COMMON PRE-BOARD EXAMINATION 2022-23

Subject: COMPUTER SCIENCE (083)

Maximum Marks: 70 **Time Allowed: 3 hours**

General Instructions:

1. This question paper contains five sections, Section A to E.
2. All questions are compulsory.
3. Section A have 18 questions carrying 01 mark each.
4. Section B has 07 Very Short Answer type questions carrying 02 marks each.
5. Section C has 05 Short Answer type questions carrying 03 marks each.
6. Section D has 03 Long Answer type questions carrying 05 marks each.
7. Section E has 02 questions carrying 04 marks each.
8. All programming questions are to be answered using Python Language only.

	SECTION A	
1.	State True or False "Python programs are executed by an interpreter"	1
2.	For slicing _____ brackets will be used in Python a) {} b) () c) [] d) All of the given	1
3.	Given the following dictionary fifa={'a':1, 'b':2, 'c':3, 'd':4, 'e':5 } How to remove all the items from the dictionary? a) fifa.remove() b) fifa.delete() b) fifa.clear() d) fifa.drop()	1
4.	Consider the given expression: 9 >10 and 17 <=17 and True Which of the following will be correct output if the given expression is evaluated a) True b) False c) None d) NULL	1
5.	Select the correct output of the code : s=(10,20, [30,40,50],60,70) s[2][1]=100 print(s) a) (10,20,100,60,70) b) (10,20,[30,100,50],60,70) b) (10,20,[100, 40, 50],60,70) e) Error	1
6.	Which of the following statement is used to close a file Object (_file) ? a) close(_file) b) fileclose(_file)	1

	c) file.close() d) _file.close	
7.	Which of the following values are ignored by count(*) in SQL a) duplicate values b) Null values c) date values d) character values	1
8.	Which of the following is a DML command ? a) CREATE b) ALTER c) INSERT d) COMMIT	1
9.	Which of the following statement(s) would give an error after executing the following code? a= 'Python' b= 'python' a==b a) True b) False c) Error d) None	1
10.	Fill in the blank. _____ clause is used to filter the row from the table a) Filter b) having c) where d) sort by	1
11.	Which of the following methods is not used with the cursor ? a) fetchone b) fetchmany c) fetchall d) fetchmultiple	1
12.	A table Employee contains 5 rows and 7 columns. What will be its cardinality and degree ? a) 5,7 b) 7,5 c) 5,5 d) 7,7	1
13.	Which switching technique follows the store and forward mechanism? a) Circuit b) Message c) Packet d) All of these	1
14.	Give an output for the following expression ? print (5 + 2 ** (2+2)/2) a) 8 b) 16 c) 13 d) 9	1
15.	Which of the following is not an aggregate function ? a) SUM() b) MAX() c) TOTAL() d) AVG()	1
16.	_____ is not a parameter used in the connect() function. a) Password b) user c) database d) mysql	1
	Q17 and 18 are ASSERTION AND REASONING based questions. Mark the correct choice as (a) Both A and R are true and R is the correct explanation for A (b) Both A and R are true and R is not the correct explanation for A (c) A is True but R is False (d) A is false but R is True	
17.	Assertion (A): Built in function are predefined in the language that are used directly. Reason (R) : print() and input () are built in functions	1

	Answer (B) is correct Explanation : The python built in function are defined as the functions whose functionality is pre-defined. The python interpreter has several functions that are always present for use. e.g print (), input(), sorted (), main() etc.	
18.	Assertion (A):- Text file store information in ASCII or Unicode characters. Reason (R): In text file, there is no delimiter for a line. Answer (C) is correct Explanation : Text file store information in ASCII or Unicode character . In text file, each line of text is terminated (determined with a special character knows as EOL character.	1
	SECTION B	2

19.	Shekar has written a Python program to add all the numbers of the list. His code is having errors. Rewrite the correct code and underline the corrections made
	
	`define sum(numbers):`
	`  total = 0`
	`  for x in numbers`
	`  total =+ x`
	`  returns total`
	`print(sum([4, 6, 3, 5, 6]))`
	
	Answer
	`def sum(numbers):`
	`  total = 0`
	`  for x in numbers:`
	`  total += x`
	`  return total`
	`print(sum([4, 6, 3, 5, 6]))`
		2

20.	Write two points of difference between Star topology and Ring topology Answer In star topology, the nodes are connected to the central hub or router. In-ring topology, every node is connected to its left and right side nodes. In star topology, the only hub is the failure point. In-ring topology, every node are failure point. The cost of star topology is high. The cost of ring topology is low. OR Write about (Two points) circuit switching and packet switching. Circuit switching is the method of switching which is used for establishing a dedicated communication path between the sender and the receiver Data is processed and transmitted at the source only Packet switching is the method of switching where no dedicated path is established from the source to the destination.	2

	Data is processed and transmitted, not only at the source but at each switching station.	

21.	1) Find and write the output of the following python code:
	
	`a=10`
	`def call():`
	`  global a`
	`  a=15`
	`  b=20`
	`  print(a)`
	`call()`
	
	Answer
	15
	
	2) Given is a Python string declaration:
	`mySubject = "Computer Science with Python"`
	Write the output of:
	`print(mySubject[-27:-10:2])`
	Answer
	optrSinew
		2

22.	Differentiate between the Primary key and Alternate key of a table with the help of an example.	2
23.	1)Write the full form of the following abbreviations: (i) MODEM (ii) VoIP 2) What is web site? Answer a) MODULATOR - DEMODULATOR b) Voice over Internet Protocol 2) A website is a collection of publicly accessible, interlinked Web pages that share a single domain name. Websites can be created and maintained by an individual, group, business or organization to serve a variety of purposes.	2

24.	Predict the output of the Python code given below:
	`def check(k, l=70):`
	`  if (k>l):`
	`  k-=l`
	`  else:`
	`  k+=l`
	
	`m=50`
	`n=20`
	`check (m,n)`
	`print (m,"@",n)`
	`check (m)`
	`print (n,"#",m)`
	Answer
	output
		2

	50 @ 20 20 # 50	
25	Write two commands each of DDL and DML commands in SQL Answer DDL command CREATE ,DROP ,ALTER ,TRUNCATE ,RENAME. DML INSERT,UPDATE,DELETE : OR Write any two aggregate functions in SQL with an appropriate example MAX(), MIN(),AVG(), SUM(),COUNT()	2
	SECTION C	
26.	Consider the following tables -	3

Table : Salesperson

CODE	SALARY	ITCODE
1001	60000	12
1002	70000	15
1004	55000	17

Table : Item

ITCODE	ITEMTYPE
12	STATIONARY
15	HOSIERY
17	BAKERY

1) What will be the output of the following statement?

```
SELECT * FROM Salesperson NATURAL JOIN ITEM;
```

Answer :

ITCODE	CODE	SALARY	ITEMTYPE
12	1001	60000	STATIONARY
15	1002	70000	HOSIERY
17	1004	55000	BAKERY

2) Write the output of the queries (i) to (iv) based on the table, SchoolBus

Table:SchoolBus

Rtno	area_covered	capacity	noofstudents	distance	Transporter	charges
1	Vasant Kunj	100	120	10	Shivam Travel	100000
2	Hauz Khas	80	80	10	Anand Travel	95000
3	Pitampura	60	55	30	Anand Travel	60000
4	Rohini	100	90	35	Shivam Travel	75000
5	Yamuna Vihar	50	60	45	Anand Travel	55000
6	Krishna Nagar	70	80	30	Yadav Co.	80000
7	Vasundhara	80	110	20	Yadav Co.	100000
8	Paschim Vihar	100	40	20	Speed Travels	55000
9	Saket	120	120	10	Speed Travels	100000
10	Janak Puri	100	100	20	Kisan Tours	95000

Give the output

(A)
```
SELECT SUM(DISTANCE) FROM SCHOOLBUS WHERE
TRANSPORTER ="Yadav Co." ;
```
(B)
```
SELECT MIN(NOOFSTUDENTS) FROM SCHOOLBUS ;
```
(C)
```
SELECT AVG(CHARGES) FROM SCHOOLBUS WHERE
TRANSPORTER="Anand Travels";
```
(D)
```
SELECT DISTINCT TRANSPORTER FROM SCHOOLBUS;
```

Answer

```
(i)50 (ii)40 (iii) 70000
(iv)
Shivam Travel
Anand Travel
Yadav Co. S
peed Travels
Kisan Tour
```

Write the command to display the structure of the table.

Answer :

DESC SCHOOLBUS;

27. Write a method in python to read lines from a text file INDIA.TXT, to find and display the occurrence of the word "India". For example: If the content of the file is

"India is the fastest growing economy. India is looking for more investments around the globe. The whole world is looking at India as a great market. Most of the Indians can foresee the heights that India is capable of reaching."

The output should be 4

OR

Write a method/function DISPLAYWORDS() in python to read lines from a text file STORY.TXT, and display those words, which are less than 4 characters.

Answer

```
def display():
```

3

```
f=open("INDIA.TXT","r")
k=f.read()
l=k.split()
print(l.count("India"))
f.close( )
```

OR

Ans:

```
def DISPLAYWORDS():
 c=0
 file=open("STORY.TXT","r")
 line = file.read()
 word = line.split()
 for w in word:
    if len(w)<4:
      print( w)
  file.close()
```

28. a) Write the outputs of the SQL queries (i) to (vi) based on the relation Schoolbus given below : 3

EMPLOYEES

EMPID	FIRSTNAME	LASTNAME	ADDRESS	CITY
010	George	Smith	83 First Street	Howard
105	Mary	Jones	842 Vine Ave.	Losantiville
152	Sam	Tones	33 Elm St.	Paris
215	Sarah	Ackerman	440 U.S. 110	Upton
244	Manila	Sengupta	24 Friends Street	New Delhi
300	Robert	Samuel	9 Fifth Cross	Washington
335	Henry	Williams	12 Moore Street	Boston
400	Rachel	Lee	121 Harrison St.	New York
441	Peter	Thompson	11 Red Road	Paris

EMPSALARY

EMPID	SALARY	BENEFITS	DESIGNATION
010	75000	15000	Manager
105	65000	15000	Manager
152	80000	25000	Director
215	75000	12500	Manager
244	50000	12000	Clerk
300	45000	10000	Clerk
335	40000	10000	Clerk
400	32000	7500	Salesman
441	28000	7500	Salesman

	a) SELECT FIRSTNAME, SALARY FROM EMPLOYEES, EMPSALARY WHERE DESIGNATION ='Salesman' AND EMPLOYEES.EMPID=EMPSALARY.EMPID; b) SELECT COUNT (DISTINCT DESIGNATION)FROM EMPSALARY; c) SELECT DESIGNATION, SUM(SALARY) FROM EMPSALARY GROUP BY DESIGNATION HAVING COUNT (*)>2; d) SELECT SUM (BENEFITS) FROM EMPLOYEES WHERE DESIGNATION = 'Clerk'; b) Write the commad to view all the databases (a) (i) FirstName Salary Rachel 32000 Peter 20000 (ii)Count(Distinct Designation) 4 (iii) Designation Count(*) Manager 3 Clerk 3 (iv) Sum (Benefits) 32000 (b) show databases;	

29.	Write definition of a Method FINDCITY(CITIES) to display all the city names from a list of CITIES, which are starting with alphabet A. For example: If the list CITIES contains ["AHMEDABAD","BOMBAY","NEW DELHI","AMRITSAR","COCHIN"]
	The following should get displayed
	AHEMDABAD
	AMRITSAR
	AGRA
	Answer
	def FINDCITY(CITIES):
	for i in CITIES:
	if i[0]= ='A':
	print(I, end= ' ')
		3

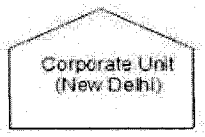
30.	Write a function in Python POP(Arr), where Arr is a stack implemented by a list of numbers. The function returns the value deleted from the stack.
	OR
	Write a function in Python PUSH(Arr), where Arr is a list of numbers. From this list push all numbers divisible by 5 into a stack implemented by using a list. Display the stack if it has at least one element, otherwise display appropriate error message.
	Answers
	A)
	def popStack(Arr) :
	if len(Arr)==0:
	# If stack is empty
	print("Underflow")
	else:
	print("no deleted: ",Arr.pop())
		3

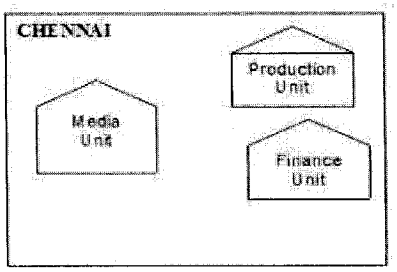
B)

```
def PUSH(Arr):
s=[]
for x in range(0,len(Arr)):
    if Arr[x]%5==0:
         s.append(Arr[x])
    if len(s)==0:
        print("Empty Stack")
    else:
        print(s)
```

SECTION D

31. "Middle East Fashion" is planning to expand their network in India, starting with two cities in India to provide infrastructure for distribution of their product. The company has planned to set up their main office units in Chennai at three locations and have named their offices as "Production Unit", "Finance Unit" and "Media Unit". The company has its corporate unit in New Delhi. A rough layout of the same is as follows: 5





Approximate distances between these Units is as follows:

From	To	Distance
Production	Finance Unit	70 Mtr
Production	Media Unit	15 KM
Production	Corporate Unit	2112 KM
Finance	Media Unit	15 KM

In continuation of the above, the company experts have planned to install the following number of computers in each of their office units:

Production Unit	150
Finance Unit	35
Media Unit	10
Corporate Unit	30

	a) Suggest the kind of network required (out of LAN, MAN, WAN) for connecting each of the following office units: 1. Production Unit and Media Unit 2. Production Unit and Finance Unit b) Which of the following communication media, will you suggest to be procured by the company for connecting their local offices in Chennai for very effective communication? Ethernet Cable, Optical Fiber, Telephone Cable. c) Which of the following devices will you suggest for connecting all the computers within each of their office units? (Switch/Hub or Modem or Telephone) d) Suggest a cable layout for connecting the company's local office units in Chennai. e) Suggest the most suitable place to house the server for the organization with suitable reason. **Answers** a) 1. Production Unit and Media Unit :MAN 2. Production Unit and Finance Unit:LAN b) Optical fiblre c) Swtich d) Star Topology e) Server should be placed in the Production Unit as it has maximum numberof computers.	

32.	1) Write the output of the code given below :
	`p=5`
	`def sum(q,r=2):`
	`  global p`
	`  p=r+q*2`
	`  print(p)`
	
	`a=20`
	`b=5`
	`sum(a,b)`
	`sum(r=5,q=10)`
	Answer
	45
	25
	
	2) Identify the missing statements in the below code segments
	`import _____ as con #1`
	`mycon=con.connect(host="localhost", user="root",`
	`password="",database="pyhtondb")`
	`_____ #2`
	`query="SELECT * FROM USERS"`
	`cursor.execute(query)`
	`data=cursor.fetchall()`
	`#print all rows`
	`_____ # 3`
	`  print(row)`
	`mycon.close()`
		2+3

	Answer 1. myslq.connector 2. cursor=mycon.cursor() 3. for row in data:	

33.	What is Delimiters in CSV files? Write a function display () in python to display all the students who have got a distinction(scored percentage more than or equal to 75) from a csv file "stud.csv", assuming the csv file is containing the following fields: roll,name,percentage
	OR
	Write a Program in Python that defines and calls the following user defined functions:
	(i) add() - To accept and add data of EMPLOYEE to a CSV file 'emp.csv'. Each record consists of a list with field elements as empid, ename and esalary to store employee id, employee name and employee salary respectively.
	(ii) (ii) search()- To display the records of the employee whose salary is more than 10000.
	Answer
	Delimiter specifies the character used to separate each field. The default is the comma (',').However, CSV files can use delimiters other than a comma. Few popular ones are | and \t.
	`def display():`
	`with open("stud.csv", "r") as csvfile:`
	`csvreader = csv.reader(csvfile)`
	`for rows in csvreader:`
	`if rows[2]>=75:`
	`print(rows)`
	OR
	`def display():`
	`with open("worker.csv", "r") as csvfile:`
	`csvreader = csv.reader(csvfile)`
	`for rows in csvreader:`
	`if rows[2]<3000:`
	`print("workder id=",rows[0])`
	`print("name=",rows[1])`
	OR
	(i)`def add():`
	`with open("emp.csv", "a", newline='') as csv:`
	`csv_writer=csv.writer(csv)`
	`r=int(input("enter empid.csv :"))`
	`n=input("enter name :")`
	`m=int(input("enter salary :"))`
	`rec=[r,n,m]`
	`csv_writer.writerow(rec)`
	(ii)`def search():`
	`with open("emp.csv", "r") as csvfile:`
	`csvreader = csv.reader(csvfile)`
	`for rows in csvreader:`
	`if rows[2]>10000:`
	`print(rows)`
		5

SECTION E

34. Observe the following table and answer the question (a) to (e) (Any 04) — 4

VisitorID	VisitorName	ContactNumber
V001	ANAND	9898989898
V002	AMIT	9797979797
V003	SHYAM	9696969696
V004	MOHAN	9595959595

a) Write the name of most appropriate columns which can be considered as Candidate keys?
b) Out of selected candidate keys, which one will be the best to choose as Primary Key?
c) What is the degree and cardinality of the table?
d) Insert the following data into the attributes VisitorID, VisitorName and ContactNumber respectively in the given table VISITOR
VisitorID = "V004", VisitorName= "VISHESH" and ContactNumber= 9907607474

OR (Option for part d ONLY)

Remove the table VISITOR from the database HOTEL.

Answer

```
(a)VIsitorID and ContactNumber
(b) VisitorID
(c) Degree= 3 Cardinality=4
(d) insert into VISITOR values ("V004","VISHESH",9907607474)
(b) DROP TABLE VISITOR;
```

35. Amritya Seth is a programmer, who has recently been given a task to write a python code to perform the following binary file operations with the help of two user defined functions/modules: — 4

a. AddStudents() to create a binary file called STUDENT.DAT containing student information - roll number,name and marks (out of 100) of each student.
b. GetStudents() to display the name and percentage of those students who have a percentage greater than 75.

In case there is no student having percentage > 75 the function displays an appropriate message. The function should also display the average percent.He has succeeded in writing partial code and has missed out certain statements, so he has left certain queries in comment lines.
You as an expert of Python have to provide the missing statements and other related queries based on the following code of Amritya.

Answer any four questions (out of five) from the below mentioned questions.

```
import pickle
def AddStudents():
    _______ #1 statement to open the binary file to write data
 while True:
  Rno = int(input("Rno :"))
  Name = input("Name : ")
  Percent = float(input("Percent :"))
  L = [Rno, Name, Percent]
  _________#2 statement to write the list L into the file
  Choice = input("enter more (y/n): ")
  if Choice in "nN":
   break
 F.close()

def GetStudents():
 Total=0
 Countrec=0
 Countabove75=0
 with open("STUDENT.DAT","rb") as F:
  while True:
    try:
          ___________ #3 statement to read from the file

   Countrec+=1
   Total+=R[2]
   if R[2] > 75:
      print(R[1], " has percent = ",R[2])
      Countabove75+=1
 except:
      break

 if Countabove75==0:
      print("There is no student who has percentage
      more than 75")
 average=Total/Countrec
 print("average percent of class = ",average)

AddStudents()
GetStudents()
```

i. Which of the following commands is used to open the file "STUDENT.DAT" for writing only in binary format? (marked as #1 in the Python code)

a. `F= open("STUDENT.DAT",'wb')` b. `F= open("STUDENT.DAT",'w')`
c. `F= open("STUDENT.DAT",'wb+')` d. `F= open("STUDENT.DAT",'w+')`

ii. Which of the following commands is used to write the list L into the binary file, STUDENT.DAT? (marked as #2 in the Python code)

a. `pickle.write(L,f)` b. `pickle.write(f, L)`
c. `pickle.dump(L,F)` d. `f=pickle.dump(L)`

	iii. Which of the following commands is used to read each record from the binary file STUDENT.DAT? (marked as #3 in the Python code) a. `R = pickle.load(F)` b. `pickle.read(r,f)` c. `r= pickle.read(f)` d. `pickle.load(r,f)` iv. Which of the following statement(s) are correct regarding the file access modes? a. 'r+' opens a file for both reading and writing. File object points to its beginning. b. 'w+' opens a file for both writing and reading. Adds at the end of the existing file if it exists and creates a new one if it does not exist. c. 'wb' opens a file for reading and writing in binary format. Overwrites the file if it exists and creates a new one if it does not exist. d. 'a' opens a file for appending. The file pointer is at the start of the file if the file exists. v. Which of the following statements correctly explain the function of seek() method? a. tells the current position within the file. b. determines if you can move the file position or not. c. indicates that the next read or write occurs from that position in a file. d. moves the current file position to a given specified position Answer a. ii. c. iii. a. iv. a v. d	