

SAMPLE QUESTION PAPER
CLASS XII (2023-24)
INFORMATICS PRACTICES (065)

TIME: 03 HOURS

M.M.: 70

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 02 questions carrying 04 marks each.
7. Section E has 03 questions carrying 05 marks each.
8. All programming questions are to be answered using Python Language only.

	SECTION A	
1.	A _____ is a device that connects the organisation's network with the outside world of the Internet. i. Hub ii. Modem iii. Gateway iv. Repeater	1
2.	When e-waste such as electronic circuit boards are burnt for disposal, the elements contained in them create a harmful chemical called _____ which causes skin diseases, allergies and an increased risk of lung cancer. i. Hydrogen ii. Beryllium iii. Chlorine iv. Oxygen	1
3.	Copyright, Patent and Trademark comes under: i. Intellectual Property Right ii. Individual Property Right iii. Industrial Property Right iv. None of the above	1
4.	Predict the output of the following query: SELECT MOD (9,0) ; i. 0 ii. NULL iii. NaN iv. 9	1



5.	Which of the following SQL functions does not belong to the Math functions category? i. POWER() ii. ROUND() iii. LENGTH() iv. MOD()	1
6.	_____ is not a FOSS tool. i. Libre Office ii. Mozilla Firefox iii. Google Chrome iv. Python	1
7.	CSV stands for: i. Column Separated Value ii. Class Separated Value iii. Comma Separated Value iv. None of the above	1
8.	Raj, a Database Administrator, needs to display the average pay of workers from those departments which have more than five employees. He is experiencing a problem while running the following query: SELECT DEPT, AVG(SAL) FROM EMP WHERE COUNT(*) > 5 GROUP BY DEPT; Which of the following is a correct query to perform the given task? i. SELECT DEPT, AVG(SAL) FROM EMP WHERE COUNT(*) > 5 GROUP BY DEPT; ii. SELECT DEPT, AVG(SAL) FROM EMP HAVING COUNT(*) > 5 GROUP BY DEPT; iii. SELECT DEPT, AVG(SAL) FROM EMP GROUP BY DEPT WHERE COUNT(*) > 5; iv. SELECT DEPT, AVG(SAL) FROM EMP GROUP BY DEPT HAVING COUNT(*) > 5;	1
9.	Predict the output of the following query: SELECT LCASE (MONTHNAME ('2023-03-05')); i. May ii. March iii. may iv. march	1



10.	Which of the following command will show the last 3 rows from a Pandas Series named NP? i. NP.Tail() ii. NP.tail(3) iii. NP.TAIL(3) iv. All of the above	1
11.	With reference to SQL, identify the invalid data type. i. Date ii. Integer iii. Year iv. Month	1
12.	In Python Pandas, while performing mathematical operations on series, index matching is implemented and all missing values are filled in with _____by default. i. Null ii. Blank iii. NaN iv. Zero	1
13.	By restricting the server and encrypting the data, a software company's server is unethically accessed in order to obtain sensitive information. The attacker blackmails the company to pay money for getting access to the data, and threatens to publish sensitive information unless price is paid. This kind of attack is known as: i. Phishing ii. Identity Theft iii. Plagiarism iv. Ransomware	1
14.	In SQL, the equivalent of UCASE() is: i. UPPERCASE () ii. CAPITALCASE() iii. UPPER() iv. TITLE ()	1
15.	Collection of hyper linked documents available on the internet is known as_____. i. Website ii. Webpage iii. Web Server iv. Web Hosting	1



16.	_____ is a non-profit organization that aims to build a publicly accessible global platform where a range of creative and academic work is shared freely. - Creative Cost - Critical Commons - Creative Commons - Creative Common	1
17.	Assertion (A):- MODEM stands for modulator-demodulator. Reasoning (R):- It is a computer hardware device that converts data from a digital format to analog and vice versa. - Both A and R are true and R is the correct explanation for A - Both A and R are true and R is not the correct explanation for A - A is True but R is False - A is false but R is True	1
18.	Assertion (A):- To use the Pandas library in a Python program, one must import it. Reasoning (R):- The only alias name that can be used with the Pandas library is pd. - Both A and R are true and R is the correct explanation for A - Both A and R are true and R is not the correct explanation for A - A is True but R is False - A is false but R is True	1
SECTION B		
19.	Briefly explain the basic concepts of a web server and web hosting. OR Rati is doing a course in networking. She is unable to understand the concept of URL. Help her by explaining it with the help of suitable example.	2
20.	The python code written below has syntactical errors. Rewrite the correct code and underline the corrections made. <pre>Import pandas as pd df ={"Technology":["Programming","Robotics","3D Printing"],"Time(in months)":[4,4,3]} df= Pd.dataframe(df) Print(df)</pre>	2
21.	Consider the given SQL string: "12#All the Best!" Write suitable SQL queries for the following: - Returns the position of the first occurrence of the substring "the" in the given string. - To extract last five characters from the string.	2



22.	Predict the output of the given Python code: <pre>import pandas as pd list1=[-10,-20,-30] ser = pd.Series(list1*2) print(ser)</pre>	2
23.	Differentiate between the active digital footprint and passive digital footprints.	2
24.	Complete the given Python code to get the required output as: Rajasthan <pre>import _____ as pd di = {'Corbett': 'Uttarakhand', 'Sariska': 'Rajasthan', 'Kanha': 'Madhya Pradesh', 'Gir':'Gujarat'} NP = _____. Series(_____) print(NP[_____])</pre>	2
25.	What are aggregate functions in SQL? Name any two.	2
SECTION C		
26.	Based on the SQL table CAR_SALES, write suitable queries for the following: <pre>+-----+-----+-----+-----+-----+ NUMBER SEGMENT FUEL QT1 QT2 +-----+-----+-----+-----+-----+ 1 Compact HatchBack Petrol 56000 70000 2 Compact HatchBack Diesel 34000 40000 3 MUV Petrol 33000 35000 4 MUV Diesel 14000 15000 5 SUV Petrol 27000 54000 6 SUV Diesel 18000 30000 7 Sedan Petrol 8000 10000 8 Sedan Diesel 1000 5000 +-----+-----+-----+-----+-----+</pre> i. Display fuel wise average sales in the first quarter. ii. Display segment wise highest sales in the second quarter. iii. Display the records in the descending order of sales in the second quarter. OR Predict the output of the following queries based on the table CAR_SALES given above: <pre>i. SELECT LEFT(SEGMENT,2) FROM CAR_SALES WHERE FUEL= "PETROL"; ii. SELECT (QT2-QT1)/2 "AVG SALE" FROM CAR_SALES WHERE SEGMENT= "SUV"; iii. SELECT SUM(QT1) "TOT SALE" FROM CAR_SALES WHERE FUEL= "DIESEL";</pre>	3



27.	Create a DataFrame in Python from the given list: [[‘Divya’,’HR’,95000],[‘Mamta’,’Marketing’,97000],[‘Payal’,’IT’,980000], [‘Deepak’,’Sales’,79000]] Also give appropriate column headings as shown below: <pre> Name Department Salary 0 Divya HR 95000 1 Mamta Marketing 97000 2 Payal IT 980000 3 Deepak Sales 79000 </pre>	3									
28.	Write MySQL statements for the following: - To create a database named FOOD. - To create a table named Nutrients based on the following specification: <table border="1"> <thead> <tr> <th>Column Name</th><th>Data Type</th><th>Constraints</th></tr> </thead> <tbody> <tr> <td>Food_Item</td><td>Varchar(20)</td><td>Primary Key</td></tr> <tr> <td>Calorie</td><td>Integer</td><td></td></tr> </tbody> </table>	Column Name	Data Type	Constraints	Food_Item	Varchar(20)	Primary Key	Calorie	Integer		3
Column Name	Data Type	Constraints									
Food_Item	Varchar(20)	Primary Key									
Calorie	Integer										
29.	Richa, recently started using her social media account. Within a few days, she befriends many people she knows and some that she does not know. After some time, she starts getting negative comments on her posts. She also finds that her pictures are being shared online without her permission. Based on the given information, answer the questions given below. - Identify the type of cybercrime she is a victim of. - Under which act, she can lodge a complaint to the relevant authorities? - Suggest her any two precautionary measures which she should take in future while being online to avoid any such situations. OR Mention any three health hazards associated with inappropriate and excessive use of gadgets.	3									
30.	Consider the given DataFrame ‘Genre’: <pre> Type Code 0 Fiction F 1 Non Fiction NF 2 Drama D 3 Poetry P </pre> Write suitable Python statements for the following: - Add a column called Num_Copies with the following data: [300,290,450,760]. - Add a new genre of type ‘Folk Tale’ having code as “FT” and 600 number of copies. - Rename the column ‘Code’ to ‘Book_Code’.	3									



	SECTION D																																				
31.	Preeti manages database in a blockchain start-up. For business purposes, she created a table named BLOCKCHAIN. Assist her by writing the following queries: TABLE: BLOCKCHAIN <table><tr><th>id</th><th>user</th><th>value</th><th>hash</th><th>transaction_date</th></tr><tr><td>1</td><td>Steve</td><td>900</td><td>ERTYU</td><td>2020-09-19</td></tr><tr><td>2</td><td>Meesha</td><td>145</td><td>@345r</td><td>2021-03-23</td></tr><tr><td>3</td><td>Nimisha</td><td>567</td><td>#wert5</td><td>2020-05-06</td></tr><tr><td>4</td><td>Pihu</td><td>678</td><td>%rtyu</td><td>2022-07-13</td></tr><tr><td>5</td><td>Kopal</td><td>768</td><td>rrt4%</td><td>2021-05-15</td></tr><tr><td>7</td><td>Palakshi</td><td>534</td><td>wer@3</td><td>2022-11-29</td></tr></table> i. Write a query to display the year of oldest transaction. ii. Write a query to display the month of most recent transaction. iii. Write a query to display all the transactions done in the month of May. iv. Write a query to count total number of transactions in the year 2022.	id	user	value	hash	transaction_date	1	Steve	900	ERTYU	2020-09-19	2	Meesha	145	@345r	2021-03-23	3	Nimisha	567	#wert5	2020-05-06	4	Pihu	678	%rtyu	2022-07-13	5	Kopal	768	rrt4%	2021-05-15	7	Palakshi	534	wer@3	2022-11-29	4
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4	Pihu	678	%rtyu	2022-07-13																																	
5	Kopal	768	rrt4%	2021-05-15																																	
7	Palakshi	534	wer@3	2022-11-29																																	
32.	Ekam, a Data Analyst with a multinational brand has designed the DataFrame df that contains the four quarter’s sales data of different stores as shown below: <table><tr><td></td><td>Store</td><td>Qtr1</td><td>Qtr2</td><td>Qtr3</td><td>Qtr4</td></tr><tr><td>0</td><td>Store1</td><td>300</td><td>240</td><td>450</td><td>230</td></tr><tr><td>1</td><td>Store2</td><td>350</td><td>340</td><td>403</td><td>210</td></tr><tr><td>2</td><td>Store3</td><td>250</td><td>180</td><td>145</td><td>160</td></tr></table> Answer the following questions: i. Predict the output of the following python statement: a. print(df.size) b. print(df[1:3]) ii. Delete the last row from the DataFrame. iii. Write Python statement to add a new column Total_Sales which is the addition of all the 4 quarter sales. OR (Option for part iii only) Write Python statement to export the DataFrame to a CSV file named data.csv stored at D: drive.		Store	Qtr1	Qtr2	Qtr3	Qtr4	0	Store1	300	240	450	230	1	Store2	350	340	403	210	2	Store3	250	180	145	160	4											
	Store	Qtr1	Qtr2	Qtr3	Qtr4																																
0	Store1	300	240	450	230																																
1	Store2	350	340	403	210																																
2	Store3	250	180	145	160																																
	SECTION E																																				
33.	Write suitable SQL queries for the following: i. To calculate the exponent for 3 raised to the power of 4. ii. To display current date and time. iii. To round off the value -34.4567 to 2 decimal place. iv. To remove all the probable leading and trailing spaces from the column userid of the table named user. v. To display the length of the string ‘FIFA World Cup’.	5																																			

OR

Kabir has created following table named exam:

RegNo	Name	Subject	Marks
1	Sanya	Computer Science	98
2	Sanchay	IP	100
3	Vinesh	CS	90
4	Sneha	IP	99
5	Akshita	IP	100

Help him in writing SQL queries to the perform the following task:

- Insert a new record in the table having following values:
[6,'Khushi','CS',85]
- To change the value “IP” to “**Informatics Practices**” in subject column.
- To remove the records of those students whose marks are less than 30 .
- To add a new column **Grade** of suitable datatype.
- To display records of “**Informatics Practices**” subject.

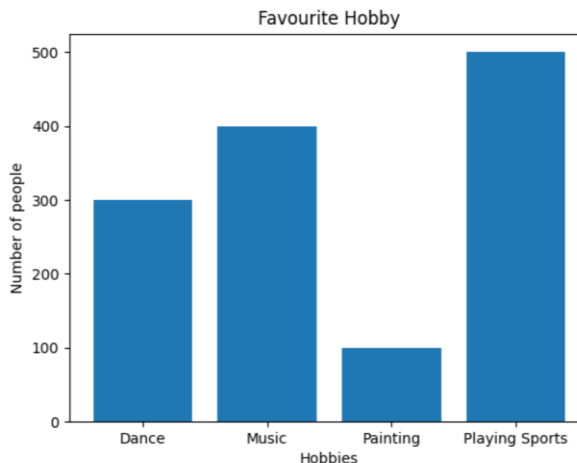
34. XYZ Media house campus is in Delhi and has 4 blocks named Z1, Z2, Z3 and Z4. The tables given below show the distance between different blocks and the number of computers in each block.

Block Z1 to Block Z2	80 metres
Block Z1 to Block Z3	65 metres
Block Z1 to Block Z4	90 metres
Block Z2 to Block Z3	45 metres
Block Z2 to Block Z4	120 metres
Block Z3 to Block Z4	60 metres

Block	Number of computers
Z1	135
Z2	290
Z3	180
Z4	195

5



	The company is planning to form a network by joining these blocks. i. Out of the four blocks on campus, suggest the location of the server that will provide the best connectivity. Explain your response. ii. For very fast and efficient connections between various blocks within the campus, suggest a suitable topology and draw the same. iii. Suggest the placement of the following devices with justification (a) Repeater (b) Hub/Switch iv. VoIP technology is to be used which allows one to make voice calls using a broadband internet connection. Expand the term VoIP. v. The XYZ Media House intends to link its Mumbai and Delhi centers. Out of LAN, MAN, or WAN, what kind of network will be created? Justify your answer.											
35.	The heights of 10 students of eighth grade are given below: Height_cms=[145,141,142,142,143,144,141,140,143,144] Write suitable Python code to generate a histogram based on the given data, along with an appropriate chart title and both axis labels. Also give suitable python statement to save this chart. OR Write suitable Python code to create 'Favourite Hobby' Bar Chart as shown below: <table><caption>Favourite Hobby Data</caption><thead><tr><th>Hobbies</th><th>Number of people</th></tr></thead><tbody><tr><td>Dance</td><td>300</td></tr><tr><td>Music</td><td>400</td></tr><tr><td>Painting</td><td>100</td></tr><tr><td>Playing Sports</td><td>500</td></tr></tbody></table> Also give suitable python statement to save this chart.	Hobbies	Number of people	Dance	300	Music	400	Painting	100	Playing Sports	500	5
Hobbies	Number of people											
Dance	300											
Music	400											
Painting	100											
Playing Sports	500											

MARKING SCHEME
SAMPLE QUESTION PAPER
CLASS XII (2023-24)
INFORMATICS PRACTICES (065)

TIME: 03 HOURS

M.M.: 70

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 02 questions carrying 04 marks each.
7. Section E has 03 questions carrying 05 marks each.
8. All programming questions are to be answered using Python Language only.

	SECTION A	
1.	iii. Gateway (1 mark for correct answer)	1
2.	ii. Beryllium (1 mark for correct answer)	1
3.	i. Intellectual Property Right (1 mark for correct answer)	1
4.	iv. NULL (1 mark for correct answer)	1
5.	iii. LENGTH () (1 mark for correct answer)	1
6.	iii. Google Chrome (1 mark for correct answer)	1
7.	iii. Comma Separated Value (1 mark for correct answer)	1
8.	iv. <code>SELECT DEPT, AVG(SAL) FROM EMP GROUP BY DEPT HAVING COUNT(*) > 5;</code> (1 mark for correct answer)	1
9.	iv. march (1 mark for correct answer)	1
10.	ii. <code>NP.tail(3)</code> (1 mark for correct answer)	1



11.	iv. Month (1 mark for correct answer)	1
12.	iii. NaN (1 mark for correct answer)	1
13.	iv. Ransomware (1 mark for correct answer)	1
14.	iii. UPPER() (1 mark for correct answer)	1
15.	i. Website (1 mark for correct answer)	1
16.	iii. Creative Commons (1 mark for correct answer)	1
17.	i. Both A and R are true and R is the correct explanation for A (1 mark for correct answer)	1
18.	iii. A is True but R is False (1 mark for correct answer)	1
	SECTION B	
19.	Web server: A web server is used to store and deliver the contents of a website to clients such as a browser that request it. A web server can be software or hardware. Web hosting: It is a service that allows to put a website or a web page onto the Internet, and make it a part of the World Wide Web. (1 mark each for each correct explanation) OR URL: It stands for Uniform Resource Locator. It provides the location and mechanism (protocol) to access the resources over the internet. URL is sometimes also called a web address. It not only contains the domain name, but other information as well that completes a web address. Examples: https://www.cbse.nic.in, https://www.mhrd.gov.in, http://www.ncert.nic.in, http://www.airindia.in, etc. (1 mark for correct explanation) (1 mark for correct example)	2



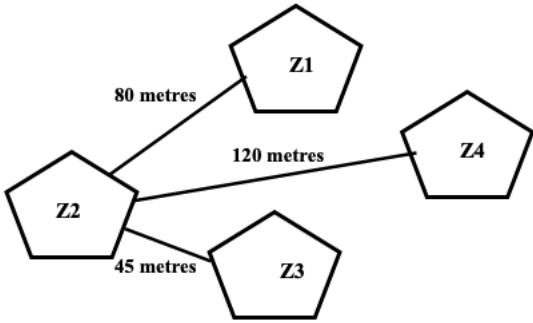
20.	<pre><u>import</u> pandas as pd df ={"Technology":["Programming","Robotics","3D Printing"],"Time(in months)":[4,4,3]} df= <u>pd.DataFrame</u>(df) <u>print</u>(df) (1/2 mark for each correction)</pre>	2
21.	i. SELECT INSTR("12#All the Best!","the"); ii. SELECT RIGHT("12#All the Best!",5); (1 mark for each correct query)	2
22.	<pre>0 -10 1 -20 2 -30 3 -10 4 -20 5 -30 (2 marks for correct output)</pre>	2
23.	Active Digital Footprints: Active digital footprints include data that we intentionally submit online. This would include emails we write, or responses or posts we make on different websites or mobile Apps, etc. Passive Digital Footprints: The digital data trail we leave online unintentionally is called passive digital footprints. This includes the data generated when we visit a website, use a mobile App, browse Internet, etc. (2 marks for correct differentiation)	2
24.	<pre>import <u>pandas</u> as pd di = {'Corbett': 'Uttarakhand', 'Sariska': 'Rajasthan', 'Kanha': 'Madhya Pradesh','Gir': 'Gujarat'} NP = <u>pd.Series</u>(di) print(NP['<u>Sariska</u>']) (1/2 mark for each correct fill-up)</pre>	2
25.	Aggregate functions: These are also called multiple row functions. These functions work on a set of records as a whole, and return a single value for each column of the records on which the function is applied. Max(), Min(), Avg(), Sum(), Count() and Count(*) are few examples of multiple row functions. (1 mark for correct explanation) (½ mark each for two correct names)	2
SECTION C		

26.	i. <code>SELECT FUEL, AVG(QT1) FROM CAR_SALES GROUP BY FUEL;</code> ii. <code>SELECT SEGMENT, MAX(QT2) FROM CAR_SALES GROUP BY SEGMENT;</code> iii. <code>SELECT * FROM CAR_SALES ORDER BY QT2 DESC;</code> (1 mark for each correct query) OR i. <pre> +-----+ LEFT (SEGMENT,2) +-----+ Co MU SU Se +-----+ </pre> ii. <pre> +-----+ AVG SALE +-----+ 13500.0000 6000.0000 +-----+ </pre> iii. <pre> +-----+ TOT SALE +-----+ 67000 +-----+ </pre> (1 mark each correct output)	3
27.	<pre> import pandas as pd #Statement 1 df=[["Divya","HR",95000],["Mamta","Marketing",97000], ["Payal","IT",980000], ["Deepak","Sales",79000]] #Statement 2 df=pd.DataFrame(df,columns=["Name","Department", "Salary"])#Statement 3 print(df) #Statement 4 </pre> (#Statement 1 & 4 – ½ mark each) (#Statement 2 & 3 – 1 mark each)	3



28.	i. CREATE DATABASE FOOD; (1 mark for correct answer) ii. CREATE TABLE NUTRIENTS (NAME VARCHAR(20) PRIMARY KEY, CALORIES INTEGER); (½ mark for CREATE TABLE NUTRIENTS ½ mark each for correctly specifying each column ½ mark for correctly specifying primary key)	3
29.	i. She is a victim of Cyber Bullying. ii. Information Technology Act, 2000 (also known as IT Act). iii. a. Need to be careful while befriending unknown people on the internet. b. Never share personal credentials like username and password with others. (1 mark for each correct answer) OR Simran needs to be made aware of the following consequences: i) Eye strain ii) Painful muscles and joints iii) Poor memory iv) Lack of sleep v) Back pain and neck pain (1 mark each for writing any 3 correct health hazards)	3
30.	i. Genre["Num_Copies"]=[300,290,450,760] ii. Genre.loc[4]=["Folk Tale", "FT", 600] iii. Genre=Genre.rename({"Code": "Book_Code"}, axis=1) OR Genre=Genre.rename({"Code": "Book_Code"}, axis="columns") (1 mark for each correct statement)	3
SECTION D		
31.	i. SELECT YEAR(MIN(TRANSACTION_DATE)) FROM BLOCKCHAIN; ii. SELECT MONTH(MAX(TRANSACTION_DATE)) FROM BLOCKCHAIN; iii. SELECT * FROM BLOCKCHAIN WHERE MONTHNAME(TRANSACTION_DATE)='MAY'; iv. SELECT COUNT(ID) FROM BLOCKCHAIN WHERE YEAR(TRANSACTION_DATE)=2022; (1 mark for each correct query)	4



32.	i. a. 15 b. Store Qtr1 Qtr2 Qtr3 Qtr4 1 Store2 350 340 403 210 2 Store3 250 180 145 160 ii. <code>df=df.drop(2)</code> OR <code>df.drop(2,axis=0)</code> iii. <code>df["total"]=df["Qtr1"]+df["Qtr2"]+df["Qtr3"]+df["Qtr4"]</code> OR <code>df.to_csv("D:\data.csv")</code> (1 mark for each correct output/statement)	4
	SECTION E	
33.	i. <code>SELECT POWER(3,4);</code> ii. <code>SELECT NOW();</code> iii. <code>SELECT ROUND(-34.4567,2);</code> iv. <code>SELECT TRIM(USERID) FROM USER;</code> v. <code>SELECT LENGTH("FIFA World Cup");</code> (1 mark for each correct query) OR Ans: i. <code>INSERT INTO EXAM VALUES(6,'Khushi','CS',85);</code> ii. <code>UPDATE EXAM SET subject= "Informatics Practices" where subject = "IP";</code> iii. <code>DELETE FROM EXAM WHERE marks<30;</code> iv. <code>ALTER TABLE EXAM ADD COLUMN grade varchar(2);</code> v. <code>Select * from exam where subject="Informatics Practices";</code> (1 mark for each correct query)	5
34.	i. Z2 as it has maximum number of computers. ii. For very fast and efficient connections between various blocks within the campus suitable topology: Star Topology 	5

	iii. Repeater: To be placed between Block Z2 to Z4 as distance between them is more than 100 metres. Hub/Switch: To be placed in each block as each block has many computers that needs to be included to form a network. iv. Voice Over Internet Protocol v. WAN as distance between Delhi and Mumbai is more than 40kms. (1 mark for each correct answer)	
35.	<pre>import matplotlib.pyplot as plt #Statement 1 Height_cms=[145,141,142,142,143,143,141,140,143,144] #Statement 2 plt.hist(Height_cms) #Statement 3 plt.title("Height Chart") #Statement 4 plt.xlabel("Height in cms") #Statement 5 plt.ylabel("Number of people") #Statement 6 plt.show() #Statement 7</pre> (½ mark each for each correct statement 1,2,4,5,6,7) (1 mark for correct statement 3) <pre>plt.savefig("heights.jpg")</pre> (1 mark for the correct statement) OR <pre>import matplotlib.pyplot as plt #Statement 1 hobby = ('Dance', 'Music', 'Painting', 'Playing Sports') #Statement 2 users = [300,400,100,500] #Statement 3 plt.bar(hobby, users) #Statement 4 plt.title("Favourite Hobby") #Statement 5 plt.ylabel("Number of people") #Statement 6 plt.xlabel("Hobbies") #Statement 7 plt.show() #Statement 8</pre> (½ mark for each correct statement) (1 mark for the correct statement)	5

