists
 - (iii) Print the count of employees who works in admin department
 - (iv) Print the employees detail whose salary is greater than the average salary of all employees

30. a. Write a short note on the following function paradigm terms. With examples 12 2 3 3
- (i) Lazy evaluation
 - (ii) Closure
 - (iii) Pure functions
 - (iv) Higher order function

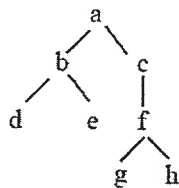
(OR)

- b. Write a python code to implements parallel programming to add and delete items from the queue with synchronization techniques. 12 3 3 3

31. a. Write a python code to implement a simple TCP/IP chat based socket application. 12 4 4 4

(OR)

- b. Write a code to implement the following using pyDatalog 12 4 4 4



For the above tree assume the set of facts of the form `father (name1, name2)` where name 1 is father of name2. Define predicate for brother (X,Y), cousin (X,Y), grandson (X,Y) and grandfather (X,Y).

Write the queries for the following brother (X,Y), cousin (X,Y), grandson (X,Y).

32. a. Write a code for the following 12 4 5 5
- (i) DFA for the language that accepts all and only strings that contain 001.
 - (ii) NFA for the language that accepts all strings end with 01.

Draw the transition diagram and table and the python code.

(OR)

- b. Write a python code to solve the following using sympy 12 4 5 5
- (i) Solve linear equation $x + 5y - 2 = 0$, $-3x + 6y - 15 = 0$.
 - (ii) Create two 3×3 matrix and perform addition and multiplication
 - (iii) Solve $(x^3 + x^2 - x - 1) / (x^2 + 2x + 1)$
 - (iv) Expand the form $(x + 4)^6$

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