CBSE CLASS XII IP 2017 QUESTION PAPER WITH MARKING SCHEME

General Instructions:

- **Marking scheme is the final document for all references with regard to evaluation and cannot be altered under any circumstances.**
- **The answers given in the marking scheme are SUGGESTIVE, Examiners are requested to award marks for all alternative correct Solutions/Answers conveying the similar meaning.**
- **All programming questions have to be answered with respect to Java Language only.**
- **In Java, ignore case sensitivity for identifiers (Variable / Functions).**
- **In SQL related questions – both ways of text/character entries should be acceptable for Example: "AMAR" and 'amar' both are correct.**
- **In SQL related questions – semicolon should be ignored for terminating the SQL statements.**
- **In SQL related questions, ignore case sensitivity.**
- **In SQL related questions, ignore column headers in outputs.**

1	**(a)**	Identify odd one out of the following: Optical Fiber/Coaxial Cable/ Bluetooth/Twisted Pair Cable. Give reason for your answer.	2
	Ans	Odd one : Bluetooth Reason : Bluetooth is a wireless/unguided communication media while others are wired/guided communication media.	
		(1 mark for each part)	
	(b)	How is it easier to diagnose fault in Star topology than in Bus topology?	2
	Ans	In Star topology each node is directly connected to a central hub / switch, hence fault diagnosis becomes easy. In bus topology all the nodes are connected to the backbone cable. The signal travels through the entire length of the backbone and is received by the node for which it is intended. Hence, fault diagnosis is difficult.	
		(2 marks for correct answer) ***NOTE : ½ mark each for both topologies if are explained using either diagrams / text.***	
	(c)	What is the purpose of logical address of computer?	2
		NOTE : Full 2 marks to be given if any part of question no. 1 is attempted correctly.	
	(d)	Does Open source software only mean that the software is free of cost? Give reason for your answer.	2
	Ans	No , it does not only mean that the software is free of cost. Reason: It also means that the source code is available to user with freedom to use , modify and distribute.	
		(1 mark for each part)	
	(e)	Which of the following are valid IP addresses? Give reason(s) if invalid.	2

		i) 121.23.1.45 ii)192.168.0. 254 iii)192.168.0.1 iv)198.-1.1.1	
	Ans	Valid IP addresses: (i) , (ii) , (iii) Invalid IP address: (iv) 198.-1.1.1 because an IP address is a group of four bytes; each of which can be a number from 0 to 255.	
		(1 mark for stating all the three valid IP addresses **OR** ***½ mark for stating any two valid IP addresses)*** ***(½ mark for mentioning invalid address , ½ mark for the reason)***	
2	**(a)**	Write the value that will be assigned to variable x after executing the following statement: `x = 20 -5 + 3 * 20/5;`	1
	Ans	**27**	
		(1 Mark for correct answer)	
	(b)	Consider the statement: `choice = 'Y';` What is the datatype of variable choice? Write Java statement to declare the variable 'choice'.	1
	Ans	The data type of the variable choice is **`char`**. Declaration : `char choice;`	
		(½ mark for stating datatype as char) ***(½ mark for declaration)*** ***NOTE :*** `char choice = 'Y' ;` ***to be accepted as correct answer and 1 Mark to be allotted.***	
	(c)	While working in Netbeans IDE, Amit wants that the text in a Text area should move to the next line without breaking the word. Which properties would help him do that?	1
	Ans	wrapStyleWord property, lineWrap property	
		(1 mark for correct answer) ***NOTE: Full 1 mark to be allotted if any one of the above properties is mentioned***	
	(d)	Write Java statement to: Append a string "ABC" to the text that is already in the text area named jTextArea1.	1
	Ans	`jTextArea1.append("" +"ABC");` **OR** `jTextArea1.append("ABC");` **OR**	

		`jTextArea1.append("ABC"+" ");`	
		(1 mark for correct answer) ***NOTE : (½ mark to be allotted if setText is mentioned instead of append)***	
	(e)	Write the output of the following HTML code. `<ol start="4">` `<li>Bake the mixture in oven for an hour</li>` `<li>Remove from oven</li>` `<li>Allow the mixture to stand for ten minutes</li>` `<li>Serve</li>` `</ol></code>`	2
	Ans	4 Bake the mixture in the oven for an hour 5 Remove from oven 6 Allow the mixture to stand for ten minutes 7 Serve	
		(½ mark for each line of output) ***NOTE: Full 2 marks to be allotted if :*** `</code>`***mentioned as an error*** ***OR*** ***'Error' as*** `<li>`***is an empty tag is mentioned*** ***OR*** ***'No output' / 'Error' is mentioned***	
	(f)	Given below is a code. `<message>` `<text>Hello, world!</text>` `</message>` Which language is used to write the above code? What are **`<message>`, `</message>`, `<text>` and `</text>`?**	2
	Ans	Language used is XML **`<message>`, `</message>`,`<text >` and `</text >`** are user defined tags **OR** tags **OR** container tags **OR `<message>`, `</message>`** is the root element and **`<text>`, `</text>`** is the child element. ***(1 mark for each part)***	
	(g)	Rewrite the following code using if else if statement instead of switch :	2
		`switch (success) {` `case -1: x1 = "No result" ;` `break;` `case 0: x1 ="Final result- Not successful";` `break;` `default: x1 = "result NOT known"; break;` `}`	

	Ans	`if (success == -1)` `  x1= "No result";` `else if (success == 0)` `  x1= "Final result -Not successful";` `else` `  x1= "result NOT known";`	
		(2 marks for correct `if-else-if` *construct and conditions)* **OR** ***(1 mark for correct use of*** `if-else-if` ***construct)*** ***(1 mark for correct conditions)***	
3	**(a)**	How is a database related to a table ?	1
	Ans	Database contains related tables. OR Database contains tables.	
		(1 mark for any correct answer)	
	(b)	Ariya wants to add another column 'Gender' in the already existing table 'CUSTOMERS'. She has written the following statement. However , it has errors . Rewrite the correct statement. [`MODIFY TABLE CUSTOMERS GENDER char(1);`	1
	Ans	`ALTER TABLE CUSTOMERS` `ADD GENDER CHAR(1);` `OR` `ALTER TABLE CUSTOMERS` `ADD GENDER CHAR;` `OR` `ALTER TABLE CUSTOMERS` `ADD COLUMN GENDER CHAR;` `OR` `ALTER TABLE CUSTOMERS` `ADD COLUMN GENDER CHAR(1);`	
		(½ mark for `ALTER TABLE`***)*** ***(½ mark for*** `ADD` ***clause)*** ***NOTE:*** `VARCHAR(1)` ***in place of*** `CHAR` ***should be accepted***	
	(c)	In a hospital, the patients are allocated to wards. A database named 'Hospital' is created. One table in this database is: WARD with **`WardId`**, **`WardName`**, **`NumOfBeds`** as columns and **`WardId`** as the primary key. Write another suitable table you could expect to see in the 'Hospital' database, with 3 suitable columns identifying Primary key and Foreign key in the table that you expect.	2
	Ans	Example: Table - Patient Columns - PatientId, PatientName, WardId Patient Id - Primary Key WardId - Foreign Key	

OR
Any other suitable table mentioning its primary key and foreign key.

(1 mark for writing any three suitable column names
OR ½ mark for writing any two suitable column names)
(½ mark for mentioning the **`Primary Key`***)***
(½ mark for mentioning the **`Foreign Key`***)***
NOTE : Tabular representation also to be accepted

(d) Explain the following statement with the help of example: 2
"In a transaction either all the SQL statements be committed or all rolled back."

Ans Any MySQL example showing **`COMMIT`**, **`ROLLBACK`**, **`AUTOCOMMIT`** to be accepted OR definition of transaction

(2 marks for the correct answer)
NOTE : Full 2 marks to be given if 3(e) or 3(f) is attempted.

(e) Given below is the 'Department' table: 2

DEPCODE	DEPNAME
101	ADMIN
102	RECEPTION
103	PERSONNEL

```
SET AUTOCOMMIT = 0;
UPDATE DEPARTMENT SET DEPNAME = 'OFFICE' WHERE DEPNAME = 'ADMIN';
INSERT INTO DEPARTMENT VALUES(104,'HRD');
UPDATE DEPARTMENT SET DEPNAME = 'FRONT OFFICE' WHERE DEPNAME = 'RECEPTION';
COMMIT;
DELETE FROM DEPARTMENT WHERE DEPNAME = 'FRONT OFFICE';
ROLLBACK;
SELECT * FROM DEPARTMENT;
```

What will be the output of the above given SELECT statement?

Ans

DEPCODE	DEPNAME
101	OFFICE
102	FRONT OFFICE
103	PERSONNEL
104	HRD

(½ mark for each line of output)

(f) How is **`HAVING`** clause similar to **`WHERE`** clause? How is **`HAVING`** clause different from **`WHERE`**clause? Explain with the help of examples of each. 2

Ans Similarity : Both **`HAVING`**and **`WHERE`**clause are used for checking condition(s)
Difference : **`WHERE`** clause is used for simple condition(s). **`HAVING`** clause is

		used for conditions with group of values. e.g. **WHERE**clause: `SELECT * FROM EMP WHERE DEPT = "PHYSICS " ;` **HAVING**clause : `SELECT SUM(SALARY), DEPT FROM EMP` `GROUP BY DEPT HAVING COUNT(*) > 3;` **OR** Any other valid example	
		(½ mark for Similarity) ***(½ mark for Difference)*** ***(½ mark for any correct example of* WHERE*clause)*** ***(½ mark for any correct example of* HAVING*clause)*** ***NOTE: 1 mark each for Similarity and Difference to be allotted if explained with the help of valid example.***	
4	(a)	Write the values of r and s after execution of following code: `int p = 11;` `int q = 21;` `int r;` `int s;` `r = ++q;` `s = p++;` `r++;`	1
	Ans	`r = 23` `s = 11`	
		(½ mark for each correct answer)	
	(b)	What will be displayed in jTextField1 and jTextField2 after the following code is executed: `int ndigits = 0;` `int N = 35;` `while (N > 12) {` `ndigits = ndigits + 1;` `N = N-10;` `}` `jTextField1.setText(" "+ndigits);` `jTextField2.setText(" "+N);`	2
	Ans	`jTextField1`will display 3 **`jTextField2`**will display 5	
		(1 mark for each correct answer)	
	(c)	Write the value of C after executing the following code: `int P;` `int R = 8;`	2

```
int oddNum;
int C = 0;
for (P = 1; P < R; P=P+3)
{
     oddNum = P %2;
     if (oddNum == 1)
     {
          C= C+1;
     }
}
```

Ans 2

(2 marks for correct value of C)

(d) Write the value that will be stored in variable **t** after the execution of the following code . How many times will the loop execute ? 2

```
int sum = 0;
int score =
0; double t;
do
{
  score = score +1;
  sum = sum + score;
}
while (score <=3);
t = sum / 3;
```

Ans Value of t will be 3.0

Loop executes 4 times

NOTE: 3 and 3.3 for value of t should also be accepted

(1 mark for correct value of 't')

(1 mark for correct number of iterations)

(e) The following code has error(s). Rewrite the correct code underlining all the corrections made 2

```
: int j;
int i = 15;
int flag = 1;
while( j = 2 j < i; j++)
{
  if(i % j = 0)
  {
    flag ==
    0; break;
  }
}
```

Ans Corrected code :

```
int j;
```

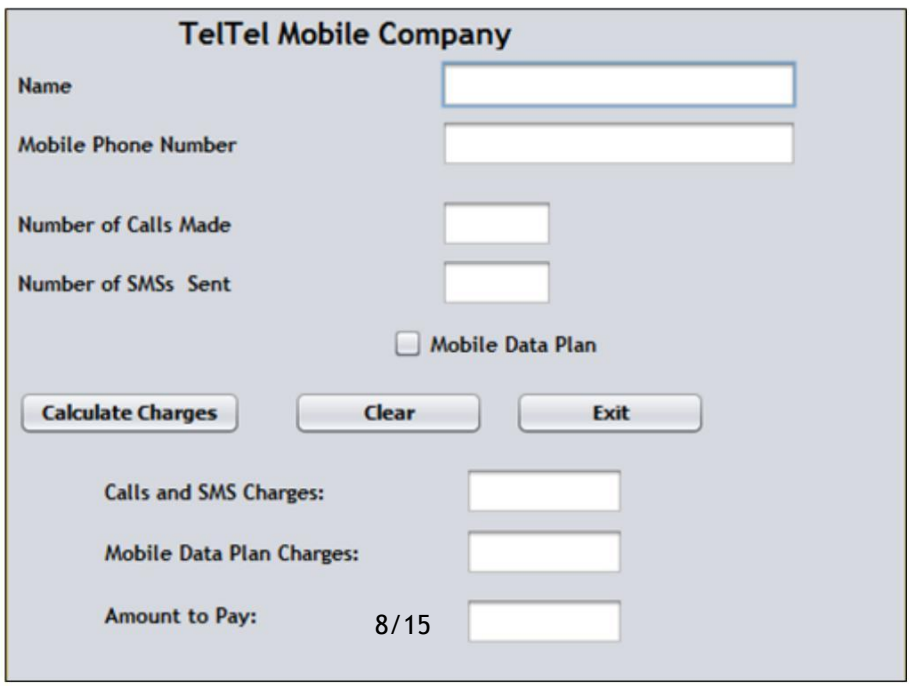
```
int i = 15;

int flag = 1;
for(j = 2; j < i ; j++)
 {
   if ( i % j = = 0)
    {
       flag = 0;
       break ;

    }
 }
OR
int j;
int i = 15;
int flag = 1;
j=2;
while(j  < i)
 {
   if ( i % j = = 0)
    {
       flag = 0;
       break ;

    }
    j++;
 }
```

(½ mark each for correcting any four errors)

OR

(1 mark for only identifying any four errors - without making any corrections)

(f) Ms. Fauzia works as a programmer in "TelTel Mobile Company" where she has designed a software to compute charges to be paid by the mobile phone user. A screenshot of the same is shown below:



	(i)	Each Call is charged at Rs.1.00 . Each SMS is charged at Rs. 0.50. Users can also opt for Mobile Data Plan. Charges for Mobile Data Plan are flat Rs.50.00. Help Ms. Fauzia in writing the code to do the following: When the 'Calculate Charges' button is clicked, 'Calls and SMS Charges', 'Mobile Data Plan Charges' and 'Amount to Pay' should be calculated and displayed in the respective text fields. 'Amount to Pay' is calculated as: Calls and SMS Charges + Mobile Data Plan Charges(if any)	4
	Ans	`int Calls, Sms;` `double Total,dataAmt = 0, grandTot, callsChg ,smsChg;` `Calls = Integer.parseInt(jTextField3.getText());` `Sms = Integer.parseInt(jTextField4.getText());` `callsChg = Calls * 1.00 ;` `smsChg = Sms * 0.5 ;` `Total = callsChg + smsChg;//Total=(Calls*1.00)+(Sms*0.5);` `if (jCheckBox1.isSelected())` `dataAmt = 50.00;` `grandTot = Total + dataAmt;` `jTextField5.setText("”+ Total);` `jTextField6.setText("”+dataAmt);` `jTextField7.setText("”+grandTot);` ***(1 mark for calculating 'Amount to Pay')*** ***(1 mark for correct use of if statement)*** ***(1 mark for calculating and displaying 'Grand Total')*** ***(½ mark for displaying 'Calls and SMS Charges')*** ***(½ mark for displaying 'Mobile Plan charges')***	
	(ii)	When 'Clear' button is clicked, all the textfields and checkbox should be cleared. `jTextField1.setText("");` `jTextField2.setText("");` `jTextField3.setText("");` `jTextField4.setText("");` `jTextField5.setText("");` `jTextField6.setText("");` `jTextField7.setText("");` `jCheckBox1.setSelected(false);` ***(½ mark for clearing any TextField and ½ mark for clearing the CheckBox)*** ***NOTE : NULL in place of "" to be accepted for clearing text field.***	1

	(iii)	When the 'Exit' button is clicked, the application should close.	1
		`System.exit(0);`	
		(1 mark for correct answer)	
5		Consider the Table "Infant" shown below. **Table: Infant** `ItemCode` `Item` `DatePurchase` `UnitPrice` `Discount` `101` `Frock` `2016-01-23` `700` `10` `102` `Cot` `2015-09-23` `5000` `25` `103` `Soft Toy` `2016-06-17` `800` `10` `104` `Baby Socks` `2014-10-16` `100` `7` `105` `Baby Suit` `2015-09-20` `500` `5` NOTE : Discount column stores discount %. Write the commands in SQL for (i) to (viii) and output for (ix) and (x)	
	(i)	To display the details about the Cot.	1
	Ans	`SELECT * FROM Infant WHERE Item='Cot';` `OR` `SELECT * FROM Infant WHERE Item IN('Cot');`	
		(½ mark for `SELECT`*)* *(½ mark for* `WHERE`*)*	
	(ii)	To list the names of items and their unit price that have unit price less than 800 and discount more than 5%.	1
	Ans	`SELECT Item,UnitPrice FROM Infant` `WHERE UnitPrice<800 AND Discount>5;` *NOTE: &&should be accepted in place of 'AND'*	
		(½ mark for `SELECT`*)* *(½ mark for* `WHERE`*)*	
	(iii)	To list the names of items and their date of purchase that were purchased after 31st December , 2015.	1
	Ans	`SELECT Item, DatePurchase FROM Infant` `WHERE DatePurchase>'2015-12-31';` `OR` `SELECT Item, DatePurchase FROM Infant` `WHERE DatePurchase> 20151231;`	
		(½ mark for `SELECT`*)* *(½ mark for* `WHERE`*)*	
	(iv)	To display the number of items that have more than 10% as discount	1
	Ans	`SELECT COUNT(Item) FROM Infant` `WHERE Discount > 10;`	
		(½ mark for `SELECT`*)*	

		(½ mark for **WHERE***)*	
	(v)	To display Item code and unit price in decreasing order of unit price.	1
	Ans	**SELECT ItemCODE, UnitPrice FROM Infant** **ORDER BY UnitPrice DESC;**	
		(½ mark for **SELECT***)* *(½ mark for* **ORDER BY***)*	
	(vi)	To increase the Unit price of each item by 10% of their unit price.	1
	Ans	**UPDATE Infant** **SET UnitPrice = 1.10 * UnitPrice;** **OR** **UPDATE Infant** **SET UnitPrice = UnitPrice + .10 * UnitPrice;** **OR** **UPDATE Infant** **SET UnitPrice = UnitPrice + 10/100 * UnitPrice;**	
		(½ mark for **UPDATE***)* *(½ mark for* **SET***)*	
	(vii)	To display the highest unit price of items.	1
	Ans	**SELECT MAX(UnitPrice)** **FROM Infant;**	
		(½ mark for **SELECT***)* *(½ mark for* **MAX()***)*	
	(viii)	To display the names of items that have 'Baby' anywhere in their item names	1
	Ans	**SELECT Item FROM Infant** **WHERE Item LIKE '%Baby%';**	
		(½ mark for **SELECT***)* *(½ mark for* **LIKE***Clause)*	
	(ix)	**SELECT MID(Item,1,2) FROM Infant;**	1
	Ans	**MID(Item,1,2)** **Fr** **Co** **So** **Ba** **Ba**	
		(1 mark for correct output)	
	(x)	**SELECT AVG(UnitPrice)FROM Infant** **WHERE DATEPURCHASE >'2015-01-01';**	1
	Ans	**AVG(UnitPrice)** **1750.0**	

OR

```
AVG(UnitPrice)
--------------
       1925.0
```

NOTE : Option 2 to be accepted if updation is taken into consideration.

(1 mark for correct output)

6 **(a)** "XYZ" Company conducts workshops for employees of organizations. The company requires data of workshops that are organized. Write SQL query to create a table 'Workshop' with the following structure: 2

Field	Type	Constraint
WorkshopId	integer	Primary Key
Title	Varchar(50)	
DateWorkshop	Date	
NumSpeakers	Integer	

Ans

```
CREATE TABLE WORKSHOP
(
  WorkshopId INTEGER PRIMARY KEY,
  Title VARCHAR(50),
  DateWorkshop DATE,
  Numspeakers INTEGER
);
```

(½ mark for* `CREATE TABLE`*)
(1 mark for Column Names with Data Types)
(½ mark for* `PRIMARY KEY` *Constraint)

(b) Consider the tables given below and answer the questions that follow : 2

Table: Event

EventId	Event	NumPerformers	CelebrityID
101	Birthday	10	C102
102	Promotion Party	20	C103
103	Engagement	12	C102
104	Wedding	15	C104

Table: Celebrity

CelebrityID	Name	Phone	FeeCharged
C101	Faiz Khan	99101956	200000
C102	Sanjay Kumar	893466448	250000
C103	Neera Khan Kapoor	981166568	300000
C104	Reena Bhatia	65877756	100000

(i) Name the Primary keys in both the tables and Foreign key in 'Event' table. Can NumPerformers(Number for performers) be set as the Primary key? Give reason.

	Ans	Table: Event **PRIMARY KEY**- EventId Table: Celebrity **PRIMARY KEY**- CelebrityID Table : Event **FOREIGN KEY**- CelebrityID No, NumPerformers cannot be set as Primary key because It may not be unique in every row (when more rows are added to the table later) ***NOTE: Yes, should also be considered as in the given table NumPerformers contains* UNIQUE*and* NOT NULL*values.*** ***(½ mark for* PRIMARY KEY *of both tables and* FOREIGN KEY *of Event table)***	
	(ii)	***(½ mark for stating Yes / No and/or with correct reason)*** How many rows will be present in the Cartesian join of the above mentioned 2 tables? In the table 'Event', the CelebrityID 102 is present twice in the column "CelebrityId". Is there any discrepancy? Give reason.	
	Ans	Number of rows in the Cartesian join = 16 No discrepancy. Because the same Celebrity may perform in more than one events. ***NOTE:*** ***"It is a foreign key column, hence it can store duplicate values" may also be accepted.*** ***(½ mark for stating the numbers of rows)*** ***(½ mark for stating no discrepancy without stating reason)***	
	(c)	With reference to the above given tables (in Q6 b), Write commands in SQL for (i) to (iii)	
	(i)	To display EventId, Event name, Celebrity Id and Names of celebrities for 2 only those events that have more than 10 performers.	
	Ans (i)	`SELECT EventId, Event, Event.CelebrityId, NAME` `FROM Event, Celebrity` `WHERE Event.CelebrityId = Celebrity.CelebrityId` `AND NumPerformers>10;` `OR` `SELECT EventId, Event, E.CelebrityId, Name` `FROM Event E, Celebrity C` `WHERE E.CelebrityId = C.CelebrityId AND NumPerformers>10;` ***(½ mark for* SELECT*)*** ***(½ mark for* FROM*)*** ***(½ mark for correct use of Join)***	

		(½ mark for `NumPerformers>10` *condition)*	
	(ii)	To display Event name, Celebrity Id and Names of celebrities who have 2 "Khan" anywhere in their names.	
	Ans (ii)	`SELECT Event, Event.CelebrityId, Name` `FROM Event, Celebrity` `WHERE Event.CelebrityId = Celebrity.CelebrityId AND` `Name LIKE '%Khan%';` `OR` `SELECT Event, E.CelebrityId,` `Name FROM Event E, Celebrity C` `WHERE E.CelebrityId = C.CelebrityId AND Name` `LIKE '%Khan%';` `OR` `SELECT E.Event, E.CelebrityId,` `C.Name FROM Event E, Celebrity C` `WHERE E.CelebrityId = C.CelebrityId AND C.Name` `LIKE '%Khan%';`	
		(½ mark for `SELECT`*)* *(½ mark for* `FROM`*)* *(½ mark for correct use of Join)* *(½ mark for* `Name LIKE '%Khan%'` *condition)*	
	(iii)	To display Event name, Names of celebrities and Fee charged for those 2 celebrities who charge more than 200000 .	
	Ans (iii)	`SELECT Event, Name, FeeCharged` `FROM Event, Celebrity` `WHERE Event.CelebrityId = Celebrity.CelebrityId` `AND FeeCharged > 200000;` `OR` `SELECT Event, Name, FeeCharged` `FROM Event E, Celebrity C` `WHERE E.CelebrityId = C.CelebrityId AND FeeCharged` `> 200000;` `OR` `SELECT E.Event, C.Name, C.FeeCharged` `FROM Event E, Celebrity C` `WHERE E.CelebrityId = C.CelebrityId AND C.FeeCharged` `> 200000;`	
		(½ mark for `SELECT`*)* *(½ mark for* `FROM`*)* *(½ mark for correct use of Join)* *(½ mark for* `FeeCharged > 200000` *condition)*	
7	(a)	List two disadvantages of e-governance to a disabled person.	2

	Ans	1. There is usually a lack of internet/computer literacy among the disabled. 2. Personal interaction is limited in e-governance, so the human element bond is missing which disabled people need.	
		(1 mark each for any two disadvantages)	
	(b)	How can online retailers usually offer customers a wider range of products at prices that are lesser than those of traditional stores?	1
	Ans	Online retailers usually offer customers a wider range of products at prices that are lesser than those of traditional stores because they have fewer infrastructural and operational costs.	
		(1 mark for stating any valid reason)	
	(c)	Ms. Cathy is creating a form for Vidya University Sports Council application. Help her to choose the most appropriate controls from ListBox, ComboBox, TextField, TextArea, RadioButton, CheckBox, Label and Command Button for the following entries.	2

S.NO.	FUNCTION
1.	To let the user enter NAME
2.	To let the user enter MOBILE NUMBER
3.	To let the user choose one PROFESSION out of the categories : Teaching / Non -Teaching/Research Scholar
4.	To let the user select facilities out of Gym, Yoga, Table Tennis, Badminton and Aerobics. More than one facility may be chosen

Ans

S.NO.	FUNCTION	CONTROL
1.	To let the user enter NAME	TextField
2.	To let the user enter MOBILE NUMBER	TextField
3.	To let the user choose one PROFESSION out of the categories : Teaching / Non -Teaching/Research Scholar	RadioButton / Combo Box
4.	To let the user select facilities out of Gym, Yoga, Table Tennis, Badminton and Aerobics. More than one facility may be chosen	CheckBox / List Box

(½ mark for each correct answer)