COMPUTER SCIENCE – NEW (083)
SAMPLE QUESTION PAPER (2019-20)
CLASS- XII

Max. Marks: 70 **Time: 3 hrs**

General Instructions:

- All questions are compulsory.
- Question paper is divided into 4 sections A, B, C and D.
  - Section A : Unit-1
  - Section B : Unit-2
  - Section C: Unit-3
  - Section D: Unit-4

		SECTION-A	
Q1.	(a)	Which of the following is valid arithmetic operator in Python: (i) **//** (ii) **?** (iii) **<** (iv) **and**	1
	(b)	Write the type of tokens from the following: (i) **if** (ii) **roll_no**	1
	(c)	Name the Python Library modules which need to be imported to invoke the following functions: **(i) sin() (ii) randint ()**	1
	(d)	Rewrite the following code in python after removing all syntax error(s). Underline each correction done in the code. 30=To for K in range(0,To) IF k%4==0: print (K*4) Else: print (K+3)	2

	(e)	Find and write the output of the following python code:
		def fun(s):
		k=len(s)
		m=" "
		for i in range(0,k):
		if(s[i].isupper()):
		m=m+s[i].lower()
		elif s[i].isalpha():
		m=m+s[i].upper()
		else:
		m=m+'bb'
		print(m)
		fun('school2@com')
			2

	(f)	Find and write the output of the following python code:	3

		def Change(P ,Q=30): P=P+Q Q=P-Q print(P,"#",Q) return (P) R=150 S=100 R=Change(R,S) print(R,"#",S) S=Change(S)	
	(g)	What possible outputs(s) are expected to be displayed on screen at the time of execution of the program from the following code? Also specify the maximum values that can be assigned to each of the variables FROM and TO. import random AR=[20,30,40,50,60,70]; FROM=random.randint(1,3) TO=random.randint(2,4) for K in range(FROM,TO+1): print (AR[K],end="#") (i) 10#40#70# (ii) 30#40#50# (iii) 50#60#70# (iv) 40#50#70**#**	2
Q2.	(a)	What do you understand by the term Iteration?	1
	(b)	Which is the correct form of declaration of dictionary? (i) Day={1:'monday',2:'tuesday',3:'wednesday'} (ii) Day=(1;'monday',2;'tuesday',3;'wednesday') (iii) Day=[1:'monday',2:'tuesday',3:'wednesday'] (iv) Day={1'monday',2'tuesday',3'wednesday']	1
	(c)	Identify the valid declaration of L: L = [1, 23, 'hi', 6]. (i) list (ii) dictionary (iii) array (iv) tuple	1
	(d)	Find and write the output of the following python code: x = "abcdef" i = "a" while i in x: print(i, end = " ")	1

	(e)	Find and write the output of the following python code: a=10 def call(): global a a=15 b=20 print(a) call()	1
	(f)	What do you understand by local and global scope of variables? How can you access a global variable inside the function, if function has a variable with same name.	2

	(g)	A bar chart is drawn(using pyplot) to represent sales data of various models of cars, for a month. Write appropriate statements in Python to provide labels **Month - June** and **Sale done** to x and y axis respectively.
		OR
		Give the output from the given python code:
		`import matplotlib.pyplot as plt; plt.rcdefaults()`
		`import numpy as np`
		`import matplotlib.pyplot as plt`
		`objects = ('Python', 'C++', 'Java', 'Perl', 'Scala', 'Lisp')`
		`y_pos = np.arange(len(objects))`
		`performance = [10,8,6,4,2,1]`
		`plt.bar(y_pos, performance, align='center', alpha=0.5)`
		`plt.xticks(y_pos, objects)`
		`plt.ylabel('Usage')`
		`plt.title('Programming language usage')`
		`plt.show()`
			2

	(h)	Write a function in python to count the number of lines in a text file '**STORY.TXT**' which is starting with an alphabet **'A'** . **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.	2
	(i)	Write a Recursive function in python **BinarySearch(Arr,l,R,X)** to search the given element **X** to be searched from the List **Arr** having **R** elements,where **l** represents lower bound and **R** represents the upper bound. **OR**	3

		Write a Recursive function **recurfactorial(n)** in python to calculate and return the factorial of number **n** passed to the parameter.	
	(j)	Write a function in Python, **INSERTQ(Arr,data)** and **DELETEQ(Arr)** for performing insertion and deletion operations in a Queue. **Arr** is the list used for implementing queue and **data** is the value to be inserted. **OR** Write a function in python, **MakePush(Package)** and **MakePop(Package)** to add a new Package and delete a Package from a List of Package Description, considering them to act as push and pop operations of the Stack data structure.	4
		SECTION-B	
Q.3		Questions 3 (a) to 3 (c) : Fill in the blanks	
	(a)	……..is an example of Public cloud.	1
	(b)	…… is a network of physical objects embedded with electronics, software, sensors and network connectivity.	1
	(c)	---------- is a device that forwards data packets along networks.	1
	(d)	---------- describes the maximum data transfer rate of a network or Internet connection.	1
	(e)	Give the full forms of the following (i) HTTP (ii) FTP (v) VoIP (vi) SSH	2
	(f)	How many pair of wires are there in twisted pair cable(Ethernet)?What is the name of port ,which is used to connect Ethernet cable to a computer or a labtop?	2
	(g)	Identify the type of cyber crime for the following situations: (i) A person complains that Rs. 4.25 lacs have been fraudulently stolen from his/her account online via some online transactions in two days using NET BANKING. (ii) A person complaints that his/her debit/credit card is safe with him still some body has done shopping/ATM transaction on this card. (iii) A person complaints that somebody has created a fake profile on Facebook and defaming his/her character with abusive comments and pictures.	3
	(h)	Software Development Company has set up its new center at Raipur for its office and web based activities. It has 4 blocks of buildings named Block A, Block B, Block C, Block D. Number of Computers	4

Block A	25
Block B	50
Block C	125
Block D	10

Shortest distances between various Blocks in meters:

Block A to Block B	60 m
Block B to Block C	40 m
Block C to Block A	30 m
Block D to Block C	50 m

(i) Suggest the most suitable place (i.e. block) to house the server of this company with a suitable reason.

(ii) Suggest the type of network to connect all the blocks with suitable reason .

(iii)The company is planning to link all the blocks through a secure and high speed wired medium. Suggest a way to connect all the blocks.

(iv) Suggest the most suitable wired medium for efficiently connecting each computer installed in every block out of the following network cables:

- Coaxial Cable
- Ethernet Cable
- Single Pair Telephone Cable.

SECTION-C

Q.4	(a)	Which key word is used to sort the records of a table in descending order?	1
	(b)	Which clause is used to sort the records of a table?	1
	(c)	Which command is used to modify the records of the table?	1
	(d)	Which clause is used to remove the duplicating rows of the table?	1
	(e)	Differentiate between Primary key and Candidate key. **OR** Differentiate between Degree and Cardinality.	2
	(f)	Differentiate between Django GET and POST method.	2
	(g)	Write a output for SQL queries (i) to (iii), which are based on the table: **STUDENT**	3

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	Store	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;
(ii) SELECT MAX(DOB),MIN(DOB) FROM STUDENT;
(iii) SELECT NAME,GENDER FROM STUDENT WHERE CITY="Delhi";

(h) Write SQL queries for (i) to (iv), which are based on the table: **STUDENT** given in the question 4(g): — 4

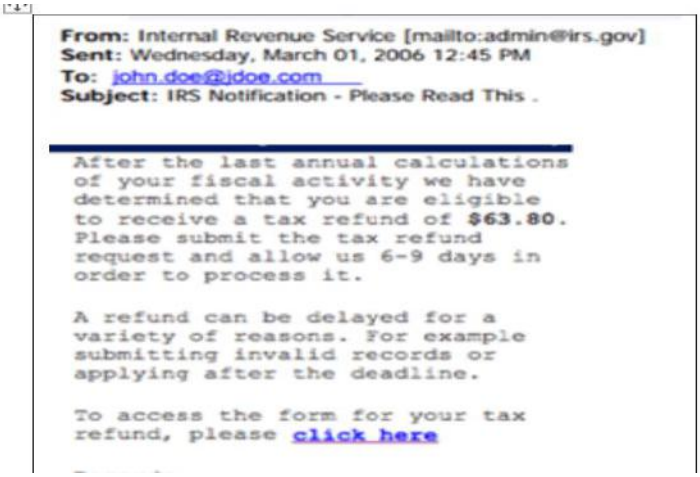
(i) To display the records from table student in alphabetical order as per the name of the student.
(ii) To display Class, Dob and City whose marks is between 450 and 551.
(iii) To display Name, Class and total number of students who have secured more than 450 marks, class wise
(iv) To increase marks of all students by 20 whose class is "XII"

SECTION-D

Q.5 (a) It is an internet service for sending written messages electronically from one computer to another. Write the service name. — 1

(b) As a citizen of india , What advise you should give to others for e-waste disposal? — 1

(c) What can be done to reduce the risk of identity theft? Write any two ways. — 2

	(d)	 **From:** Internal Revenue Service [mailto:admin@irs.gov] **Sent:** Wednesday, March 01, 2006 12:45 PM **To:** john.doe@jdoe.com **Subject:** IRS Notification - Please Read This . After the last annual calculations of your fiscal activity we have determined that you are eligible to receive a tax refund of **$63.80**. Please submit the tax refund request and allow us 6-9 days in order to process it. A refund can be delayed for a variety of reasons. For example submitting invalid records or applying after the deadline. To access the form for your tax refund, please **click here** Ravi received a mail form IRS department (as shown above). On clicking " Click-Here" ,he was taken to a site designed to imitate an official-looking website, such as IRS.gov. He uploaded some important information on it. Identify and explain the cybercrime being discussed in the above scenario.	2
	(e)	Differentiate between open source and open data.	2
	(f)	Enumerate any two disability issues while teaching and using computers	2

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MARKING SCHEME – SQP (2019-20)
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  - Section A : Unit-1
  - Section B : Unit-2
  - Section C: Unit-3
  - Section D: Unit-4

		SECTION-A	
Q1.	(a)	Which of the following is valid arithmetic operator in Python: (i) **//** (ii) **?** (iii) **<** (iv) **and**	1
	Ans.	(i) // **(1 mark for correct answer)**	
	(b)	Write the type of tokens from the following: (i) **if** (ii) **roll_no**	1
	Ans.	(i) Key word (ii) Identifier **(1/2 mark for each correct type)**	
	(c)	Name the Python Library modules which need to be imported to invoke the following functions: **(i) sin( ) (ii) randint ( )**	1
	Ans.	(i) math (ii) random **(1/2 mark for each module)**	
	(d)	Rewrite the following code in python after removing all syntax error(s). Underline each correction done in the code. 30=To for K in range(0,To) IF k%4==0: print (K*4) Else: print (K+3)	2
	Ans.	**To=30** for K in range**(0,To) :** **if** k%4==0: print (K*4) **else:** print (K+3) **(1/2 mark for each correction)**	
	(e)	Find and write the output of the following python code: def fun(s): k=len(s)	2

		m=" "
		for i in range(0,k):
		if(s[i].isupper()):
		m=m+s[i].lower()
		elif s[i].isalpha():
		m=m+s[i].upper()
		else:
		m=m+'bb'
		print(m)
		
		fun('school2@com')	

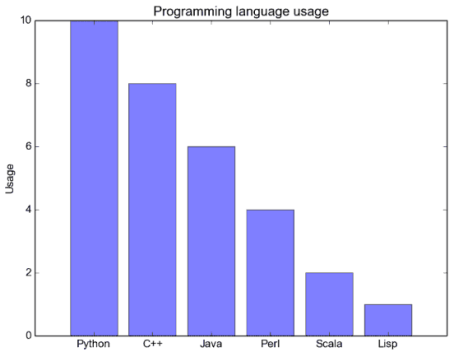
	Ans.	SCHOOLbbbbCOM **(2 marks for correct output)** Note: Partial marking can also be given	
	(f)	Find and write the output of the following python code: def Change(P ,Q=30): P=P+Q Q=P-Q print(P,"#",Q) return (P) R=150 S=100 R=Change(R,S) print(R,"#",S) S=Change(S)	3
	Ans.	250 # 150 250 # 100 130 # 100 **(1 mark each for correct line)**	
	(g)	What possible outputs(s) are expected to be displayed on screen at the time of execution of the program from the following code? Also specify the maximum values that can be assigned to each of the variables FROM and TO. import random AR=[20,30,40,50,60,70]; FROM=random.randint(1,3) TO=random.randint(2,4) for K in range(FROM,TO+1): print (AR[K],end="# ") (i) 10#40#70# (ii) 30#40#50#	2

		(iii) 50#60#70# (iv) 40#50#70**#**	
	Ans.	(ii) 30#40#50# Maximum value FROM,TO is 3,4) (1/2 mark each for maximum value) **(1 mark for correct option)**	
Q2.	(a)	What do you understand by the term Iteration?	1
	Ans.	Repeatation of statement/s finite number of times is known as Iteration. **(1 mark for correct answer)**	
	(b)	Which is the correct form of declaration of dictionary? (i) Day={1:'monday',2:'tuesday',3:'wednesday'} (ii) Day=(1;'monday',2;'tuesday',3;'wednesday') (iii) Day=[1:'monday',2:'tuesday',3:'wednesday'] (iv) Day={1'monday',2'tuesday',3'wednesday']	1
	Ans.	(i) Day={1:'monday',2:'tuesday',3:'wednesday'} **(1 mark for correct answer)**	
	(c)	Identify the valid declaration of L: L = [1, 23, 'hi', 6]. (i) list (ii) dictionary (iii) array (iv) tuple	1
	Ans.	(i) List **(1 mark for correct answer)**	
	(d)	Find and write the output of the following python code: x = "abcdef" i = "a" while i in x: print(i, end = " ")	1
	Ans.	aaaaaa----- **OR** infinite loop **(1 mark for correct answer)**	
	(e)	Find and write the output of the following python code: a=10 def call(): global a a=15 b=20 print(a) call()	1
	Ans.	15	

		(1 mark for correct answer)	
	(f)	What do you understand by local and global scope of variables? How can you access a global variable inside the function, if function has a variable with same name.	2
	Ans.	A global variable is a variable that is accessible globally. A local variable is one that is only accessible to the current scope, such as temporary variables used in a single function definition. A variable declared outside of the function or in global scope is known as global variable. This means, global variable can be accessed inside or outside of the function where as local variable can be used only inside of the function. We can access by declaring variable as **global A.** **(1 mark for correct difference)** **(1 mark for explanation)**	

	(g)	A bar chart is drawn(using pyplot) to represent sales data of various models of cars, for a month. Write appropriate statements in Python to provide labels **Month - June** and **Sale done** to x and y axis respectively.
		
		OR
		
		Give the output from the given python code:
		
		`import matplotlib.pyplot as plt; plt.rcdefaults()`
		`import numpy as np`
		`import matplotlib.pyplot as plt`
		
		`objects = ('Python', 'C++', 'Java', 'Perl', 'Scala', 'Lisp')`
		`y_pos = np.arange(len(objects))`
		`performance = [10,8,6,4,2,1]`
		
		`plt.bar(y_pos, performance, align='center', alpha=0.5)`
		`plt.xticks(y_pos, objects)`
		`plt.ylabel('Usage')`
		`plt.title('Programming language usage')`
		
		`plt.show()`
			2

	Ans.	import matplotlib.pyplot as plt import numpy as np model=('i20','Grandi10','Creta','Eon','Verna','Tucson','Elantra') y_pos=np.arange(len(model)) sale=[12369,12174,9390,4663,4077,3712,200,150] plt.bar(y_pos,sale,align='center',alpha=0.5) plt.xticks(y_pos,model) plt.xlabel('Month-June') plt.ylabel('Sale done') plt.title('Sales Bar Graph') plt.show()	

		(**1/2 mark for correct plt.bar)** **(1/2 mark for each correct xlabel and ylabel)** **(1/2 mark for plt.show)** **OR**  **(2 marks for correct output)**	
	(h)	Write a function in python to count the number of lines in a text file '**STORY.TXT'** which is starting with an alphabet **'A'** . **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.	2

	Ans.	def COUNTLINES():
		file=open('STORY.TXT','r')
		lines = file.readlines()
		count=0
		for w in lines:
		if w[0]=="A" or w[0]=="a":
		count=count+1
		print("Total lines ",count)
		file.close()
		(½ Mark for opening the file)
		(½ Mark for reading all lines, and using loop)
		(½ Mark for checking condition)
		(½ Mark for printing lines)
		
		OR
		
		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()
		(½ Mark for opening the file)
		(½ Mark for reading line and/or splitting)
		(½ Mark for checking condition)
		(½ Mark for printing word)	

	(i)	Write a Recursive function in python **BinarySearch(Arr,l,R,X)** to search the given element **X** to be searched from the List **Arr** having **R** elements where **l** represents lower bound and **R** represents upper bound. **OR** Write a Recursive function **recurfactorial(n)** in python to calculate and return the factorial of number **n** passed to the parameter.	3

	Ans.	def BinarySearch (Arr,l,R,X):
		if R >= l:
		mid = l + (R-l)//2
		if Arr[mid] == X:
		return mid
		elif Arr[mid] > X:
		return BinarySearch(Arr,l,mid-1,X)
		else:
		return BinarySearch(Arr,mid+1,r,X)
		else:
		return -1
		Arr = [2, 3, 4, 10, 40]
		X =int(input(' enter element to be searched'))
		result = BinarySearch(Arr,0,len(Arr)-1,X)
		if result != -1:
		print ("Element is present at index ", result)
		else:
		print ("Element is not present in array")
		(**1/2 mark for mid)**	

		(1/2 mark for return mid)
		(1 mark each for returning function)
		(1 mark for invoking function)
		OR
		def recurfactorial(n):
		  if n == 1:
		  return n
		  else:
		  return n*recurfactorial(n-1)
		num = int(input("Enter a number: "))
		if num < 0:
		  print("Sorry, factorial does not exist for negative numbers")
		elif num == 0:
		  print("The factorial of 0 is 1")
		else:
		  print("The factorial of",num,"is",recurfactorial(num))
		(2 marks for correct recursive function)
		(1 mark for invoking)	

	(j)	Write a function in Python, **INSERTQ(Arr,data)** and **DELETEQ(Arr)** for performing insertion and deletion operations in a Queue. **Arr** is the list used for implementing queue and **data** is the value to be inserted. **OR** Write a function in python, **MakePush(Package)** and **MakePop(Package)** to add a new Package and delete a Package from a List of Package Description, considering them to act as push and pop operations of the Stack data structure.	4

	Ans.	def INSERTQ(Arr):
		  data=int(input("enter data to be inserted: "))
		  Arr.append(data)
		def DELETEQ(Arr):
		  if (Arr==[]):
		  print("Queue empty")
		  else:
		  print ("Deleted element is: ",Arr[0])
		  del(Arr[0])
		
		(½ mark insert header)
		(½ mark for accepting a value from user)
		(½ mark for adding value in list)
		(½ mark for delete header)
		(½ mark for checking empty list condition)	

		(½ mark for displaying "Queue empty")
		(½ mark for displaying the value to be deleted)
		(½ mark for deleting value from list)
		
		OR
		def MakePush(Package):
		a=int(input("enter package title : "))
		Package.append(a)
		def MakePop(Package):
		if (Package==[]):
		print("Stack empty")
		else:
		print ("Deleted element:",Package.pop())
		
		(½ mark for MakePush() header)
		(½ mark for accepting a value from user)
		(½ mark for adding value in list)
		(½ mark for MakePop() header)
		(½ mark for checking empty list condition)
		(½ mark for displaying "Stack empty")
		(½ mark for displaying the value to be deleted)
		(½ mark for deleting value from list)	

SECTION-B			
Q.3		Questions 3 (a) to 3 (c) : Fill in the blanks	
	(a)	……..is an example of Public cloud.	1
	Ans.	Google Drive or any other correct example **(1 mark for correct answer)**	
	(b)	…… is a network of physical objects embedded with electronics, software, sensors and network connectivity.	1
	Ans.	The internet of things **OR** Internet (**1 mark for correct answer)**	
	(c)	---------- is a device that forwards data packets along networks.	1
	Ans.	Router **(1 mark for correct answer)**	
	(d)	---------- describes the maximum data transfer rate of a network or Internet connection.	1
	Ans.	Band width **(1 mark for correct answer)**	
	(e)	Give the full forms of the following	2

		(i) HTTP (ii) FTP (iii) VoIP (iv) SSH	
	Ans.	(i) Hyper text transfer protocol (ii) File transfer protocol (iii) Voice over internet protocol (iv) Secure shell **(1/2 mark for each correct expansion)**	
	(f)	How many pair of wires are there in twisted pair cable(Ethernet)?What is the name of port ,which is used to connect Ethernet cable to a computer or a labtop?	2
	Ans.	Two insulated copper wires , Ethernet port (**1 mark for each correct Answer)**	
	(g)	Identify the type of cyber crime for the following situations: (i) A person complains that Rs. 4.25 lacs have been fraudulently stolen from his/her account online via some online transactions in two days using NET BANKING. (ii) A person complaints that his/her debit/credit card is safe with him still some body has done shopping/ATM transaction on this card. (iii) A person complaints that somebody has created a fake profile on Facebook and defaming his/her character with abusive comments and pictures.	3
	Ans.	(i) Bank Fraud (ii) Identity Theft (iii) Cyber Stalking **(1 mark for each correct answer)**	
	(h)	Software Development Company has set up its new center at Raipur for its office and web based activities. It has 4 blocks of buildings named Block A, Block B, Block C, Block D. Number of Computers Block A — 25	4

		Block B | 50 Block C | 125 Block D | 10 Shortest distances between various Blocks in meters: Block A to Block B | 60 m Block B to Block C | 40 m Block C to Block A | 30 m Block D to Block C | 50 m (i) Suggest the most suitable place (i.e. block) to house the server of this company with a suitable reason. **Ans**. Block C , It has maximum number of computer. **(1 mark for correct answer**) (ii) Suggest the type of network to connect all the blo)cks with suitable reason . **Ans**. LAN **(1 mark for correct answer**) (iii)The company is planning to link all the blocks through secure and high-speed wired medium. Suggest a way to connect all the blocks. **Ans.** Star topology **OR** Diagram **(1 mark for correct answer**) (iv) Suggest the most suitable wired medium for efficiently connecting each computer installed in every block out of the following network cables: ● Coaxial Cable ● Ethernet Cable ● Single Pair Telephone Cable. **Ans**. Ethernet Cable **(1 mark for correct answer**)	
SECTION-C			
Q.4	(a)	Which key word is used to sort the records of a table in descending order?	1
	Ans.	DESC **(1 mark for correct answer**)	

	(b)	Which clause is used to sort the records of a table?	1
	Ans.	ORDER BY **(1 mark for correct answer**)	
	(c)	Which command is used to modify the records of the table?	1
	Ans.	UPDATE **(1 mark for correct answer**)	
	(d)	Which clause is used to remove the duplicating rows of the table?	1
	Ans.	DISTINCT **(1 mark for correct answer**)	
	(e)	Differentiate between Primary key and Candidate key. **OR** Differentiate between Degree and Cardinality.	2
	Ans.	A Candidate Key can be any column or a combination of columns that can qualify as unique key in database. There can be multiple Candidate Keys in one table where as A Primary Key is a column or a combination of columns that uniquely identify a record. Only one Candidate Key can be Primary Key. (2 marks for correct difference) **OR** Degree **:** It is the total number of attributes in the table. Cardinality: It is the total number of tuples in the table **(2 marks for correct difference)**	
	(f)	Differentiate between Django GET and POST method.	2
	Ans.	GET and POST. GET and POST are the only HTTP methods to use when dealing with forms. Django's login form is returned using the POST method, in which the browser bundles up the form data, encodes it for transmission, sends it to the server, and then receives back its response. Both of these are dictionary-like objects that give you access to GET and POST data. POST data generally is submitted from an HTML <form> , while GET data can come from a <form> or the query string in the page's URL. **(2 Marks for correct difference)**	
	(g)	Write a output for SQL queries (i) to (iii), which are based on the table: **STUDENT** given below: Table : **STUDENT**	3

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	Store	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;

Ans.

COUNT(*)	City
2	Mumbai
2	Delhi
2	Moscow

(1 mark for correct output)

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

Ans.

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

(1 mark for correct output)

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

Ans.

NAME	GENDER
Sanal	F
Store	M

(1 mark for correct output)

(h) Write SQL queries for (i) to (iv), which are based on the table: **STUDENT** given in the question 4(g): — 4

(i) To display the records from table student in alphabetical order as per the name of the student.

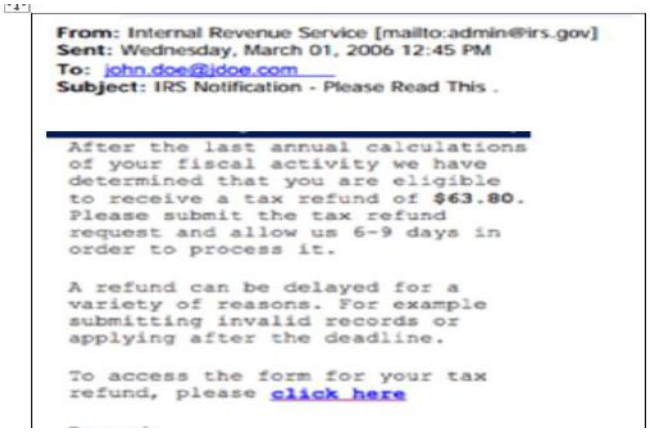
Ans. SELECT * FROM STUDENT ORDER BY NAME;

(1 mark for correct statement)

(ii) To display Class, Dob and City whose marks is between 450 and 551.

Ans. SELECT CLASS,DOB,CITY FROM STUDENT WHERE MARKS BETWEEN 450 AND 551;

(1 mark for correct statement)

		(iii) To display Name, Class and total number of students who have secured more than 450 marks, class wise. **Ans.** SELECT NAME,CLASS ,COUNT(*) FROM STUDENT GROUP BY CLASS HAVING MARKS>450; **(1 mark for correct statement)** (iv) To increase marks of all students by 20 whose class is "XII". **Ans.** UPDATE STUDENT SET MARKS=MARKS+20 where class="XII"; **(1 mark for correct statement)**	
		SECTION-D	
Q.5	(a)	It is an internet service for sending written messages electronically from one computer to another. Write the service name.	1
	Ans.	e-mail **(1 mark for correct answer)**	
	(b)	As a citizen of india , What advise you should give to others for e-waste disposal?	1
	Ans.	As a citizen of india , We can advice the following principle of waste management: Reduce , Reuse and Recycle. **(1 mark for correct answer)**	
	(c)	What can be done to reduce the risk of identity theft? Write any two ways.	2
	Ans.	1. Don't Give out Personal Information to anyone 2.Don't Carry Your Social Security Card. (1 mark for each point)	
	(d)	 **From:** Internal Revenue Service [mailto:admin@irs.gov] **Sent:** Wednesday, March 01, 2006 12:45 PM **To:** john.doe@jdoe.com **Subject:** IRS Notification - Please Read This . After the last annual calculations of your fiscal activity we have determined that you are eligible to receive a tax refund of **$63.80.** Please submit the tax refund request and allow us 6-9 days in order to process it. A refund can be delayed for a variety of reasons. For example submitting invalid records or applying after the deadline. To access the form for your tax refund, please **click here** Ravi received a mail form IRS department (as shown above). On clicking " Click-Here" ,he was taken to a site designed to imitate an official-looking website, such as IRS.gov. He uploaded some important information on it. Identify and explain the cyber crime being discussed in the above scenario.	2

	Ans.	It is an example of phishing. phishing is a term used to describe a malicious individual or group of individuals who scam users. They do so by sending e-mails or creating web pages that are designed to collect an individual's online bank, credit card, or other login information. **(1 mark for identification)** **(1 mark for explanation)**	
	(e)	Differentiate between open source and open data.	2
	Ans.	These licenses are based on the copyright protection of the code; thus, the "open" of open source refers to the source code. Difference between open data and open source is that of data versus application. Data can be numbers, locations, names, etc. **(2 Marks for correct difference)**	
	(f)	Enumerate any two disability issues while teaching and using computers.	2
	Ans.	There are several types of disabilities that can affect computer accessibility. Although there is no single universally accepted classification, an indicative list of impairments includes the following :Visual impairments: blindness, low vision and color blindness. **(1 mark for each point)**	

Class XII
Computer Science - OLD (283)
Sample Question Paper 2019-20

Time allowed: 3 Hours **Max. Marks: 70**

General Instructions:

(a) All questions are compulsory.

(b) Programming Language with C++

(c) *In Question 2(b, d) ,3 and 4 has internal choices.*

Q. No.	Part	Question Description	Marks
1	(a)	Write the type of C++ Operators (Arithmetic, Logical, and Relational Operators) from thefollowing: (i) !(ii) !=(iii) &&(iv) %	(2)

	(b)	Observe the following program very carefully and write the name of those header file(s), which are essentially needed to compile and execute thefollowing program successfully:
		void main()
		{
		char text[20], newText[20];
		gets(text);
		strcpy(newText,text);
		for(int i=0;i<strlen(text);i++)
		if(text[i] = ='A')
		text[i] = text[i]+2;
		puts(text);
		}
			(1)

	(c)	Rewrite the following C++ code after removing any/all Syntactical Error(s) with each correction underlined.
		
		Note: Assume all required header files are already being included in the program.
		
		#define float PI 3.14
		void main( )
		{
		float R=4.5,H=1.5;
		A=2*PI*R*H + 2*PIpow(R,2);
		cout<<'Area='<<A<<endl;
		}
			(2)

	(d)	Find and write the output of the following C++ program code:
		Note: Assume all required header files are already being included in the program.
		void main( )
		{
		int Ar[ ] = { 6 , 3 , 8 , 10 , 4 , 6 , 7} ;
		int *Ptr = Ar , I ;
		cout<<++*Ptr++ << '@' ;
		I = Ar[3] - Ar[2] ;
		cout<<++*(Ptr+I)<<'@'<<"\n" ;
		cout<<++I + *Ptr++ << '@' ;
		cout<<*Ptr++ <<'@'<< '\n' ;
		for(; I >=0 ; I -=2)
		cout<<Ar[I] << '@' ;
		}
			(3)

	(e)	Find and write the output of the following C++ program code:
		typedef char STRING[80];
		void MIXNOW(STRING S)
		{
		int Size=strlen(S);
		for(int I=0;I<Size;I+=2)
		{
		char WS=S[I];
		S[I]=S[I+1];
		S[I+1]=WS;
		}
		for (I=1;I<Size;I+=2)
		if (S[I]>=’M’ && S[I]<=’U’)
		S[I]=’@’;
		}
		void main()
		{
		STRING Word=”CBSEEXAM2019”;
		MIXNOW(Word);
		cout<<Word<<endl;
		}
			(2)

	(f)	Observe the following program and find out, which output(s) out of (i) to (iv) willbe expected from the program? What will be the minimum and the maximum value assigned to the variable Alter?
		
		Note: Assume all required header files are already being included in the program.
		void main( )
		{
		randomize();
		int Ar[]={10,7}, N;
			(2)

```
        int Alter=random(2) + 10 ;
        for (int C=0;C<2;C++)
        {
            N=random(2) ;
            cout<<Ar[N] +Alter<<"#";
        }
    }
```

(i) 21#20# (ii) 20#18#
(iii) 20#17# (iv) 21#17#

2 (a) What is a copy constructor? Illustrate with a suitable C++ example. (2)

(b) Write the output of the following C++ code. Also, write the name of feature of Object Oriented Programming used in the following program jointly illustrated by the Function 1 to Function 4. (2)

```
void My_fun ( )                          // Function 1
{
    for (int I=1 ; I<=50 ; I++) cout<< "-" ;
    cout<<end1 ;
}
void My_fun (int N)                      // Function 2
{
    for (int I=1 ; I<=N ; I++) cout<<"*" ;
    cout<<end1 ;
}
void My_fun (int A, int B)               // Function 3
{
    for (int I=1. ;I<=B ;I++) cout <<A*I ;
    cout<<end1 ;
}
void My_fun (char T, int N)              // Function 4
{
    for (int I=1 ; I<=N ; I++) cout<<T ;
    cout<<end1;
}
void main ( )
{
    int X=7, Y=4, Z=3;
    char C='#' ;
    My_fun (C,Y) ;
    My_fun (X,Z) ;
}
```

OR

(b) Write any four differences between Constructor and Destructor function with respect to object oriented programming.

	(c)	Define a class Ele_Bill in C++ with the following descriptions: **Private members:** Cname — of type character array Pnumber — of type long No_of_units — of type integer Amount — of type float. Calc_Amount( ) — This member function should calculate the amount as No_of_units*Cost . Amount can be calculated according to the following conditions: **No_of_units Cost** First 50 units — Free Next 100 units — 0.80 @ unit Next 200 units — 1.00 @ unit Remaining units — 1.20 @ unit **Public members:** * A function Accept( ) which allows user to enter Cname, Pnumber, No_of_units and invoke function Calc_Amount(). * A function Display( ) to display the values of all the data members on the screen.	(4)

	(d)	Answer the questions (i) to (iv) based on the following:
		class Faculty
		{
		int FCode;
		protected:
		char FName[20];
		public:
		Faculty();
		void Enter();
		void Show();
		};
		class Programme
		{
		int PID;
		protected:
		char Title[30];
		public:
		Programme();
		void Commence();
		void View();
		};
		class Schedule: public Programme, Faculty
		{
		int DD,MM,YYYY;
		public:
			(4)

```
        Schedule();
        void Start();
        void View();
};
void main()
{
        Schedule S;          //Statement 1
        _____                //Statement 2
}
```

(i) Write the names of all the member functions, which are directly accessible by the object S of class Schedule as declared in main() function.

(ii) Write the names of all the members, which are directly accessible by the memberfunction Start( ) of class Schedule.

(iii) Write Statement 2 to call function View( ) of class Programme from the object S of class Schedule.

(iv) What will be the order of execution of the constructors, when the object S of class Schedule is declared inside main()?

OR

(d) Consider the following class State :

```
class State
{
protected :
int  tp;
public :
State( ) { tp=0;}
void  inctp( ) { tp++;};
int  gettp(); { return  tp; }
};
```

Write a code in C++ to publically derive another class 'District' with the following additional members derived in the public visibility mode.

Data Members :

Dname	string
Distance	float
Population	long int

Member functions :

DINPUT( ) : To enter Dname, Distance and population

DOUTPUT( ) : To display the data members on the screen.

<table>
<tr><td>3</td><td>(a)</td><td>Write a user-defined function AddEnd4(int A[][4],int R,int C) in C++ to find and display the sum of all the values, which are ending with 4 (i.e., unit place is 4).
For example if the content of array is:
<table><tr><td>24</td><td>16</td><td>14</td></tr><tr><td>19</td><td>5</td><td>4</td></tr></table>The output should be
42</td><td>(2)</td></tr>
<tr><td></td><td></td><td>OR</td><td></td></tr>
<tr><td></td><td>(a)</td><td>Write a user defined function in C++ to find the sum of both left and right diagonal elements from a two dimensional array.</td><td></td></tr>
<tr><td></td><td>(b)</td><td>Write a user-defined function EXTRA_ELE(int A[ ], int B[ ], int N) in C++ to find and display the extra element in Array A. Array A contains all the elements of array B but one more element extra. (Restriction: array elements are not in order)

Example If the elements of Array A is 14, 21, 5, 19, 8, 4, 23, 11
and the elements of Array B is 23, 8, 19, 4, 14, 11, 5
Then output will be 21</td><td>(3)</td></tr>
<tr><td></td><td></td><td>OR</td><td></td></tr>
<tr><td></td><td>(b)</td><td>Write a user defined function Reverse(int A[],int n) which accepts an integer array and its size as arguments(parameters) and reverse the array.
Example : if the array is 10,20,30,40,50 then reversed array is 50,40,30,20,10</td><td></td></tr>
<tr><td></td><td>(c)</td><td>An array S[10] [30] is stored in the memory along the column with each of its element occupying 2 bytes. Find out the memory location of S[5][10], if element S[2][15] is stored at the location 8200.</td><td>(3)</td></tr>
<tr><td></td><td></td><td>OR</td><td></td></tr>
<tr><td></td><td>(c)</td><td>An array A[30][10] is stored in the memory with each element requiring 4 bytes of storage ,if the base address of A is 4500 ,Find out memory locations of A[12][8], if the content is stored along the row.</td><td></td></tr>
<tr><td></td><td>(d)</td><td>Write the definition of a member function Ins_Player() for a class CQUEUE in C++, to add a Player in a statically allocated circular queue of PLAYERs considering the following code
is already written as a part of the program:
struct Player
{
long Pid;
char Pname[20];</td><td>(4)</td></tr>
</table>

		};
		const int size=10;
		class CQUEUE
		{
		Player Ar[size];
		int Front, Rear;
		public:
		CQUEUE( )
		{
		Front = -1;
		Rear = -1;
		}
		void Ins_Player(); // To add player in a static circular queue
		void Del_Player(); // To remove player from a static circular queue
		void Show_Player(); // To display static circular queue
		};	

		OR	

	(d)	Write a function in C++ to delete a node containing Books information ,from a dynamically allocated stack of Books implemented with the help of the following structure:
		struct Book
		{
		int BNo;
		char BName[20];
		Book *Next;
		};	

	(e)	Convert the following Infix expression to its equivalent Postfix expression, showing the stack contents for each step of conversion. A/B+C*(D-E)	(2)
		OR	
		Evaluate the following Postfix expression : 4,10,5,+,*,15,3,/,-	
4	(a)	Write a function RevText() to read a text file " Input.txt " and Print only word starting with 'I' in reverse order . **Example: If value in text file is: INDIA IS MY COUNTRY** **Output will be: AIDNI SI MY COUNTRY**	(2)
		OR	
	(a)	Write a function in C++ to count the number of lowercase alphabets present in a text file "BOOK..txt".	

	(b)	Write a function in C++ to search and display details, whose destination is "Cochin" from binary file "Bus.Dat". Assuming the binary file is containing the objects of the following class:
		class BUS
		{ int Bno; // Bus Number
		char From[20]; // Bus Starting Point
		char To[20]; // Bus Destination
		public:
		char * StartFrom ( ); { return From; }
		char * EndTo( ); { return To; }
		void input() { cin>>Bno>>; gets(From); get(To); }
		void show( ) { cout<<Bno<< ":"<<From << ":" <<To<<endl; }
		};
			(3)

		OR	

	(b)	Write a function in C++ to add more new objects at the bottom of a binary file "STUDENT.dat", assuming the binary file is containing the objects of the following class :
		class STU
		{
		int Rno;
		char Sname[20];
		public: void Enter()
		{
		cin>>Rno;gets(Sname);
		}
		void show()
		{
		count << Rno<<sname<<endl;
		}
		};	

	(c)	Find the output of the following C++ code considering that the binary file PRODUCT.DAT exists on the hard disk with a list of data of 500 products.
		class PRODUCT
		{
		int PCode;char PName[20];
		public:
		void Entry();void Disp();
		};
		void main()
		{
		fstream In;
		In.open("PRODUCT.DAT",ios::binary|ios::in);
		PRODUCT P;
		In.seekg(0,ios::end);
		cout<<"Total Count: "<<In.tellg()/sizeof(P)<<endl;
			(1)

```
        In.seekg(70*sizeof(P));
        In.read((char*)&P, sizeof(P));
        In.read((char*)&P, sizeof(P));
        cout<<"At Product:"<<In.tellg()/sizeof(P) + 1;
        In.close();
}
```

OR

(c) Which file stream is required for seekg() ?

5 (a) Observe the following table and answer the parts(i) and(ii) accordingly (2)

Table:Product

Pno	Name	Qty	PurchaseDate
101	Pen	102	12-12-2011
102	Pencil	201	21-02-2013
103	Eraser	90	09-08-2010
109	Sharpener	90	31-08-2012
113	Clips	900	12-12-2011

(i) Write the names of most appropriate columns, which can be considered as candidate keys.

(ii) What is the degree and cardinality of the above table?

(b) Write SQL queries for (i) to (iv) and find outputs for SQL queries (v) to (viii), which are based on the tables. (4+2)

TRAINER

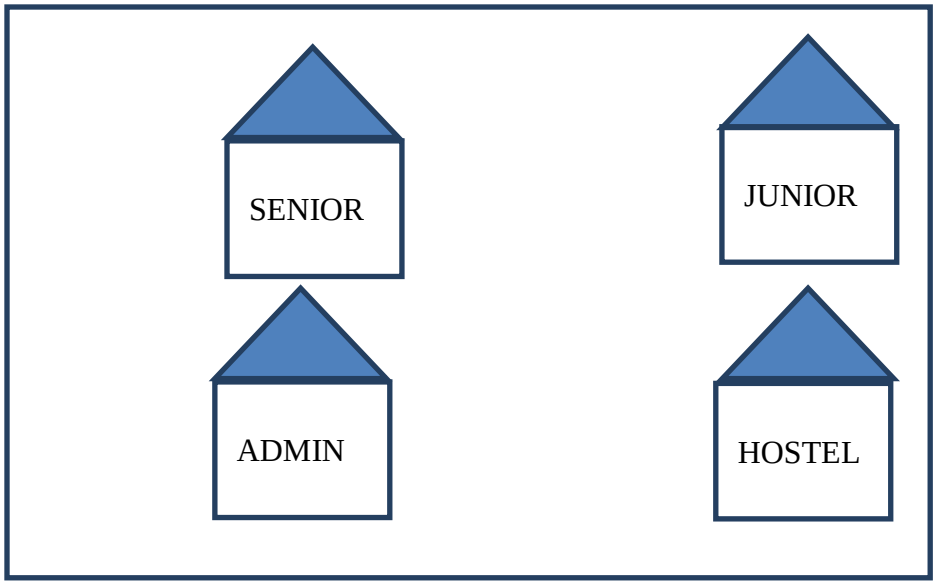
TID	TNAME	CITY	HIREDATE	SALARY
101	SUNAINA	MUMBAI	1998-10-15	90000
102	ANAMIKA	DELHI	1994-12-24	80000
103	DEEPTI	CHANDIGARG	2001-12-21	82000
104	MEENAKSHI	DELHI	2002-12-25	78000
105	RICHA	MUMBAI	1996-01-12	95000
106	MANIPRABHA	CHENNAI	2001-12-12	69000

COURSE

CID	CNAME	FEES	STARTDATE	TID
C201	AGDCA	12000	2018-07-02	101
C202	ADCA	15000	2018-07-15	103
C203	DCA	10000	2018-10-01	102
C204	DDTP	9000	2018-09-15	104
C205	DHN	20000	2018-08-01	101
C206	O LEVEL	18000	2018-07-25	105

	(i)	Display the Trainer Name, City & Salary in descending order of their Hiredate.	
	(ii)	To display the TNAME and CITY of Trainer who joined the Institute in the month of December 2001.	
	(iii)	To display TNAME, HIREDATE, CNAME, STARTDATE from tables TRAINER and COURSE of all those courses whose FEES is less than or equal to 10000.	
	(iv)	To display number of Trainers from each city.	
	(v)	SELECT TID, TNAME, FROM TRAINER WHERE CITY NOT IN('DELHI', 'MUMBAI');	
	(vi)	SELECT DISTINCT TID FROM COURSE;	
	(vii)	SELECT TID, COUNT(*), MIN(FEES) FROM COURSE GROUP BY TID HAVING COUNT(*)>1;	
	(viii)	SELECT COUNT(*), SUM(FEES) FROM COURSE WHERE STARTDATE< '2018-09-15';	
6	(a)	State any one Distributive Law of Boolean Algebra and Verify it using truth table.	(2)
	(b)	Draw the Logic Circuit of the following Boolean Expression: ((U + V').(U + W)). (V + W')	(2)
	(c)	Derive a Canonical SOP expression for a Boolean function F(X,Y,Z) represented by the following truth table:	(1)
	(d)	Reduce the following Boolean Expression to its simplest form using K-Map: **F(X,Y,Z,W)= Σ (0,1,2,3,4,5,8,10,11,14)**	(3)

X	Y	Z	F(X,Y,Z)
0	0	0	1
0	0	1	1
0	1	0	0
0	1	1	0
1	0	0	1
1	0	1	0
1	1	0	0
1	1	1	1

7	(a)	Arun opened his e-mail and found that his inbox was full of hundreds of unwanted mails. It took him around two hours to delete these unwanted mails and find the relevant ones in his inbox. What may be the cause of his receiving so many unsolicited mails? What can Arun do to prevent this happening in future?	(2)
	(b)	Assume that 50 employees are working in an organization. Each employee has been allotted a separate workstation to work. In this way, all computers are connected through the server and all these workstations are distributed over two floors. In each floor, all the computers are connected to a switch. Identify the type of network?	(1)
	(c)	Your friend wishes to install a wireless network in his office. Explain him the difference between guided and unguided media.	(1)
	(d)	Write the expanded names for the following abbreviated terms used in Networking and Communications: (i) CDMA (ii) HTTP (iii) XML (iv) URL	(2)
	(e)	Multipurpose Public School, Bangluru is Setting up the network between its Different Wings of school campus. There are 4 wings namedasSENIOR(S),JUNIOR(J),ADMIN(A)andHOSTEL(H). Multipurpose Public School, Bangluru  	(4)

Distancebetweenvariouswingsaregivenbelow:

WingAtoWingS	100m
WingAtoWingJ	200m
WingAtoWingH	400m
WingStoWingJ	300m
WingStoWingH	100m
WingJtoWingH	450m

Number of Computers installed at various wings are as follows:

Wings	NumberofComputers
WingA	20
WingS	150
WingJ	50
WingH	25

(i)	Suggest the best wired medium and draw the cable layout to efficiently connect various wings of Multipurpose PublicSchool, Bangluru.
(ii)	Namethe most suitablewing wherethe Servershouldbe installed.Justifyyour answer.
(iii)	Suggest a device/software and its placement that would provide data security for the entire network of the School.
(iv)	Suggest a device and the protocol that shall be needed to provide wireless Internet access to all smartphone/laptop users in the campus of Multipurpose Public School, Bangluru.

SAMPLE QUESTION PAPER 2019-20

Marking Scheme
COMPUTER SCIENCE - OLD (Code: 283)

CLASS:-XII

Time:3 Hrs. **M.M.:70**

Q. No.	Part	Question Description	Marks
1	(a)	Write the type of C++ Operators (Arithmetic, Logical, and Relational Operators) from the following: (i) !(ii) !=(iii) &&(iv) %	2
	Ans.	(i) Logical (ii) Relational (iii)Logical (iv) Arithmetic	
		(1/2 Mark for each correct Operator Type)	

	(b)	Observe the following program very carefully and write the name of those header file(s), which are essentially needed to compile and execute thefollowing program successfully:
		void main()
		{
		char text[20], newText[20];
		gets(text);
		strcpy(newText,text);
		for(int i=0;i<strlen(text);i++)
		if(text[i]==’A’)
		text[i]=text[i]+2;
		puts(text);
		}
			1

	Ans.	• stdio.h • string.h	
		(½ Mark for writing each correct header file) NOTE: Any other header file to be ignored	

	(c)	Rewrite the following C++ code after removing any/all Syntactical Error(s) with each correction underlined.
		Note: Assume all required header files are already being included in the program.
		#define float PI 3.14
		void main( )
		{
		float R=4.5,H=1.5;
		A=2*PI*R*H + 2*PIpow(R,2);
		cout<<‘Area=’<<A<<endl;
		}
			(2)

```
#define PI 3.14//Error 1
void main( )
{
        float  R=4.5,H=1.5;
        floatA=2*PI*R*H + 2*PI*pow(R,2);          //Error 2, 3
        cout<<"Area="<<A<<endl;                    //Error 4
}
```

(½ Mark for each correction)
OR
(1 mark for identifying the errors, without suggesting corrections)

(d) Find and write the output of the following C++ program code: (3)

Note: Assume all required header files are already being included in the program.

```
void main( )
{
        int Ar[ ] = { 6 , 3 , 8 , 10 , 4 , 6 , 7} ;
        int *Ptr = Ar , I ;
cout<<++*Ptr++ << '@' ;
I = Ar[3] - Ar[2] ;
cout<<++*(Ptr+I)<<'@'<<"\n" ;
cout<<++I + *Ptr++ << '@' ;
cout<<*Ptr++ <<'@'<< '\n' ;
for( ; I >=0 ; I -=2)
        cout<<Ar[I] << '@' ;
}
```

Ans

```
7@11@
6@8@
11@3@
```

(½ Mark for writing each correct value)
OR
(Only ½ Mark for writing all '@' at proper places)
Note:

- Deduct only ½ Mark for not considering any or all correct placements of @
- Deduct only ½ Mark for not considering any or all line break

(e) Find and write the output of the following C++ program code: (2)

```
typedef char STRING[80];
void MIXNOW(STRING S)
{
   int Size=strlen(S);
   for(int I=0;I<Size;I+=2)
   {
                char WS=S[I];
```

		S[I]=S[I+1];
		S[I+1]=WS;
		}
		for (I=1;I<Size;I+=2)
		if (S[I]>='M' && S[I]<='U')
		S[I]='@';
		}
		void main()
		{
		STRING Word="CBSEEXAM2019";
		MIXNOW(Word);
		cout<<Word<<endl;
		}	

	Ans.	BCE@XEMA0291	
		(2 Marks for correct output) OR (½ Mark for each of two correct consecutive alphabets not exceeding 1½ marks)	

	(f)	Observe the following program and find out, which output(s) out of (i) to (iv) willbe expected from the program? What will be the minimum and the maximum value assigned to the variable Alter?
		Note: Assume all required header files are already being included in the program.
		void main( )
		{
		randomize();
		int Ar[]={10,7}, N;
		int Alter=random(2) + 10 ;
		for (int C=0;C<2;C++)
		{
		N=random(2) ;
		cout<<Ar[N] +Alter<<"#";
		}
		}
		(i) 21#20# (ii) 20#18#
		(iii) 20#17# (iv) 21#17#
			(2)

	Ans.	The output expected from the program is (iii) 20#17# Minimum Value of Alter = 10 Maximum Value of Alter = 11	
		(1 Mark for writing correct option (iii)) (½ Mark for writing correct Minimum Value of Alter) (½ Mark for writing correct Maximum Value of Alter)	

23	(a)	What is a copy constructor? Illustrate with a suitable C++ example.	(2)

	Ans.	A copy constructor is an overloaded constructor in which an object of the same class is passed as reference parameter.
		class X
		{
		int a;
		public:
		X()
		{
		a=0;
		}
		X(X &ob) //copy constructor
		{
		a=ob.a;
		}
		};
		
		(Full 2 Marks to be awarded if the copy constructor is explained with an appropriate example)
		
		OR
		
		(1 Mark for correct explanation of copy constructor only without an example)	

	(b)	Write the output of the following C++ code. Also, write the name of feature of Object Oriented Programming used in the following program jointly illustrated by the Function 1 to Function 4.
		
		void My_fun ( ) // Function 1
		{
		for (int I=1 ; I<=50 ; I++) cout<< "-" ;
		cout<<end1 ;
		}
		void My_fun (int N) // Function 2
		{
		for (int I=1 ; I<=N ; I++) cout<<"*" ;
		cout<<end1 ;
		}
		void My_fun (int A, int B) // Function 3
		{
		for (int I=1. ;I<=B ;I++) cout <<A*I ;
		cout<<end1 ;
		}
		void My_fun (char T, int N) // Function 4
		{
		for (int I=1 ; I<=N ; I++) cout<<T ;
		cout<<end1;
			(2)

```
        }
        void main ( )
        {
                int X=7, Y=4, Z=3;
                char C='#' ;
                My_fun (C,Y) ;
                My_fun (X,Z) ;
}
```

OR

Write any four differences between Constructor and Destructor function with respect to object oriented programming

Ans.

####
71421
Polymorphism
OR
Function Overloading

OR

Constructor	Destructor
Name of the constructor function is same as that of class	Name of the destructor function is same as that of class preceded by ~
Constructor functions are called automatically at the time of creation of the object	Destructor functions are called automatically when the scope of the object gets over
Constructor can be overloaded	Destructor ca not be overloaded
Constructor is used to initialize the data members of the class	Destructor is used to de- initialize the data members of the class

(½ Mark for writing each correct line of output)
(1 Mark for writing the feature name correctly)

OR

(½ Mark for writing each correct difference)

(c) Define a class Ele_Bill in C++ with the following descriptions: (4)

Private members:

Cname of type character array
Pnumber of type long
No_of_units of type integer
Amount of type float.
Calc_Amount( ) This member function should calculate the amount asNo_of_units*Cost .

Amount can be calculated accordingto the following conditions:

No of units Cost

First 50 units	Free
Next 100 units	0.80 @ unit
Next 200 units	1.00 @ unit
Remaining units	1.20 @ unit

Public members:

* A function Accept( ) which allows user to enter Cname, Pnumber, No_of_units and invoke function Calc_Amount().
* A function Display( ) to display the values of all the data members on the screen.

Ans.

```
class Ele_Bill
{
    char Cname[20];
    long Pnumber;
    int No_of_units;
    float Amount;
    void Calc_Amount( );
  public:
    void Accept();
    void Display();
};

    void Ele_Bill : : Calc_Amount( )
    {
            if(No_of_units<=50)
            {
                    Amount=0;
}
else if(No_of_units<=150)
             {
                    Amount=(No_of_units-50)*0.80;
}
            else if(No_of_units<=350)
             {
                    Amount=80+(No_of_units-150)*1.00;
}
              else
              {
                    Amount=80+200+(No_of_units-350)*1.20;
              }
      }
  void Ele_Bill :: Accept( )
```

		{
		gets(Cname);
		cin>Pnumber>>No_of_units;
		Calc_Amount( );
		}
		void Ele_Bill :: Display( )
		{
		cout<<Cname<<Pnumber<<No_of_units<<Amount;
		}	

		(½ Mark for declaring class header correctly) (½ Mark for declaring data members correctly) (1 Mark for defining Calc_Amount() correctly) (½ Mark for taking inputs of Cname, Pnumber and No_of_units in Accept()) (½ Mark for invoking Calc_Amount() inside Accept()) (½ Mark for defining Display() correctly) (½ Mark for correctly closing class declaration with a semicolon ;) **NOTE:** **Marks to be awarded for defining the member functions inside or outside the class**	

	(d)	Answer the questions (i) to (iv) based on the following:
		class Faculty
		{
		int FCode;
		protected:
		char FName[20];
		public:
		Faculty();
		void Enter();
		void Show();
		};
		class Programme
		{
		int PID;
		protected:
		char Title[30];
		public:
		Programme();
		void Commence();
		void View();
		};
		class Schedule: public Programme, Faculty
		{
		int DD,MM,YYYY;
		public:
		Schedule();
			(4)

		void Start();
		void View();
		};
		void main()
		{
		Schedule S; //Statement 1
		_____ //Statement 2
		}	

		OR	

		Consider the following class State :
		class State
		{
		protected :
		int tp;
		public :
		State( ) { tp=0;}
		void inctp( ) { tp++;};
		int gettp(); { return tp; }
		};
		Write a code in C++ to publically derive another class 'District' with the following additional members derived in the public visibility mode.
		Data Members :
		Dname string
		Distance float
		Population long int
		Member functions :
		DINPUT( ) : To enter Dname, Distance and population
		DOUTPUT( ) : To display the data members on the screen.	

	(i)	Write the names of all the member functions, which are directly accessible by the object S of class Schedule as declared in main() function.	
	Ans.	Start(), Schedule::View(), Commence(), Programme::View()	
		(1 Mark for writing all correct member names) NOTE: ● Ignore the mention of Constructors	
	(ii)	Write the names of all the members, which are directly accessible by the memberfunction Start( ) of class Schedule.	
	Ans.	DD,MM,YYYY, Schedule::View() Title, Commence( ), Programme::View() Fname, Enter(), Show()	
		(1 Mark for writing all correct member names)	

		NOTE: ● Marks not to be awarded for partially correct answer ● Ignore the mention of Constructors	
	(iii)	Write Statement 2 to call function View( ) of class Programme from the object S of class Schedule.	
	Ans.	S.Programme::View( );	
		(1 Mark for writing Statement 2 correctly)	
	(iv)	What will be the order of execution of the constructors, when the object S of class Schedule is declared inside main()?	
	Ans.	Programme( ), Faculty( ), Schedule( )	
		OR	

	Ans.	class District : public State
		{
		public :
		char Dname[20];
		float Distance;
		long int Population;
		void DINPUT( )
		{
		gets(Dname);
		cin>>distance;
		cin>>Population;
		}
		void DOUTPUT( )
		{
		cout<<Dname<<endl;
		cout<<Distance<<endl;
		cout<<population<<endl;
		}
		};	

		(1 Mark for writing correct order) ● No Marks to be awarded for any other combination/order. ● Names of the constructor/class without parenthesis is acceptable	
		OR	
		(1 Mark for correct syntax for derived class header) (½ Mark for writing public :) (½ Mark for correct declaration of data members Dname ,Distance and Population) (1 Mark for defining the function DINPUT( )) (1 Mark for defining the function DOUTPUT( ))	

	(a) Ans.	Write a user-defined function AddEnd4(int A[][4],int R,int C) in C++ to find and display the sum of all the values, which are ending with 4 (i.e., unit place is 4). For example if the content of array is: 24 16 14 19 5 4 The output should be 42	(2)
		OR	
		Write a user defined function in C++ to find the sum of both left and right diagonal elements from a two dimensional array.	

		void AddEnd4(int A[ ][4], int R, int C)
		{
		int I,J,sum=0;
		for(I=0;I<R;I++)
		{
		for(J=0;J<C;J++)
		if(A[I][J]%10 ==4)
		sum=sum+A[I][J];
		}
		cout<<sum;
		}	

		OR	

		void Diagsumboth(int A[][4], int n)
		{
		int sumLt=0,sumRt=0;
		for(int i=0;i<n;i++)
		{
		sumLt+=A[i][i];
		else
		sumRt+=A[n-1-i][i];
		}
		cout<<"sum of left diagonal"<<sumlt<<endl;
		cout<<"sum of right diagonal"<<sumRt<<endl;
		}	

		(½ Mark for correct loops) (½ Mark for correct checking values ending with 4) (½ Mark for finding sum of values) (½ Mark for displaying the sum)	
		OR	
		(1/2 Mark for correct loop) (1/2 Mark each for calculating sum of left or right diagonals) (1/2 Mark for displaying)	

	(b)	Write a user-defined function EXTRA_ELE(int A[ ], int B[ ], int N) in C++ to find and display the extra element in Array A. Array A contains all the elements of array B but one more element extra. (Restriction: array elements are not in order) Example If the elements of Array A is 14, 21, 5, 19, 8, 4, 23, 11 and the elements of Array B is 23, 8, 19, 4, 14, 11, 5 Then output will be 21	(3)
		OR	
		Write a user defined function Reverse(int A[],int n) which accepts an integer array and its size as arguments(parameters) and reverse the array. **Example : if the array is 10,20,30,40,50 then reversed array is 50,40,30,20,10**	

	Ans.	void EXTRA_ELE(int A[], int B[],int N)
		{
		int i,j,flag=0;
		for(i=0;i<N;i++)
		{
		for(j=0;j<N;j++)
		{
		if(A[i]==B[j])
		{
		flag=1;
		break;
		}
		}
		if(flag==0)
		cout<<"Extra element"<<A[i];
		flag=0;
		}
		}	

		OR	

		void Reverse(int A[ ] , int n)
		{
		int temp;
		for(int i=0;i<n/2;i++)
		{
		temp=A[i];
		A[i]=A[n-1-i];
		A[n-1-i]=temp;
		}
		}	

		(1 Mark for correct loops) (1 Mark for checking array elements which are equal) (½ Mark for display the extra element)	

		OR	
		(1 Mark for correct loop) (2 Marks for swapping elements)	
	(c)	An array S[10] [30] is stored in the memory along the column with each of its element occupying 2 bytes. Find out the memory location of S[5][10], if element S[2][15] is stored at the location 8200.	(3)
		OR	
		An array A[30][10] is stored in the memory with each element requiring 4 bytes of storage ,if the base address of A is 4500 ,Find out memory locations of A[12][8], if the content is stored along the row.	
	Ans.	**OPTION 1:** ASSUMING LBR=LBC=0 W=2 BYTES, NUMBER OF ROWS(M)=10, NUMBER OF COLUMNS(N)=30 LOC(S[I][J]) = B +(I + J*M)*W LOC(S[2][15]) = B +(2+15*10)* 2 8200 = B + (152*2) B = 8200 - 304 B = 7896 LOC(S[5][10]) = 7896 +(5+10*10)* 2 = 7896 + (105*2) = 7896 + 210 = 8106 **OPTION 2:** ASSUMING LBR=2,LBC=15 AND B = 8200 W=2 BYTES, NUMBER OF ROWS(M)=10, NUMBER OF COLUMNS(N)=30 LOC(S[I][J]) = B +((I-LBR) + (J-LBC)*M)*W LOC(S[5][10])= 8200 + ((5-2) + (10-15)*10)*2 = 8200 + (3 + (-5)*10) * 2 = 8200 + (3 + (-50)) * 2 = 8200 + (3 – 50) * 2 = 8200 + (-47) * 2 = 8200 – 94 = 8106	
		OR	
		Loc of A[12][8]= B+W*(N*(I-LBR)+(J-LBC)) =4500+4*(10*12+8) = 4500 4*(128) =4500 + 512 = 5012	

		1 Mark for writing correct formula (for column major) OR substituting formula with correct values) (1 Mark for correct step calculations) (1 Mark for final correct address)	
		OR	
		1 Mark for writing correct formula (for Row major) OR substituting formula with correct values) (1 Mark for correct step calculations) (1 Mark for final correct address)	

	(d)	Write the definition of a member function Ins_Player() for a class CQUEUE in C++, to add a Player in a statically allocated circular queue of PLAYERs considering the following code is already written as a part of the program:
		struct Player
		{
		long Pid;
		char Pname[20];
		};
		const int size=10;
		class CQUEUE
		{
		Player Ar[size];
		int Front, Rear;
		public:
		CQUEUE( )
		{
		Front = -1;
		Rear=-1;
		}
		void Ins_Player(); // To add player in a static circular queue
		void Del_Player(); // To remove player from a static circular queue
		void Show_Player(); // To display static circular queue
		};
			(4)

		OR	

		Write a function in C++ to delete a node containing Books information ,from a dynamically allocated stack of Books implemented with the help of the following structure:
		struct Book
		{
		int BNo;
		char BName[20];
		Book *Next;
		};	

	Ans.	void CQUEUE : : Ins_Player( )
		{
		if((Front==0 && Rear==size-1) || (Front==Rear+1)
		{
		cout<< "Overflow";
		return;
		}
		else if(Rear = = -1)
		{
		Front=0;
		Rear=0;
		}
		else if(Rear= =size-1)
		{
		Rear=0;
		}
		else
		{
		Rear++;
		}
		cout<< "Enter Player Id=";
		cin>>Ar[Rear].Pid;
		cout<< "Enter Player Name=";
		gets(Ar[Rear].Pname);
		}	

		OR	

		struct Book
		{
		int BNo;
		char BName[20];
		Book *Next;
		}*temp,*top;
		
		void pop()
		{
		temp=new Book ;
		temp=top;
		top=top->next;
		delete temp;
		}	

		(1 Mark for checking if Queue is Full) (1 Mark for checking if Queue is Empty) (½ Mark for checking Rear is at size-1) (½ Mark for incrementing Rear) (½ *M*ark for assigning Values to the Rear location of the Queue)	

OR

(1 Mark for creating new node Book)
(1 Mark for assigning top to temp)
(1 Mark for top=top->next)
(1 Mark for delete top)

(e) Convert the following Infix expression to its equivalent Postfix expression, showing the stack contents for each step of conversion. (2)

A/B+C*(D-E)

OR

Evaluate the following Postfix expression :

4,10,5,+,*,15,3,/,-

Ans:

Element	Stack	Postfix
A		A
/	/	A
B	/	AB
+	+	AB/
C	+	AB/C
*	+*	AB/C
(	+*(	AB/C
D	+*(	AB/CD
-	+*(-	AB/CD
E	+*(-	AB/CDE
)	+*	AB/CDE-
	+	AB/CDE-*
		AB/CDE-*+

OR

55

(½ Mark for conversion upto each operator illustrating through stack)

OR

(1/2 Mark for evaluating each operator)

4 (a) Write a function RevText() to read a text file " Input.txt " and Print only word starting with 'I' in reverse order . (2)

Example: If value in text file is: INDIA IS MY COUNTRY
Output will be: AIDNI SI MY COUNTRY

OR

Write a function in C++ to count the number of lowercase alphabets present in a text file "BOOK..txt".

	Ans.	void RevText( )
		{
		ifstream Fin("Input.txt");
		char Word[20];
		while(!Fin.eof())
		{
		Fin>>Word;
		if(Word[0]=='I')
		strrev(Word);
		cout<<Word<< " ";
		}
		Fin.close( );
		}	

		OR	

		int Countalpha()
		ifstream ifile ("BOOK.txt");
		char ch;
		int count =0;
		while (! ifile.eof())
		{
		ifile.get(ch);
		if(isfower(ch))
		count ++;
		}
		ifile.close();
		return (count)
		}	

		(½ Mark for opening Input.txt correctly) (½ Mark for reading each Word from the file) (½ Mark for checking the word starting with 'I') (½ Mark for reversing and displaying the word)	
		OR	
		(½ Mark for opening Input.txt correctly) (½ Mark for reading each character from the file) (½ Mark for checking the lower character) (½ Mark for displaying the count)	

	(b)	Write a function in C++ to search and display details, whose destination is "Cochin" from binary file "Bus.Dat". Assuming the binary file is containing the objects of the following class:
		class BUS
		{ int Bno; // Bus Number
		char From[20]; // Bus Starting Point
			(3)

```
        char To[20];                    // Bus Destination
      public:
char * StartFrom ( ); { return From; }
        char * EndTo( ); { return To; }
        void input() { cin>>Bno>>; gets(From); get(To); }
        void show( ) { cout<<Bno<< ":"<<From << ":" <<To<<endl; }
};
```

OR

Write a function in C++ to add more new objects at the bottom of a binary file "STUDENT.dat", assuming the binary file is containing the objects of the following class :

```
class STU
{
int Rno;
char Sname[20];
public: void Enter()
{
cin>>Rno;gets(Sname);
}
void show()
{
count << Rno<<sname<<endl;
}
};
```

Ans.

```
void Read_File( )
{
      BUS B;
      ifstream Fin;
      Fin.open("Bus.Dat", ios::binary);
      while(Fin.read((char *) &B, sizeof(B)))
      {
            if(strcmp(B.EndTo(), "Cochin")==0)
            {
                  B.show( )  ;
            }
     }
     Fin.close( );
}
```

OR

```
void Addrecord()
{
ofstream ofile;
ofile.open("STUDENT.dat", ios ::out);
STU S;
char ch='Y';
while (Ch=='Y' || Ch = = 'y')
{
```

		S.Enter();
		ofile.write (Char*) & S, sizeof(s));
		cout << "more (Y/N)";
		cin>>ch;
		}
		ofile.close();
		}	

		(½ Mark for opening Bus.Dat correctly) (1 Mark for reading each record from Bus.Dat) (1 Mark for comparing value returned by EndTo( ) with "Cochin") (½ Mark for displaying the matching record)	
		OR	
		(1 Mark for opening STUDENT.Dat correctly) (1 Mark for S.Enter()) (1 Mark for writing each record into the file)	

	(c)	Find the output of the following C++ code considering that the binary file PRODUCT.DAT exists on the hard disk with a list of data of 500 products.
		class PRODUCT
		{
		int PCode;char PName[20];
		public:
		void Entry();void Disp();
		};
		void main()
		{
		fstream In;
		In.open("PRODUCT.DAT",ios::binary|ios::in);
		PRODUCT P;
		In.seekg(0,ios::end);
		cout<<"Total Count: "<<In.tellg()/sizeof(P)<<endl;
		In.seekg(70*sizeof(P));
		In.read((char*)&P, sizeof(P));
		In.read((char*)&P, sizeof(P));
		cout<<"At Product:"<<In.tellg()/sizeof(P) + 1;
		In.close();
		}
			(1)

		OR	
		Which file stream is required for seekg() ?	
	Ans.	Total Count:500 At Product: 73	
		OR	

		fstream/ ifstream	
		(½ Mark for each correct value of In.tellg()/sizeof(P) as 500 and 73 respectively)	
		OR	
		(1 Mark for correct stream)	
5	(a)	Observe the following table and answer the parts(i) and(ii) accordingly **Table:Product**	(2)

Pno	Name	Qty	PurchaseDate
101	Pen	102	12-12-2011
102	Pencil	201	21-02-2013
103	Eraser	90	09-08-2010
109	Sharpener	90	31-08-2012
113	Clips	900	12-12-2011

	(i)	Write the names of most appropriate columns, which can be considered as candidate keys.
	Ans.	Candidate Key: Pno, Name
		(1 Mark for writing correct Candidate Keys)
	(ii)	What is the degree and cardinality of the above table?
	Ans.	Degree:4 Cardinality:5
		(½ Mark for writing correct value of degree) (½ Mark for writing correct value of cardinality)
	(b)	Write SQL queries for (i) to (iv) and find outputs for SQL queries (v) to (viii), which are based on the tables.

TRAINER

TID	TNAME	CITY	HIREDATE	SALARY
101	SUNAINA	MUMBAI	1998-10-15	90000
102	ANAMIKA	DELHI	1994-12-24	80000
103	DEEPTI	CHANDIGARG	2001-12-21	82000
104	MEENAKSHI	DELHI	2002-12-25	78000
105	RICHA	MUMBAI	1996-01-12	95000
106	MANIPRABHA	CHENNAI	2001-12-12	69000

COURSE

CID	CNAME	FEES	STARTDATE	TID
C201	AGDCA	12000	2018-07-02	101
C202	ADCA	15000	2018-07-15	103
C203	DCA	10000	2018-10-01	102
C204	DDTP	9000	2018-09-15	104
C205	DHN	20000	2018-08-01	101
C206	O LEVEL	18000	2018-07-25	105

(i) Display the Trainer Name, City & Salary in descending order of their Hiredate.

Ans. SELECT TNAME, CITY, SALARY FROM TRAINER ORDER BY HIREDATE;

(½ Mark for SELECT TNAME, CITY, SALARY FROM TRAINER)
(½ Mark for ORDER BY HIREDATE)

(ii) To display the TNAME and CITY of Trainer who joined the Institute in the month of December 2001.

Ans. SELECT TNAME, CITY FROM TRAINER WHERE HIREDATE BETWEEN '2001-12-01' AND '2001-12-31';
OR
SELECT TNAME, CITY FROM TRAINER WHERE HIREDATE >= '2001-12-01' AND HIREDATE<='2001-12-31';
OR
SELECT TNAME, CITY FROM TRAINER WHERE HIREDATE LIKE '2001-12%';

(½ Mark for SELECT TNAME, CITY FROM TRAINER)
(½ Mark for
WHERE HIREDATE BETWEEN '2001-12-01' AND '2001-12-31'
OR
WHERE HIREDATE >= '2001-12-01' AND HIREDATE<='2001-12-31
OR
WHERE HIREDATE LIKE '2001-12%'

(iii) To display TNAME, HIREDATE, CNAME, STARTDATE from tables TRAINER and COURSE of all those courses whose FEES is less than or equal to 10000.

Ans. SELECT TNAME,HIREDATE,CNAME,STARTDATE FROM TRAINER, COURSE WHERE TRAINER.TID=COURSE.TID AND FEES<=10000;

		(1 Mark for correct query) OR (½ Mark for correct SELECT) (½ Mark for correct WHERE Clause)	
	(iv)	To display number of Trainers from each city.	
	Ans.	SELECT CITY, COUNT(*) FROM TRAINER GROUP BY CITY;	
		(1 Mark for correct query) OR (½ Mark for correct SELECT) (½ Mark for GROUP BY CITY)	
	(v)	SELECT TID, TNAME, FROM TRAINER WHERE CITY NOT IN('DELHI', 'MUMBAI');	
	Ans.	TIDTNAME 103 DEEPTI 106 MANIPRABHA	
		(½ Mark for correct output)	
	(vi)	SELECT DISTINCT TID FROM COURSE;	
	Ans.	DISTINCT TID 101 103 102 104 105	
		(½ Mark for correct output)	
	(vii)	SELECT TID, COUNT(*), MIN(FEES) FROM COURSE GROUP BY TID HAVING COUNT(*)>1;	
	Ans.	TIDCOUNT(*)MIN(FEES) 101 2 12000	
		(½ Mark for correct output)	
	(viii)	SELECT COUNT(*), SUM(FEES) FROM COURSE WHERE STARTDATE< '2018-09-15';	
	Ans.	COUNT(*)SUM(FEES) 4 65000	
		(½ Mark for correct output)	

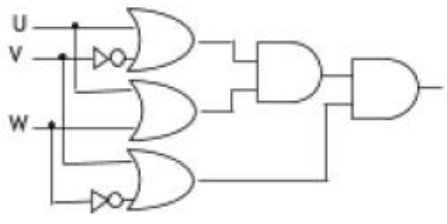
6	(a)	State any one Distributive Law of Boolean Algebra and Verify it using truth table.	(2)
	Ans.	Distributive Law: A+BC=(A+B)(A+C) Verification	

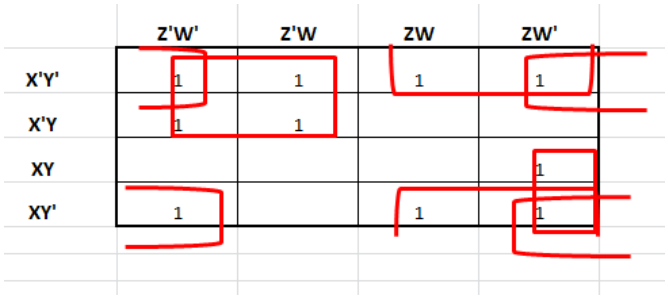
A	B	C	BC	A+BC	(A+B)	(A+C)	(A+B)(A+C)
0	0	0	0	0	0	0	0
0	0	1	0	0	0	1	0
0	1	0	0	0	1	0	0
0	1	1	1	1	1	1	1
1	0	0	0	1	1	1	1
1	0	1	0	1	1	1	1
1	1	0	0	1	1	1	1
1	1	1	1	1	1	1	1

OR
A(B+C)=AB+AC

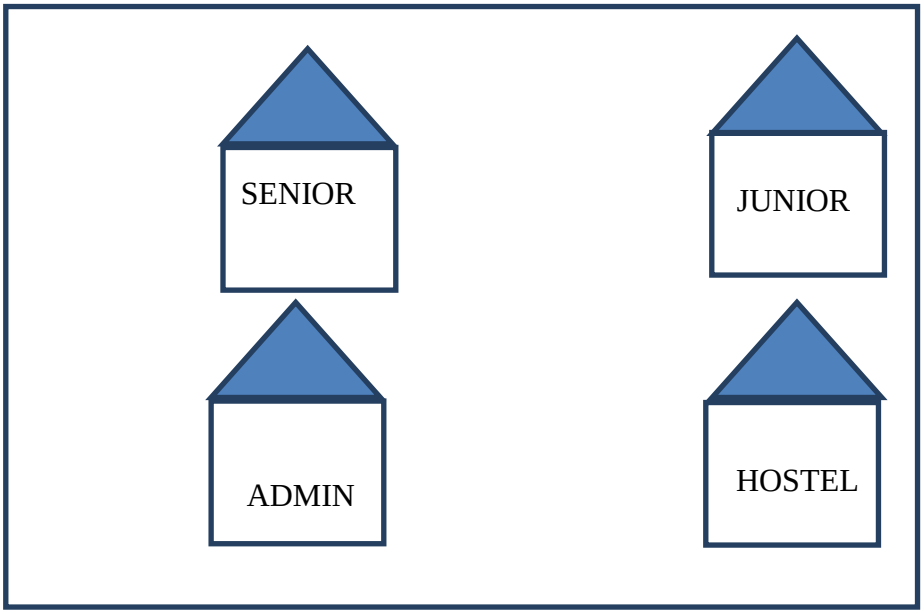
A	B	C	B+C	A(B+C)	AB	AC	AB+AC
0	0	0	0	0	0	0	0
0	0	1	1	0	0	0	0
0	1	0	1	0	0	0	0
0	1	1	1	0	0	0	0
1	0	0	0	0	0	0	0
1	0	1	1	1	0	1	1
1	1	0	1	1	1	0	1
1	1	1	1	1	1	1	1

(1 Mark for stating any one Distributive Law correctly)
(1 Mark for correctly verifying the stated Law using Truth Table)

	(b)	Draw the Logic Circuit of the following Boolean Expression: **((U + V').(U + W)). (V + W')**	(2)
	Ans.		
	(c)	Derive a Canonical SOP expression for a Boolean function F(X,Y,Z) represented by the following truth table:	(1)

		<table><tr><th>X</th><th>Y</th><th>Z</th><th>F(X,Y,Z)</th></tr><tr><td>0</td><td>0</td><td>0</td><td>1</td></tr><tr><td>0</td><td>0</td><td>1</td><td>1</td></tr><tr><td>0</td><td>1</td><td>0</td><td>0</td></tr><tr><td>0</td><td>1</td><td>1</td><td>0</td></tr><tr><td>1</td><td>0</td><td>0</td><td>1</td></tr><tr><td>1</td><td>0</td><td>1</td><td>0</td></tr><tr><td>1</td><td>1</td><td>0</td><td>0</td></tr><tr><td>1</td><td>1</td><td>1</td><td>1</td></tr></table>	
	Ans.	F(X,Y,Z)= X'Y'Z'+X'Y'Z+XY'Z'+XYZ OR F(X,Y,Z)=∑(0,1,4,7)	
		(1 Mark for the correct SOP form) OR (½ Mark for writing any two term correctly)	
	(d)	Reduce the following Boolean Expression to its simplest form using K-Map: **F(X,Y,Z,W)= Σ (0,1,2,3,4,5,8,10,11,14)**	(3)
		 **Simplified Expression: X'Z'+Y'W'+Y'Z+XZW'**	
		(½ Mark for drawing K-Map and correctly plotting 1s in the given cells) (½ Mark each for 4 groupings) (½ Mark for writing final expression in reduced/minimal form) Note: ● Deduct ½ mark if wrong variable names are used	
7	(a)	Arun opened his e-mail and found that his inbox was full of hundreds of unwanted mails. It took him around two hours to delete these unwanted mails and find the relevant ones in his inbox. What may be the cause of his receiving so many unsolicited mails? What can Arun do to prevent this happening in future?	(2)

	Ans.	Arun's email has been attacked with spam. These may be promotional mails from different advertisement groups. Arun must have checked some promotional offers while surfing the Internet. He should create filters in his email to stop receiving these unwanted mails.	
		(1 Mark for writing correct Answer) (1 Mark for writing correct Justification to prevent Spam)	
	(b)	Assume that 50 employees are working in an organization. Each employee has been allotted a separate workstation to work. In this way, all computers are connected through the server and all these workstations are distributed over two floors. In each floor, all the computers are connected to a switch. Identify the type of network?	(1)
	Ans.	LAN(Local Area Network)	
		(1 Mark for writing correct Answer)	
	(c)	Your friend wishes to install a wireless network in his office. Explain him the difference between guided and unguided media.	(1)
	Ans.	Guided media uses cables to connect computers, whereas unguided media uses waves.	
		(1 Mark for writing any correct difference between guided and unguided media)	
	(d)	Write the expanded names for the following abbreviated terms used in Networkingand Communications: (i) CDMA (ii) HTTP (iii) XML (iv) URL	(2)
	Ans.	(i) Code Division Multiple Access (ii) Hyper Text Transfer Protocol (iii) Extensible Markup Language (iv) Uniform Resource Locator	
		(½ Mark for writing each correct expansion)	
	(e)	Multipurpose Public School, Bangluru is Setting up the network between its Different Wings of school campus. There are 4 wings namedasSENIOR(S),JUNIOR(J),ADMIN(A)andHOSTEL(H). Multipurpose Public School, Bangluru	(4)



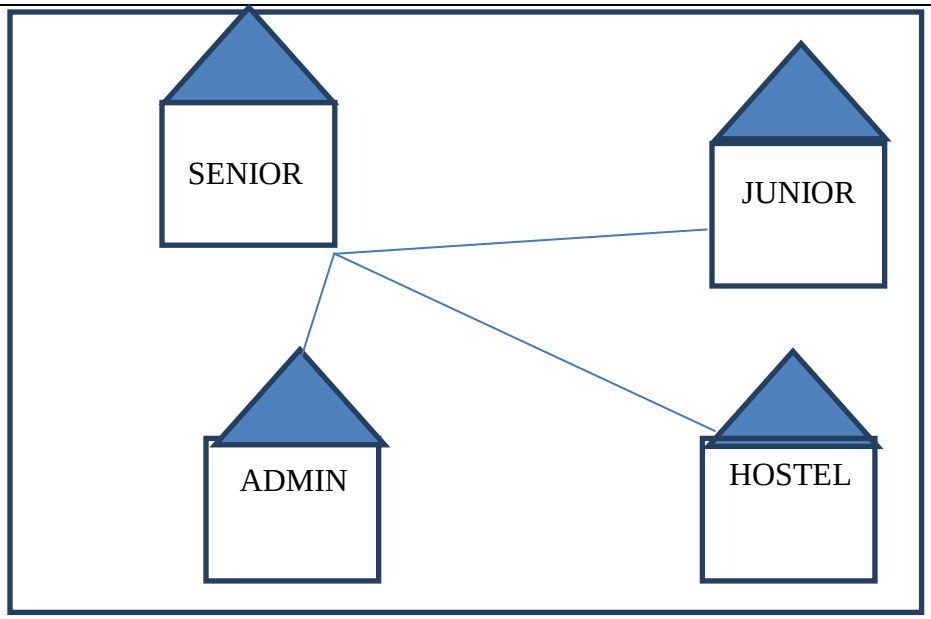
Distance between various wings are given below:

WingAtoWingS	100m
WingAtoWingJ	200m
WingAtoWingH	400m
WingStoWingJ	300m
WingStoWingH	100m
WingJtoWingH	450m

Number of Computers installed at various wings are as follows:

Wings	NumberofComputers
WingA	20
WingS	150
WingJ	50
WingH	25

(i)	Suggest the best wired medium and draw the cable layout to efficiently connect various wings of Multipurpose PublicSchool, Bangluru.
Ans	Best wired medium: Optical Fibre OR CAT5 OR CAT6 OR CAT7 OR CAT8 OR Ethernet Cable

			
		(½ Mark for writing best wired medium) (½ Mark for drawing the layout correctly)	
	(ii)	Name the most suitable wing where the Server should be installed. Justify your answer.	
	Ans.	Wing Senior(S)- Because it has maximum number of computers.	
		(½ Mark for correct Wing) (½ Mark for valid justification)	
	(iii)	Suggest a device/software and its placement that would provide data security for the entire network of the School.	
	Ans.	Firewall - Placed with the server at Senior OR Any other valid device/software name	
		(½ Mark for writing device/software name correctly) (½ Mark for writing correct placement)	
	(iv)	Suggest a device and the protocol that shall be needed to provide wireless Internet access to all smartphone/laptop users in the campus of Multipurpose Public School, Bangluru.	
	Ans.	Device Name: WiFi Router OR WiMax OR RF Router OR Wireless Modem OR RFTransmitter Protocol : WAP OR 802.16 OR TCP/IP OR VOIP OR MACP OR 802.11	
		(½ Mark for writing correct device name) (½ Mark for writing correct protocol)	