VARANASI PUBLIC SCHOOL

BANGALIPUR, RAJATALAB, VARANASI

Pre Board - I Examination (2022-23)

CLASS- XII

COMPUTER SCIENCE WITH PYTHON

Max. 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 has 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.

Q.No.	SECTION - A	Marks
1	Which of these in not a core data type? a. Lists b. Dictionary c. Tuples d. Class	1
2	Given a function that does not return any value, What value is thrown by default when executed in shell? a. int b. boolean c. void d. None	1
3	Following set of commands are executed in shell, what will be the output? >>>str="hello" >>>str[:2] >>> a. he b. lo c. olleh d. hello	1
4	What data type is the object below? L = [1, 23, 'hello', 1]. a. list b. dictionary c. array d. tuple	1
5	In order to store values in terms of key and value we use what core data type. a. list b. dictionary c. array d. tuple	1
6	What is the output of the following? x = ['ab', 'cd'] for i in x: i.upper() print(x) a. ['ab', 'cd'] b. ['AB', 'CD'] c. [None, None] d. none of the mentioned	1
7	What is the output when following statement is executed? >>>"a"+"bc" a. a b. bc c. bca d. abc	1

8	What arithmetic operators cannot be used with strings? a. + b. * c. – d. All of the mentioned	1
9	What is the output of the following? print("xyyzxyzxzxyy".count('yy')) a. 2 b. 0 c. error d. none of the mentioned	1
10	Process of removing errors called a. Error Free b. Debug c. Syntax Error d. Exception	1
11	Which of the following commands will create a list? a. list1 = list() b. list1 = [] c. list1 = list([1, 2, 3]) d. all of the mentioned	1
12	The statement in SQL which allows to change the definition of a table is a. Alter b. Update c. Create d. select	1
13	Which of the following is the use of function in python? a. Functions are reusable pieces of programs b. Functions don't provide better modularity for your application c. you can't also create your own functions d. All of the mentioned	1
14	DNS is the abbreviation of a. Dynamic Name System b. Dynamic Network System c. Domain Name System d. Domain Network Service	1
15	What is the output of below program? def cube(x): return x * x * x x = cube(3) print x a. 9 b. 3 c. 81 d. 27	1
16	To open a file c:\scores.txt for reading, we use a) infile = open("c:\scores.txt", "r") b) infile = open("c:\\scores.txt", "r") c) infile = open(file = "c:\scores.txt", "r") d) infile = open(file = "c:\\scores.txt", "r")	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):- Process of inserting an element in stack is called Push. Reasoning (R):- In a stack, if a user tries to remove an element from empty stack it is called overflow. Answer : C	1

18	Assertion (A):- Database commands are not case sensitive. Reasoning (R):- While creating database in MYSQL, we use commands to perform some fundamental tasks. The MYSQL makes no difference whether you type the commands in lowercase or upper case while creating databases. Answer : A	1
	SECTION – B	

19	Rewrite the following code after removing the syntactical errors (if any). Underline each correction.
	`def chksum:`
	`  x= input("Enter a number")`
	`  if (x%2 = 0):`
	`  for i range(2*x):`
	`  print i`
	`  loop else:`
	`  print "#"`
	Answer :-
	def chksum():
	x= input("Enter a number")
	if (x%2 == 0):
	for i in range(2*x):
	print i
	else:
	print "#"
	(½ mark for each correction)
	(1 mark to be given if only the errors are identified)
		2

20	Mention one advantage and one disadvantage of optical fiber cable in context of transmission media. Answer : - Advantage: - It is **flexible, bends easily and resists most corrosive elements that attack copper cable**. The raw materials for glass are plentiful, unlike copper. This means glass can be made more cheaply than copper. Disadvantage: -The optical fibers are difficult to splice, and there are loss of the light in the fiber due to scattering. Or What is network switching? Write any two types of network switching. Answer:- Switching in IT and computer networking is **the transfer of data packets, or blocks of data, through a network switch**. Switches transfer data from source ports on devices such as computers to destination ports on devices such as routers. There are two types of switching: **circuit switching and packet switching**.	2

21	(a) Given is a Python string declaration: Mystring="@@ILoveToProgramInPython@@" Write the output of: print(Mystring [2:18]) Answer:- ILoveToProgramin (b) Write the output of the code given below: D = {"ID": "E001", "Name": "Rajiv Singh"} D['Age'] = 25 D['Address'] = "Delhi" print(D.items( )) Answer:- ('ID','E001')(('Name',' Rajiv Singh') ('Age',25) ('Address',' Delhi')	1 1
22	What is the role of UNIQUE constraint? How is PRIMARY KEY constraint different from UNIQUE constraint? Answer:- Role of UNIQUE constraint- The UNIQUE constraint **ensures that all values in a column are different**. Both the UNIQUE and PRIMARY KEY constraints provide a guarantee for uniqueness for a column or set of columns. The difference between a UNIQUE constraint and a Primary Key is that **per table you may only have one Primary Key but you may define more than one UNIQUE constraints**. Primary Key constraints are not nullable. UNIQUE constraints may be nullable.	2
23	(a) Write the full forms of the following: (i) POP - Post Office Protocol (ii) GPS - Global Positioning System (b) What is HTTP? - Hypertext Transfer Protocol	1 1

24	Predict the output of the Python code given below:
	x=1
	def fun1( ):
	  x=3
	  x=x+1
	  print(x)
	def fun2( ):
	  global x
	  x=x+2
	  print(x)
	fun1( )
	fun2( )
	Answer:-
	4
	3
	OR
		2

Predict the output of the Python code given below:

```
string1 = input ("Enter a string : -")
print ("The", string1, "in reverse order is:")
length = len(string1)
for a in range(-1, (-length-1), -1 ):
        print (string1[a])
```

Answer:-

```
Enter a string : -"Python"
The "Python" in reverse order is:
"
n
o
h
t
y
P
"
```

25 Differentiate between LOWER( ) and UPPER( ) functions in SQL with appropriate example. 2

Answer:-

It takes a string input value and converts the characters to uppercase versions of each character. In short, it capitalises a string value. **The SQL LOWER function converts a string to lowercase**. It's the opposite of the UPPER function.

OR

Categorize the following commands as DDL, DML & TCL:

INSERT (DML), CREATE (DDL), COMMIT(TCL)

SECTION – C

26 (a) Consider the following tables – DEPT and WORKER: 1+2

Table: DEPT

DCODE	DEPARTMENT	CITY
D01	MEDIA	DELHI
D02	MARKETING	DELHI
D03	INFRASTRUCTURE	MUMBAI
D04	FINANCE	KOLKATA
D05	HUMAN RESOURCE	MUMBAI

Table: WORKER

WNO	NAME	DOJ	GENDER	DCODE
1001	Anil Jha	2013-09-12	Male	D01
1002	Rakesh Jain	2011-10-23	Male	D02

1003	Ramesh Sahu	2014-02-20	Male	D03
1004	Anamika	2012-08-15	Female	D04
1005	Ambar	2008-12-29	Female	D05

What will be the output of the following statement?
SELECT * FROM DEPT NATURAL JOIN WORKER;

Answer:-

WNO	NAME	DOJ	GENDER	DCODE	DEPARTMENT	CITY
1001	Anil Jha	2013-09-12	Male	D01	MEDIA	DELHI
1002	Rakesh Jain	2011-10-23	Male	D02	MARKETING	DELHI
1003	Ramesh Sahu	2014-02-20	Male	D03	INFRASTRUCTURE	MUMBAI
1004	Anamika	2012-08-15	Female	D04	FINANCE	KOLKATA
1005	Ambar	2008-12-29	Female	D05	HUMAN RESOURCE	MUMBAI

(b) Write the output of the queries (i) to (iv) based on the table, COURSE given below:

Table: COURSE

CID	CNAME	FEES	STARTDATE	TID
C101	BBA	55000	2021-06-14	101
C102	BCA	60000	2020-06-15	102
C103	B PHARMA	80000	2022-06-16	103
C104	MBA	75000	2022-06-19	101
C105	MCA	80000	2021-06-18	NULL
C106	M PHARMA	95000	2023-06-17	103

(i) SELECT DISTINCT TID FROM COURSE;

TID
101
102
103
NULL

(ii) SELECT TID, COUNT(*), MIN(FEES) FROM COURSE GROUP BY TID HAVING COUNT(TID)>1;

TID	COUNT(*)	MIN(FEES)
101	2	55000

(iii) SELECT CNAME FROM COURSE WHERE FEES>75000 ORDER BY CNAME;

CNAME
B PHARMA
MCA
M PHARMA

	(iv) SELECT AVG(FEES) FROM COURSE WHERE FEES BETWEEN 75000 AND 95000; Answer:-82500	

27	Write a method in python to read lines from a text file MYNOTES.TXT and display those lines, which are starting with an alphabet 'K'.
	Answer:-
	`def display():`
	`  file=open('MYNOTES.TXT','r')`
	`  line=file.readline()`
	`  while line:`
	`  if line[0]=='K' :`
	`  print line`
	`  line=file.readline()`
	`  file.close()`
	Or
	Write a method in python to read lines from a text file INDIA.TXT to find and display the occurrence of the word "India".
	----------INDIA.TXT----------
	"India is the fastest growing economy. India is looking for more investment around the globe. The whole world looking at India as a great market. Most of the Indians can foresee the heights that India is capable of reaching."
	Answer:-
	`def display1():`
	`  count = 0`
	`  file = open("INDIA.TXT","r")`
	`  for LINE in file:`
	`  Words = LINE.split()`
	`  for W in Words:`
	`  if W == "India":`
	`  count = count + 1`
	`  print (count)`
	`  file.close()`
		3

28

*Write a output for SQL queries (i) to (iii), which are based on the table : **STUDENT** given below :*

Table : **STUDENT**

RollNo	Name	Class	DOB	Gender	City	Marks
1	Nanda	X	06-06-1995	M	Agra	551
2	Saurabh	XII	07-05-1993	M	Mumbai	462
3	Sanal	XI	06-05-1994	F	Delhi	400
4	Trisla	XII	08-08-1995	F	Mumbai	450
5	Stort	XII	08-10-1995	M	Delhi	369
6	Marisla	XI	12-12-1994	F	Dubai	250
7	Neha	X	08-12-1995	F	Moscow	377
8	Nishant	X	12-06-1995	M	Moscow	489

(i) SELECT COUNT(*), CITY FROM STUDENT GROUP BY CITY HAVING COUNT(*)>1;

Count(*)	City
2	Mumbai
2	Delhi
2	Mascow

(ii) SELECT MAX(DOB), MIN(DOB) FROM STUDENT;

MAX(DOB)	MIN(DOB)
08-12-1995	07-05-1993

(iii) SELECT NAME, GENDER FROM STUDENT WHERE CITY = “Delhi”;

NAME	GENDER
Sanal	F
Stort	M

3

29

Write a program to input two lists and display the maximum element from the elements of both the lists combined, along with its index in its list.

Answer:-

```
lst1=eval(input("Enter List 1"))
lst2=eval(input("Enter List 2"))
mx1=max(lst1)
mx2=max(lst2)
```

3

```
if mx1>=mx2:
    print(mx1,"the maximum value in is in the list 1 at index ",lst1.index(mx1))
else:
    print(mx2,"the maximum value in is in the list 2 at index ",lst2.index(mx2
```

Or

Write a program to find the second largest number of a list of numbers.

Answer:-

```
def secondMax(list1):
    list1.sort() #sort ascending order
    return list1[len(list1)-2] # second last element is second largest
list1 = [12,322,31,43,54,76,87]
print(secondMax(list1))
```

30 | Write a function in PUSH(Lst) Python, where Lst is a set 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 atleast one element, otherwise display appropriate error message. | 3

Answer:

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

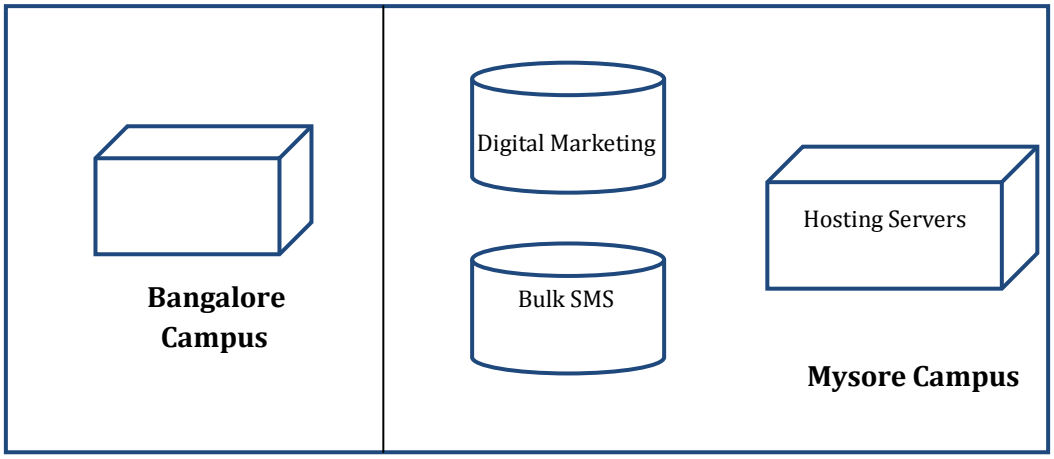
Or

	Write a function in Python POP(Stk), where Stk is a stack implemented by a list of numbers. If no element in the stack, then display a message "Stack Underflow !", otherwise the function returns the last element detected from the stack.
	Answer:-
	`SIZE = 10`
	`S = [0]*(SIZE+1) #to initialize the list`
	`top = 0`
	
	`def is_empty():`
	`if top==0:`
	`  return True`
	`return False`
	
	`def push(x):`
	`global top`
	`top = top+1`
	`if top>SIZE:`
	`  print("Stackoverflow")`
	`else:`
	`  S[top] = x`
	
	`def pop():`
	`global top`
	`if is_empty():`
	`  print("Stackunderflow")`
	`else:`
	`  top = top-1`
	`  return S[top+1]`
	
	`if __name__ == '__main__':`
	`pop()`
	`push(10)`
	`push(20)`
	`push(30)`
	`push(40)`
	`push(50)`
	`push(60)`
	`push(70)`
	`push(80)`
	`push(90)`
	`push(100)`
	`push(110)`
	
	`print(S[1:SIZE+1])`	

	SECTION – D	
31	Pratush Infotech, an Bangalore based IT training company, is planning to set up training centers in various cities in next 5 years. Their first campus is coming up in Mysore district. At Mysore campus, they are planning to have 3 different blocks for Digital Marketing, Bulk SMS and Hosting Servers. Each block has number of computers, which are required to be connected in a network for communication, data and resource sharing. As a network consultant of this company, you have to suggest the best network related solutions for them for	5

issues/problems raised in question nos. (i) to (v), keeping in mind the distances between various blocks/locations and other given parameters.

Shortest distances between various locations in meters :



Distance between various blocks/locations:

Block	Distance
Digital Marketing to Bulk SMS	65 Meter
Digital Marketing to Hosting Servers	85 Meter
Bulk SMS to Hosting Servers	110 Meter
Mysore Campus to Bangalore Campus	127 KM

Number of computers installed at various locations are as follows:

Block	No of Computers
Digital Marketing	45
Bulk SMS	35
Hosting Servers	95

i) Suggest the most appropriate block/location to house the SERVER in the Mysore campus (out of the 3 blocks) to get the best and effective connectivity. Justify your answer.

Answer:-

Ans: Hosting Servers block is the most appropriate to house the server as it has the maximum number of computers.

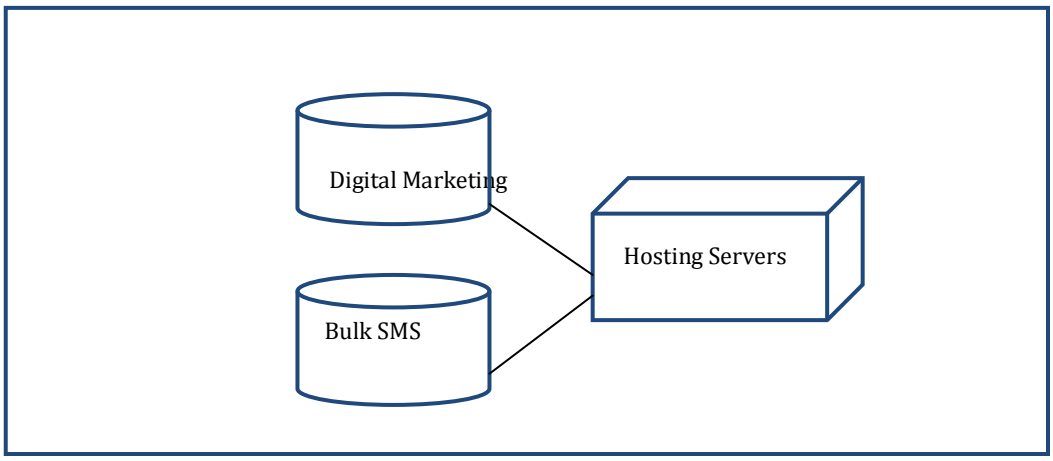
ii) Suggest a device/software to be installed in the Mysore Campus to take care of data security.

Answer:-**Firewall**

iii) Suggest the best wired medium and draw the cable layout (Block to Block) to economically connect various blocks within the Mysore Campus.

Answer:-**Ethernet Cable**

Layout:



iv) Suggest the placement of the following devices with appropriate reasons:

a. Switch / Hub -

Switch/hub will be placed in all blocks to have connectivity within the block.

b. Repeater

Repeater is not required between the blocks as the distances are less than 100 mts.

e) Suggest a protocol that shall be needed to provide Video Conferencing solution between Mysore Campus and Bangalore Campus.

Protocol: VoIP

32

(a) Write the output of the code given below: 2+3

```
def Display(str):
    m=""
    for i in range(0,len(str)):
        if(str[i].isupper()):
            m=m+str[i].lower()
        elif str[i].islower():
            m=m+str[i].upper()
        else:
            if i%2==0:
                m=m+str[i-1]
            else:
                m=m+"#"
    print(m)
Display('Welcome!@Python')
```

Answer : wELCOME#!pYTHON

(b) The code given below inserts the following record in the table Employee:

EmpNo – integer
EmpName – string
Post – integer
Salary – integer

Note the following to establish connectivity between Python and MYSQL:

Username is MYPC
Password is MYLOGIN
The table exists in a MYSQL database named Employee.
The details (Employee No, Employee Name, Post and Salary) are to be accepted from the user.

Write the following missing statements to complete the code:
Statement 1 – to form the cursor object
Statement 2 – to execute the command that inserts the record in the table Employee.
Statement 3- to add the record permanently in the database

```
import mysql.connector as mysql

def sql_data():

con1=mysql.connect(host="localhost",user="MYPC", password="MYLOGIN",

database="Employee")

mycursor=_____                                    #Statement 1

Empno=int(input("Enter Employee Number :: "))

Empname=input("Enter Employee name :: ")

Post=int(input("Enter Post :: "))

Salary=int(input("Enter Salary :: "))

querry="insert into Employee

values({},'{}',{},{})".format(Empno,Empname,post,salary)

_____                                             #Statement 2

_____                                             # Statement 3

print("Data Added successfully")
```

Answer: -

Statement 1:

```
con1.cursor()
```

Statement 2:

```
mycursor.execute("insert into employee values(Empno,

Empname, Post, Salary)
```

Statement 3:

```
mycursor.fetchall()
```

33	What are CSV File Format and its advantage for permanent storage?
	
	Write a Program in Python that defines and calls the following user defined functions:
	(i) ADD() – To accept and add data of an student to a CSV file 'Sudent_record.csv'. Each record consists of a list with field elements as stdid, name and mobile to store student id, student name and student mobile respectively.
	(ii) COUNTR() – To count the number of records present in the CSV file named 'Student_record.csv'.
	
	Answer:- A CSV (comma-separated values) file is a text file that has a specific format which allows data to be saved in a table structured format.
	Advantage of a csv file:
	1. It is human readable – can be opened in Excel and Notepad applications
	2. It is just like text file
	
	Program:
	`import csv`
	`def ADD():`
	`fout=open("record.csv","a",newline="\n")`
	`wr=csv.writer(fout)`
	`empid=int(input("Enter Employee id :: "))`
	`name=input("Enter name :: ")`
	`mobile=int(input("Enter mobile number :: "))`
	`lst=[empid,name,mobile] ---------1/2 mark`
	`wr.writerow(lst) ---------1/2 mark`
	`fout.close()`
	`def COUNTR():`
	`fin=open("record.csv","r",newline="\n")`
	`data=csv.reader(fin)`
	`d=list(data)`
	`print(len(d))`
	`fin.close()`
	`ADD()`
	`COUNTR()`
	
	OR
		5

Write the difference between a binary file and a csv file.

Write a Program in Python that defines and calls the following user defined functions:
(i) add() – To accept and add data of an employee to a CSV file 'sales.csv'. Each record consists of a list with field elements as sid, pname and pprice to store product id, product name and product price respectively.
(ii) search()- To display the records of the product whose price is more than 10000.

Answer:

A text file consists of human readable characters, which can be opened by any text editor. On the other hand, binary files are made up of non-human readable characters and symbols, which require specific programs to access its contents.

```
import csv
def add():
    fout=open("sles.csv","a",newline='\n')
    wr=csv.writer(fout)
    sid=int(input("Enter Sales Id :: "))
    pname=input("Enter Product name :: ")
    pprice=int(input("Enter Product price :: "))
    FD=[sid,pname,pprice]
    wr.writerow(FD)
    fout.close()
def search():
    fin=open("furdata.csv","r",newline='\n')
    data=csv.reader(fin)
    found=False
    print("The Details are")
    for i in data:
        if int(i[2])>10000:
            found=True
            print(i[0],i[1],i[2])
    if found==False:
        print("Record not found")
    fin.close()
add()
print("Now displaying")
search()
```

	SECTION – E	
34	Write SQL Commands for the following (a) to (e) [any four] based on the relation Teacher given below: (a) To show all information about the teacher of History department. (b) To list the names of female teachers who are in Mathematics department. (c) To list the names of all teachers with their date of joining in ascending order. (d) To display teacher's name, salary, age for male teachers only. (e) To display name, bonus for each teacher where bonus is 10% of salary. Answer:- (a) SELECT * FROM Teacher WHERE Department= "History"; (b) SELECT Name FROM Teacher WHERE Department= "Mathematics" AND Gender= 'F'; (c) SELECT Name FROM Teacher ORDER BY Date_of_Join; (d) SELECT Name, Salary, Age FROM Teacher WHERE Gender='M'; (e) SELECT Name, Salary*0.1 AS Bonus FROM Teacher;	2+2

35	This is a binary file record.dat with employeeid, ename and salary. The file contains 10 records.
	He now has to update a record based on the employee id entered by the user and update the salary. The updated record is then to be written in the file temp.dat. The records which are not to be updated also have to be written to the file temp.dat. If the employee id is not found, an appropriate message should to be displayed.
	1. As a Python expert, help him to complete the following code based on the requirement given above:
	
	import _____ #Statement 1
	def update_data():
	rec={}
	fin=open("record.dat","rb")
	fout=open("_____") #Statement 2
	found=False
	eid=int(input("Enter employee id to update their salary :: "))
	while True:
	try:
		4

T_ID	Name	Age	Department	Date_of_Join	Salary	Gender
T01	Aman	34	Computer Science	10/01/2017	12000	M
T02	Suman	31	History	24/03/2008	20000	F
T03	Sandeep	32	Mathematics	12/12/2016	30000	M
T04	Moumita	35	History	01/07/2015	40000	F
T05	Raman	42	Mathematics	05/09/2007	25000	M
T06	Kaushik	50	History	27/06/2008	30000	M
T07	Shivam	44	Computer Science	25/02/2017	21000	M
T08	Chandana	33	Mathematics	31/07/2018	20000	F

```
rec=_____ #Statement 3
if rec["Employee id"]==eid:
found=True
rec["Salary"]=int(input("Enter new salary :: "))
pickle._____ #Statement 4
else:
pickle.dump(rec,fout)
except:
break
if found==True:
print("The salary of employee id ",eid," has been updated.")
else:
print("No employee with such id is not found")
fin.close()
fout.close()
```

(i) Which module should be imported in the program? (Statement 1)

(ii) Write the correct statement required to open a temporary file named temp.dat. (Statement 2)

(iii) Which statement should fill in Statement 3 to read the data from the binary file, record.dat and in Statement 4 to write the updated data in the file, temp.dat?

(i) Which module should be imported in the program? (Statement 1)
Ans: pickle

(ii)Write the correct statement required to open a temporary file named `temp.dat` for writing the updated data. (Statement 2)
Ans: fout=open('temp.dat', 'wb')

(iii) Which statement should Aman fill in Statement 3 to read the data from the binary file, `record.dat` and in Statement 4 to write the updated data in the file, `temp.dat`?

Ans: **Statement 3: pickle.load(fin)**

Ans: **Statement 4:** pickle.dump(rec,fout)