Series 3НКР3Б/С

SET~4

Roll No.

Code No. **90**

Candidates must write the Code on the title page of the answer-book.

NOTE :

*(i) Please check that this question paper contains **12** printed pages.*

(ii) Code number given on the right hand side of the question paper should be written on the title page of the answer-book by the candidate.

*(iii) Please check that this question paper contains **40** questions.*

(iv) Please write down the serial number of the question in the answer-book before attempting it.

(v) 15 minute time has been allotted to read this question paper. The question paper will be distributed at 10.15 a.m. From 10.15 a.m. to 10.30 a.m., the students will read the question paper only and will not write any answer on the answer-book during this period.

INFORMATICS PRACTICES (NEW)

Time allowed : 3 hours *Maximum Marks : 70*

General Instructions :

*(i) This question paper contains **two** parts — Part A and Part B. Each part is **compulsory**.*

(ii) Both Part A and Part B have choices.

*(iii) Part A has **two** sections :*

(a) Section I is short answer questions, to be answered in one word or one line.

*(b) Section II has **two** case study questions. Each case study has 5 case-based subparts. An examinee is to attempt any **4** out of the 5 subparts.*

(iv) Part B is Descriptive Paper.

(v) *Part B has **three** sections :*

(a) *Section I is short answer questions of **2** marks each in which **two** questions have internal options.*

(b) *Section II is long answer questions of **3** marks each in which **two** questions have internal options.*

(c) *Section III is very long answer questions of **5** marks each in which **one** question has internal option.*

PART A

SECTION I

*Attempt any **15** questions from questions **1** to **21**.*

1. You were not able to create the IP project, therefore you downloaded a project from the internet and submitted it to your teacher by your name. This wrong/unethical act is considered as _____ . *1*

(A) Copyright

(B) Hacking

(C) Plagiarism

(D) Trademark

2. Which Python package is used for 2D graphics ? *1*

(A) matplotlib.pyplot

(B) pyplot.lib

(C) matplotlib.py

(D) matplotlib.plt

3. Write the output of the following SQL command : *1*

select round(3456.885,–2);

(A) 3456.88

(B) 3456.89

(C) 3400

(D) 3500

4. What will be the output of the following program ? *1*

```
import pandas as pd
x=6
S1=pd.Series(x,index=[1,2,4,6,8,9])
print(S1)
```

(A)
```
1  6
2  6
4  6
6  6
8  6
9  6
dtype: int64
```

(B)
```
0  6
dtype: int64
```

(C)
```
1 2 4 6 8 9
6 6 6 6 6 6
dtype: int64
```

(D) None of the above

5. Which one of the following is an attribute of the series in Pandas to set the index label for the given object ? *1*

(A) label

(B) index

(C) loc

(D) All of the above

6. Using Python Matplotlib _____ can be used to display information as a series of data points. *1*

(A) line chart

(B) bar graph

(C) histogram

(D) None of the above

7. Which of the following topologies needs least cable length ? *1*

(A) Star

(B) Tree

(C) Bus

(D) None of the above

8. Out of the following, which crime(s) will come under cyber crime category ? *1*

(A) Identity theft

(B) Invasion of privacy

(C) Online harassment

(D) All of the above

9. An aggregate function performs a calculation on _____ and returns a single value. *1*

(A) single value

(B) multiple values

(C) no value

(D) None of the above

10. Which of the following is a web browser ? *1*

(A) Microsoft Windows

(B) Android

(C) Microsoft Edge

(D) Ubuntu

11. Which one of the following would arrange the rows in ascending order in SQL ? *1*

(A) SORT BY

(B) ALIGN BY

(C) GROUP BY

(D) ORDER BY

12. Technology not protected by copyright and available to everyone, is categorized as: *1*

(A) Proprietary

(B) Open Source

(C) Experimental

(D) Shareware

13. What will be the output of the Python program ? *1*

```
import pandas as pd
I=['Apple','Banana','Mango','Orange','Litchi']
df=pd.DataFrame(I,index=[1,2,3,4,5])
print(df.iloc[1:3])
```

14. Indian law to deal with cyber crime is : *1*

(A) Cyber Act (CA)

(B) Internet Act (IA)

(C) IT Act (ITA)

(D) WWW Act (WWWA)

15. A _____ is a collection of interconnected _____ designed with a goal in mind. *1*

(A) webpage, website

(B) web browser, webpage

(C) server, client

(D) website, webpage

16. In the _____ field of the e-mail, enter the recipients whose address you want to hide from other recipients. *1*

(A) Carbon Copy

(B) To

(C) Blind Carbon Copy

(D) All of the above

17. E-waste is harmful to the environment and human health if not properly treated or disposed of, therefore they must be handled with care. What are the health hazards which can be caused by E-waste ? *1*

(A) Lung cancer

(B) DNA damage

(C) Brain damage

(D) All of the above

18. The _____ command can be used to select an existing database in SQL. *1*

19. The SQL string function that returns the index of the first occurrence of substring is _____ . *1*

20. What is the type of network for long distance communication ? *1*

(A) LAN

(B) MAN

(C) WAN

(D) PAN

21. _____ helps to enhance the functionality of the web browsers. *1*

(A) Extension

(B) Plugin

(C) Add-on

(D) All of the above

SECTION II

*Both the case study-based questions (Q. Nos. **22** and **23**) are compulsory. Attempt any **four** subparts from each question. Each sub questions carries **1** mark.*

22. Consider the following DataFarme df and answer any ***four*** questions from (i) to (v) :

```
import pandas as pd
t={'rollno':[1,2,3,4,5,6],
   'Name':['Krishna','Pranshu','Gurusha','Arpit','Rani','Aurobindo'],
   'Age':[15,14,14,15,16,15],
   'marks':[70·4,60·9,80·3,87·5,67·8,86·0],
   'class':['11A','12B','11B','12B','12B','11B']
   }
df = pd.DataFrame(t,index=[10,20,30,40,50,60])
```

(i) Write down the command that will give the following output : *1*

```
rollno      2
Name        Pranshu
Age         14
Marks       60·9
Class       12B
Name: 20, dtype: object
```

(A) print(df.iloc[1])

(B) print(df.loc[1])

(C) print(df.LOC[1])

(D) print(df.iloc(1))

(ii) The teacher wants to know the highest marks secured by the students. Which statement would help her to get the correct answer ? *1*

(A) print(df[marks].max())

(B) print(df.max([marks]))

(C) print(df['marks'].max())

(D) print(df('marks').max)

(iii) Which of the following statement(s) will add new column 'fee' as third column with values [3200,3400,4500,3100,3200,4000] in DataFrame df ? *1*

(A) df.insert(loc=2,column='fee',value=[3200,3400,4500,3100,3200,4000])

(B) df.add(2,column='fee',[3200,3400,4500,3100,3200,4000])

(C) df.append(loc=2,'fee'=[3200,3400,4500,3100,3200,4000])

(D) df.insert(loc=2,'fee'=[3200,3400,4500,3100,3200,4000])

(iv) Which of the following commands is useds to remove the column 'Age' in the DataFrame df ? *1*

(A) df.drop('Age',axis=1,inplace=True)

(B) df.drop('Age',axis=0,inplace=True)

(C) df.drop['Age',axis=1,inplace=True]

(D) df.delete('Age',axis=1,inplace=True)

(v) Which of the following command would rename the column 'marks' to 'Term1' in the DataFrame df ? *1*

(A) df.rename(['marks','Term1'],inplace=True)

(B) df.rename({'marks':'Term1'},inplace=True)

(C) df.rename(columns={'marks':'Term1'},inplace=True)

(D) df.rename(['marks':'Term1'],inplace=True)

23. Consider the table HOTEL given below and write any four SQL commands :

Table : HOTEL

Hotel_Id	H_Name	Location	Room_type	Price	Star
H001	The Palace	Delhi	Deluxe	4500	5
H002	The Resort	Mumbai	Deluxe	8000	7
H003	Adobe Resort	Dubai	Villa	2750	7
H004	Victoria Hill	London	Duplex	10000	3
H005	The Bee	London	Villa	30000	7

(i) Display the details of all the Hotels situated in London. *1*

(ii) Display the details of all 'Deluxe' rooms with price more than 6000 in ascending order of Price. *1*

(iii) Display the Hotel names that end with "e". *1*

(iv) Count different types of rooms available in the Hotels. *1*

(v) Display the Hotel names in descending order. *1*

PART B

SECTION I

24. Write a program in Python to create the series of all the alphabets of "Happy" with default index. Print the first three alphabets. *2*

25. (a) Raunak wanted to display the list of employees who did not get commission. Therefore, he wrote the following query in SQL :

SELECT emp_name from emp where comm=NULL;

He did not get the correct answer. Identify the error and write the correct SQL statement. *2*

OR

(b) Can we use Where clause after Group By clause ? Name the clause which is used to restrict the number of records returned by the Group By clause. *2*

26. Discuss the purpose of count(*) function with the help of a suitable example. *2*

27. Consider the following two series 'A' and 'B' : *2*

A=pd.Series([2,4,6], index=[0,1,2])

B=pd.Series([1,3,5], index=[1,2,3])

(i) Write the statement to add both the series 'A' and 'B'.

(ii) Write the statement to multiply two series 'A' and 'B'.

28. Write the output (i and ii) for the following SQL commands : *2*

Table: F_INDIA

F_ID	Product	Price	Qty
F01	Sun Cream	678	10
F02	Beauty Cream	5400	15
F03	Face Glow Foundation	1704	20
F04	Gel Wax	520	10
F05	Hair Shampoo	800	25
F06	Beauty Cream	1200	32

(i) SELECT COUNT (Distinct product) FROM F_INDIA;

(ii) SELECT Product, Price FROM F_INDIA WHERE Product LIKE '%m';

29. (a) Find the output of the following SQL queries : *2*

(i) SELECT SUBSTR ("Innovation",3,4);

(ii) SELECT RIGHT ("Innovation",5);

OR

(b) Find the output of the following SQL queries : *2*

(i) SELECT INSTR ("COVID-19", "v");

(ii) SELECT MOD(5,2);

30. Consider the following DataFrame 'stu' :

	Admno	Firstname	Lastname	Age	Pretest	Posttest
0	1001	Amit	Sehgal	18	87	67
1	1002	Rohit	Malik	17	89	78
2	1003	Shyam	Bhatia	18	90	84
3	1004	Manan	Gupta	16	79	69
4	1005	Raman	Bajaj	18	92	70

Write the statements for the DataFrame "stu" : *2*

(i) Display the details of the students in the reverse order of their indexes.

(ii) Add a new row in the DataFrame "stu" with values (1006,Sujal,Sharma,17,87,89).

31. What do you understand by the term VoIP ? Give two examples of software/apps based on VoIP. *2*

32. Nowadays children are fond of playing computer games. What is the health hazard that can occur due to excessive use of computer/smart phone screens ? *2*

33. Expand URL. Explain URL with the help of an example. *2*

SECTION II

34. Create a series S1 with the values (2,3,1). *3*

Find the output of the following two statements considering the above created series :

(a) print(S1**3)

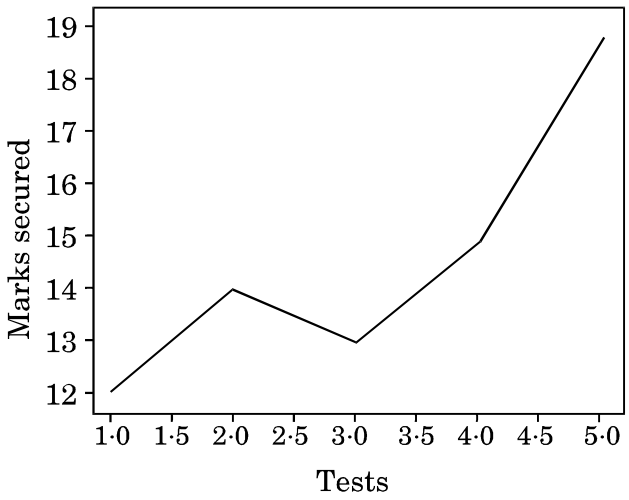
(b) print(S1*3)

35. (a) What is the difference between Copyright and Licenses ? *3*

OR

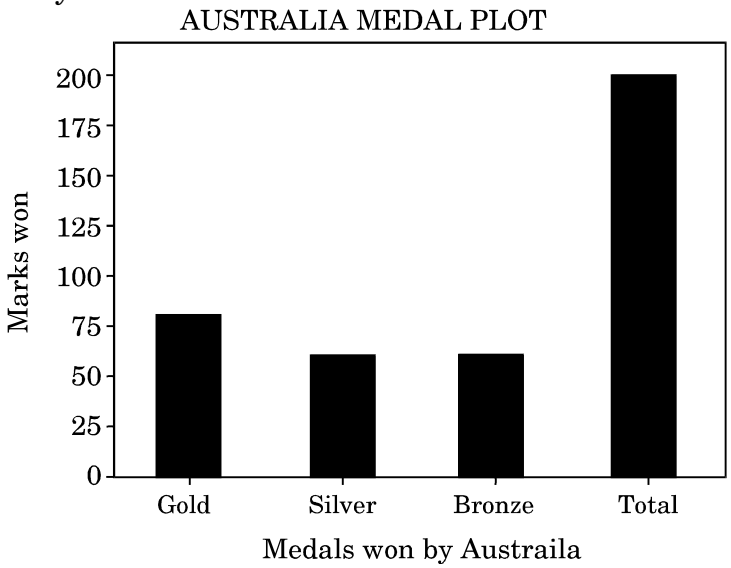
(b) What do you understand by Intellectual Property Rights ? Why is there a need to protect Intellectual Property Rights ? *3*

36. (a) Consider the following graph. Write the code to plot it. Also label the X and Y axis. *3*



OR

(b) Write code to draw the following bar graph representing the total number of medals won by Australia. *3*



Questions for visually impaired students only :

(a) What is Data Visualization ? Discuss briefly. Also mention the name of one of the most commonly used Python library for data visualization. *3*

OR

(b) Mention the purpose of the following functions briefly : *3*

(i) plot()

(ii) show()

(iii) savefig()

37. Consider the following table **School** :

Table : **School**

Admno	Name	Class	House	Percentage	Gender
20150001	Abhishek Kumar	10	Green	86	Male
20140212	Mohit Bhardwaj	11	Red	75	Male
20090234	Ramandeep Kaur	10	Yellow	84	Female
20130216	Mukesh Sharma	9	Red	91	Male
20190227	Rahil Arora	10	Blue	70	Male
20120200	Swapnil Bhatt	11	Red	64	Female

Write SQL queries for the following : *3*

(a) Display the total number of students in each House where number of students are more than 2.

(b) Display the average Percentage of girls and boys.

(c) Display the minimum Percentage secured by the students of Class 10.

SECTION III

38. (a) Write a program in Python Pandas to create the following DataFrame "population" from a Dictionary : *5*

	country	population	percent
IT	Italy	61	0·83
ES	Spain	46	0·63
GR	Greece	11	0·15
FR	France	65	0·88
PO	Portugal	10	0·14

(b) Perform the following operations on the DataFrame:

(i) Display the columns country and population.

(ii) Display all the rows where population is more than 40.

(iii) Delete the last 2 rows.

39. (a) Write the SQL functions which will perform the following operations : *5*

(i) To display the name of the weekday for your date of birth

(ii) To convert e-mail-id to lowercase

(iii) To count the number of characters in your name

(iv) To display the first character of your name

(v) To calculate the average marks secured by the class

OR

(b) Consider a table ITEM with the following data :

S.No.	Itemname	Type	Stockdate	Price	Discount
1	Eating Paradise	Dining Table	19-02-2002	11500·58	25
2	Royal Tiger	Sofa	22-02-2002	31000·67	30
3	Decent	Office Table	01-01-2002	25000·623	30
4	Pink Feather	Baby Cot	20-01-2001	7000·3	20
5	White Lotus	Double Bed	23-02-2002	NULL	25

Write SQL queries using SQL functions to perform the following operations : *5*

(i) Display the first 3 characters of the Itemname.

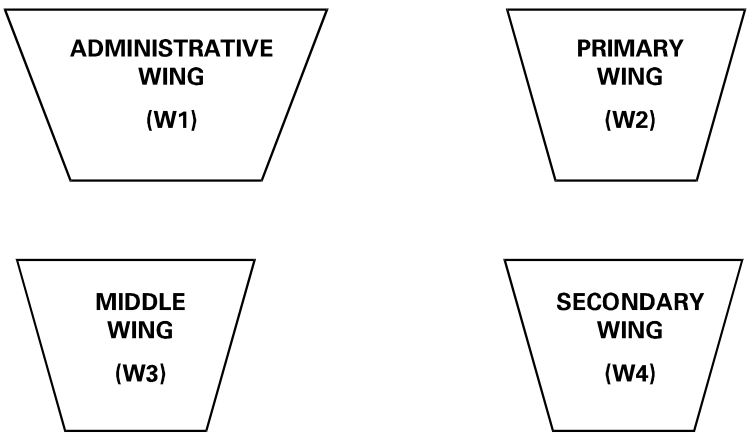
(ii) Display the month name from the Stockdate.

(iii) Display the total price of the whole stock.

(iv) Display the average Price of all the stocks.

(v) Display all the Price round off up to 2 decimal places.

40. ABC International School, Delhi has different wings as shown in the diagram :



Distance between the wings are as follows :

W3 to W1	70 m
W1 to W2	40 m
W2 to W4	15 m
W4 to W3	100 m
W3 to W2	120 m
W1 to W4	80 m

Number of computers in each of the wings :

W1	125
W2	40
W3	42
W4	60

Based on the above information, answer the following questions : *5*

(a) Suggest the most suitable cable layout for the above connections.

(b) In which wing would you place the server ? Explain the reason for your selection.

(c) Suggest the kind of network required (out of LAN, MAN, WAN) for connecting Administrative Wing and Middle Wing.

(d) Suggest the placement of the following devices with justification :

(i) Repeater

(ii) Switch/Hub

(e) There is one more branch of ABC International School in Mussoorie. The schools want to link ABC International School, Delhi with ABC International School, Mussoorie. Suggest the software(s) or app(s) to share the files and videos.

Questions for visually impaired students only :

With reference to computer networking, answer the following questions briefly : *5*

(a) What is the significance of a switch in a computer network ?

(b) Mention the name of any two network topologies.

(c) What is MODEM ?

(d) Explain Gateway briefly.

(e) Expand VoIP.