

SOLVED PAPER with CBSE Marking Scheme	C.B.S.E. 2018 Class–XII Delhi/Outside Delhi	Informatics Practices
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Time : 3 Hours

Max. Marks : 70

General Instructions :

- (i) All questions are compulsory.
- (ii) Answer the questions after carefully reading the text.

1. (a) ABC Company wants to link its computers in the Head office in New Delhi to its office in Sydney. Name the type of Network that will be formed. Which communication media should be used to form this Network ? 2
- (b) Which of the following is/are not communication media ?
 - (i) Microwaves
 - (ii) Optical Fiber cable
 - (iii) Node
 - (iv) Radio waves
 Identify which of the above mentioned communication media are Wired media and which ones are Wireless media.
- (c) Write two examples each of software in the following categories :
 - (i) Open Source Operating System 2
 - (ii) Open Source Web Browser
- (d) Expand the following terms : 2
 - (i) GSM
 - (ii) IP
- (e) Name the devices :
 - (i) This device constantly looks at all the data entering and exiting your connection. It can block or reject data in response to an established rule.
 - (ii) This device connects multiple nodes to form a network. It redirects the received information only to the intended node(s). 2
2. (a) Identify the invalid variable names. State the reason if invalid. 1
 - (i) Marks Unit
 - (ii) Product _1
 - (iii) Sales123
 - (iv) 2Marks
- (b) Write the data type of variables that should be used to store : 1
 - (i) Marks of students
 - (ii) Grades of students (Grade can be 'A' or 'B' or 'C')
- (c) Write examples of any two properties and any two methods of JButton component. 2
- (d) Write the purpose of HTML. Distinguish between <P> tag and
 tag. 2
- (e) Distinguish between ComboBox and ListBox. When would you prefer using them over Radiobutton and Checkbox ? 2
- (f) Rewrite the following code using switch statement : 2


```

if (code == 'A')
    allowance = 3500;
else if (code == 'B')
      
```

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- ```

allowance = 3200;
else
 allowance = 2000;

```
3. (a) What is MySQL used for ? Abhay wants to start learning MySQL. From where can he obtain the MySQL software ? 1
- (b) In the table "Student", Priya wanted to increase the Marks (Column Name : Marks) of those students by 5 who have got Marks below 33. She has entered the following statement :  
 SELECT Marks+5 FROM Student WHERE Marks<33;  
 Identify errors (if any) in the above statement. Rewrite the correct SQL statement. 1
- (c) (i) Name the Data type that should be used to store AccountCodes like "A1001" of Customers. 1  
 (ii) Name two Data types that require data to be enclosed in quotes. 1
- (d) Gives the table 'Player' with the following columns :

**Table : Player**

| PCODE | POINTS |
|-------|--------|
| 1     | 50     |
| 2     | NULL   |
| 3     | 40     |

**Write the output of the following statements :** 2

- (i) SELECT AVG (POINTS) FROM Player;
- (ii) SELECT COUNT (POINTS) FROM Player;
- (e) 'Class' table has columns RNO and NAME.  
 The following statements are executed  
 SET AUTOCOMMIT = 0;  
 INSERT INTO CLASS VALUES (5, 'Rajiv');  
 COMMIT;  
 UPDATE CLASS SET NAME = 'Rajeev' WHERE ID = 5;  
 SAVEPOINT A;  
 INSERT INTO CLASS VALUES (6, 'Chris');  
 SAVEPOINT B;  
 INSERT INTO CLASS VALUES (7, 'Feroze');  
 SELECT \* FROM CLASS;  
 ROLLBACK TO B;  
 SELECT \* FROM CLASS;  
 What will be the output of both the above given SELECT statements ? 2
- (f) Name SQL Single Row functions (for each of the following) that 2
- (i) returns a number.
- (ii) returns lowercase letters.
- (iii) returns names of days. For example : "Monday", "Tuesday".
- (iv) returns weekday number. For example : 1 for Sunday, 2 for Monday, 3 for Tuesday.
4. (a) Identify the error in the following code : 1
- ```

switch (c)
{
case 9.0 : a = a + 2;
    break;
case 8.0 : a = a + 3;
    break;
}

```
- (b) What values will be displayed in JOptionPane when the following code is executed ? 2
- ```

int a = 5, b = 2;
while (a < 20)
{

```

- ```

a = a + b;
b = a - b;
JOptionPane.showMessageDialog (null,a);
}

```
- (c) Write the code given below using 'for' loop instead of 'while' loop : 2
- ```

int i = 1;
while (i <= 5)
{
 if (i * i == 4)
 jTextField1.setText (" " + i);
 i = i + 1;
}

```
- (d) Write the value that will be stored in variable a after execution of the following code if : 2
- (i) initial value of a is 8.  
(ii) initial value of a is 10.
- ```

int b = 9;
if (a > b)
    a = a + 5;
a = a + 2;

```
- (e) What will be the values of i and z after the following code is executed :
- ```

int i = 0;
int z = 10;
do
{
 i = i + 2;
 z--;
}
while (i < 10);

```
- (f) Ms. Priya works as a programmer in "Avon Education" where she has designed a software to compute fee charges to be paid by the students. A screenshot of the same is shown below :

- Name of the student is entered by the user.
- Any one Course out of Pharmacy, Architecture and Arts & Design is chosen by the user.
- If the student is eligible for Concession, the required checkbox is selected by the user.
- Based on the course selected, Fee Per Quarter is displayed in the appropriate textfield according to the following criterion :

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| Course        | Fee Per Quarter |
|---------------|-----------------|
| Pharmacy      | 2000.00         |
| Architecture  | 2500.00         |
| Arts & Design | 2300.00         |

- If the student is eligible for Concession, a concession of 7% of Fee per quarter is calculated as the concession amount, otherwise concession amount is 0.
- Fee to be paid is the Fee per quarter with the concession amount (if any) deducted from it.

Help Ms. Priya in writing the code to do the following :

- When 'Calculate Charges' button is clicked, 'Fee per quarter', 'Concession Amount', 'Fee to be Paid' should be calculated and displayed in the respective text fields. 4
  - When 'CLEAR' button is clicked, all the textfields, radiobuttons and checkbox should be cleared. 1
  - When 'Exit' button is clicked the application should close. 1
5. Consider the following table 'Furniture'. Write SQL commands for the statements (i) to (viii) and write output for SQL queries (ix) and (x).

**Table : Furniture**

| Fcode | NAME         | PRICE | MANUFDATE   | WCODE |
|-------|--------------|-------|-------------|-------|
| 10023 | Coffee table | 4000  | 19-DEC-2016 | W03   |
| 10001 | Dining table | 20500 | 12-JAN-2017 | W01   |
| 10012 | Sofa         | 35000 | 06-JUN-2016 | W02   |
| 10024 | Chair        | 2500  | 07-APR-2017 | W03   |
| 10090 | Cabinet      | 18000 | 31-MAR-2015 | W02   |

- To display FCODE, NAME and PRICE of items that have Price less than ₹ 5,000. 1
  - To display NAMES and PRICE of those Furniture Items that have 'table' anywhere in their names. 1
  - To display WCode of Furniture Items. There should be no duplicate values. 1
  - To display the NAMES and PRICE increased by 500.00 of all the furniture items. (Price should only be displayed as increased; there should be no increase in the data in the table). 1
  - To display FCODE and NAME of each Furniture Item in descending order of FCODE. 1
  - To display the details of all the Furniture Items which have Manufacturing date (MANUFDATE) between 01-JAN-2016 and 15-JUN-2017 (inclusive of both the dates). 1
  - To display the average PRICE of all the Furniture Items, which are made of Wood with WCODE as W02. 1
  - To display WCODE wise, WCODE and the highest price of Furniture Items. 1
  - SELECT SUM (PRICE) FROM Furniture WHERE WCODE = 'W03'; 1
  - SELECT COUNT (DISTINCT PRICE) FROM Furniture; 1
6. (a) Write SQL query to create a table 'Inventory' with the following structure : 2

| Field        | Type         | Constraint  |
|--------------|--------------|-------------|
| MaterialId   | Integer      | Primary key |
| Material     | Varchar (50) | NOT NULL    |
| Category     | Char         |             |
| DatePurchase | Date         |             |

- (b) Consider the following tables PATIENT and TEST and answer the questions that follow :

**Table : PATIENT**

| PCODE | NAME              | PHONE     | DTADMIT     | TESTID |
|-------|-------------------|-----------|-------------|--------|
| 6473  | Amit Sharma       | 912356899 | 15-JUN-2017 | T102   |
| 7134  | Rose Mathew       | 886744536 | 12-NOV-2017 | T101   |
| 8786  | Tina Sharma Arora | 889088765 | 06-DEC-2017 | T102   |
| 6477  | Vijay Shah        | 714567445 | 07-DEC-2017 | T502   |
| 7658  | Venkat Fazal      | 865545343 | 31-DEC-2017 | T101   |

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- Note :** NAME holds the Names of patients.  
 DTADMIT holds Dates on which a patient was admitted to hospital.  
 TESTID holds Ids of Medical tests done on patients.

**Table : TEST**

| TESTID | TESTNAME          | COST   |
|--------|-------------------|--------|
| T101   | Platelet Count    | 200.00 |
| T102   | Hemogram          | 190.00 |
| T301   | Malaria Detection | 350.00 |
| T502   | Glucose Test      | 150.00 |

Name the Primary keys in both the tables and foreign key in 'PATIENT' table.  
 State the reason for your choice.

- (c) With reference to the above given tables (in Q. 6-(b)), write commands in SQL for (i) to (iii) : 2
- (i) To display names of Patients, TESTID and Test names for those Patients who were admitted between '01-DEC-2017' and '15-DEC-2017' (both dates inclusive). 2
- (ii) To display Names of Patients, Test names and Cost of Test for those Patients who have 'Sharma' in their names. 2
- (iii) To increase the cost of those tests in the table "TEST" by ₹ 50.00 that have cost below ₹200.00. 2
7. (a) How does e-governance help in building trust between the Government and citizens ? 2
- (b) How can e-learning help students learn at their own pace ? 1
- (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. |

## CBSE Marking Scheme (Issued by Board)

1. (a) Type of network that will be formed : Wide Area Network(WAN) 1  
 Transmission media to be used : Satellite 1
- (b) Not communication media : Node ½  
**Wired media** : Optical Fiber cable ½  
**Wireless media** : Microwaves , Radio waves ½
- (c) (i) Linux, Android, FreeBSD, OpenBSD, NetBSD, DragonFly BSD, OpenSolaris, illumos, AuroraUX, Darwin, OpenDarwin, MINIX, FreeRTOS, FreeDOS, Haiku, House KolibriOS, MenuetOS, GNU, ReactOS, L4, Fiasco, Pistachio, Plan 9, AROS, Syllable, Inferno, NuttX eCos, RTEMS, HelenOS, E/OS, TempleOS, Linux, BOSS, Ubuntu, Kali Linux ½
- (ii) Mozilla Firefox, Google Chrome, Opera, QupZilla, Midori, rekonq, Tor Browser, NetSurf, Pale Moon, GNOME Web ½
- (d) (i) GSM - Global System for Mobile Communications/ Global System for Mobile/ Graphics Stimulator Media 1  
 (ii) IP - Internet Protocol 1
- (e) (i) Firewall 1  
 (ii) Switch 1
2. (a) Invalid variable names are : 1  
 (i) Marks Unit  
 Reason : Variable Name should not contain space 1  
 (iv) 2 Marks  
 Reason : Variable Name should not start with digit 1
- (b) (i) float/double /int / byte / short / long ½  
 (ii) char ½
- (c) **Properties of J Button component :**  
 Background, font, label, text, name, edit able, enabled, horizontal alignment, border ½

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**Methods of JButton component :**

setText(), getText(), setEnabled(), setVisible(), setEditable(), setVisible(), isSelected(), setSelected()  $\frac{1}{2}$

- (d) HTML is used to create web page(s). **1**

<P> tag is used to introduce a paragraph while <BR> tag is used to introduce a line break on a web page. **1**

**Note:** <P> as paragraph tag and <BR> as line break tag to be accepted as difference

- (e) A ComboBox allows selection of one item from a set of items.

while List Box provides a scroll able set of items from which one or more item(s) may be selected. **1**

When the number of items are more Combo box or List Box would be preferred over Radio button and Check box. **1**

- (f) switch(code)  $\frac{1}{2}$

```
{
case 'A' : allowance = 3500; $\frac{1}{2}$
 break ;
case 'B' : allowance = 3200; $\frac{1}{2}$
 break ;
default : allowance = 2000; $\frac{1}{2}$
}
```

**Note:** 65 in place of 'A' and 66 in place of 'B' should be accepted

3. (a) (i) MySQL is an open source RDBMS used for managing databases.

(ii) For obtaining MySQL, Abhay has the following options :

- download from the website mysql.org  $\frac{1}{2}$
- download it from any website that offers MySQL.  $\frac{1}{2}$
- get the software from any source  $\frac{1}{2}$

- (b) **Error :** UPDATE should be used instead of SELECT  $\frac{1}{2}$

**Correct SQL statement:**

UPDATE Student SET Marks= Marks+5  
WHERE Marks<33;  $\frac{1}{2}$

- (c) (i) char/varchar  $\frac{1}{2}$

(ii) char/varchar/date  $\frac{1}{2}$

- (d) (i)  $\frac{\text{AVG}(\text{POINTS})}{45}$  **1**

(ii)  $\frac{\text{COUNT}(\text{POINTS})}{2}$  **1**

[CBSE Marking Scheme, 2018]

**Detailed Answer :**

(i)  $\frac{\text{AVG}(\text{POINTS})}{45}$

(ii)  $\frac{\text{COUNT}(\text{POINTS})}{2}$

- (e) (Case 1 : If RNO is treated as ID, the following solution should be accepted:)

**Output of SELECT statement 1 :**

| RNO | NAME   |
|-----|--------|
| 5   | Rajeev |
| 6   | Chris  |
| 7   | Feroze |

**Output of SELECT statement 2 :**

| RNO | NAME   |
|-----|--------|
| 5   | Rajeev |
| 6   | Chris  |

- (Case 2 : If RNO is NOT treated as ID, the following should be accepted:)

**Output of SELECT statement 1 :**

| RNO | NAME   |
|-----|--------|
| 5   | Rajeev |
| 6   | Chris  |
| 7   | Feroze |

**Output of SELECT statement 2 :**

| RNO | NAME   |
|-----|--------|
| 5   | Rajeev |
| 6   | Chris  |

- (f) (i) length()/ instr()/ round()/ truncate() or any other correct Single Row Function that returns a number  $\frac{1}{2}$

(ii) lower() / lcase ()  $\frac{1}{2}$

(iii) dayname ()  $\frac{1}{2}$

(iv) dayofweek ()  $\frac{1}{2}$

4. (a) Variable 'c' cannot be of float/real data type.  
Note: Full 1 mark should be allotted if correct code is written [CBSE Marking Scheme, 2018]

**Detailed Answer :**

Default case is missing in the given code which is used for performing a task when none of the cases are true.

(b) 7  
12  
19  
31  
OR  
7 12 19 31 [CBSE Marking Scheme, 2018]

**Detailed Answer :**

```
7
(c) int i; $\frac{1}{2}$
 for(i = 1; i <= 5; i++) $\frac{1}{2}$
 {
 if(i * i == 4) $\frac{1}{2}$
 jTextField1.setText(" "+i); $\frac{1}{2}$
 }
```

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- (d) (i) 10 1  
(ii) 17 1  
(e) i = 10 1  
z = 5 1  
(f) // Calculation of Amount  
double feeperqtr = 0.0,concess = 0.0,feetopay=0.0;  
if (jRadioButton1.isSelected()) ½  
feeperqtr=2000;  
else if (jRadioButton2.isSelected()) ½  
feeperqtr=2500;  
else if (jRadioButton3.isSelected()) ½  
feeperqtr=2300;  
if (jCheckBox1.isSelected()) ½  
concess= (0.07\*feeperqtr);  
feetopay=feeperqtr-concess; ½  
jTextField2.setText(" " + feeperqtr); ½  
jTextField3.setText(" " + concess); ½  
jTextField4.setText(" " + feetopay); ½  
(ii) jTextField1.setText(" ");  
jTextField2.setText(" ");  
jTextField3.setText(" ");  
jTextField4.setText(" ");  
jRadioButton1.setSelected(false);  
jRadioButton2.setSelected(false);  
jRadioButton3.setSelected(false);  
jCheckBox1.setSelected(false);  
system.exit(0) 1
5. (i) SELECT FCODE, NAME, PRICE FROM Furniture 1  
WHERE PRICE < 5000; ½  
(ii) SELECT NAME, PRICE FROM Furniture 1  
WHERE NAME LIKE '%table%'; ½  
(iii) SELECT DISTINCT(WCODE) FROM Furniture; ½  
(iv) SELECT NAME, PRICE + 500 FROM Furniture; ½  
(v) SELECT FCODE, NAME FROM Furniture 1  
ORDER BY FCODE DESC; 1  
(vi) SELECT \* FROM FURNITURE WHERE 1  
MANUFDATE BETWEEN '2016-01-01' AND  
'2017-06-15'; 1  
OR  
SELECT \* FROM FURNITURE WHERE  
MANUFDATE >= '2016-01-01' AND  
MANUFDATE <= '2017-06-15';  
OR  
SELECT \* FROM FURNITURE WHERE  
MANUFDATE BETWEEN '01-JAN-2016' AND  
'15-JUN-2017';  
OR  
SELECT \* FROM FURNITURE WHERE  
MANUFDATE >= '01-JAN-2016' AND  
MANUFDATE <= '15-JUN-2017'; 1  
(vii) SELECT AVG(PRICE) FROM Furniture 1  
WHERE WCODE = 'W02'; ½
- (viii) SELECT WCODE, MAX(PRICE) FROM Furni- ½  
ture  
GROUP BY WCODE;  
(ix) SUM(PRICE) 1  
6500  
(x) COUNT(DISTINCT PRICE) 1  
5
6. (a) CREATE TABLE Inventory  
(  
MaterialId INTEGER PRIMARY KEY, ½  
Material Varchar(50) NOT NULL, ½  
Category Char, ½  
DatePurchase Date ½  
);  
(b) Primary key (Table : PATIENT ) - PCODE as it is ½  
unique to each row of table ½  
Primary key (Table : TEST ) - TESTID as it is ½  
unique to each row of table ½  
Foreign key in table PATIENT : TESTID as it links ½  
the two tables and is Primary key in table TEST. ½  
(c) (i) SELECT NAME, PATIENT.TESTID, ½  
TESTNAME ½  
/\*TEST.TESTID accepted\*/  
FROM PATIENT, TEST  
WHERE PATIENT.TESTID = TEST.TESTID  
AND DTADMIT BETWEEN '01-DEC-2017'  
and '15-DEC-2017'; ½  
OR  
SELECT NAME, PATIENT.TESTID, ½  
TESTNAME ½  
/\*TEST.TESTID accepted\*/  
FROM PATIENT, TEST  
WHERE PATIENT.TESTID = TEST.TESTID  
AND DTADMIT >= '01-DEC-2017' and  
DTADMIT <= '15-DEC-2017'; ½  
OR  
SELECT NAME, P.TESTID, TESTNAME ½  
/\*T.TESTID accepted\*/  
FROM PATIENT P, TEST T  
WHERE P.TESTID = T.TESTID  
AND DTADMIT BETWEEN '01-DEC-2017'  
and '15-DEC-2017';  
OR  
SELECT NAME, P.TESTID, TESTNAME ½  
/\*T.TESTID accepted\*/  
FROM PATIENT P, TEST T  
WHERE P.TESTID = T.TESTID ½  
AND DTADMIT >= '01-DEC-2017' and ½  
DTADMIT <= '15-DEC-2017';  
(ii) SELECT NAME, TESTNAME, COST ½  
FROM PATIENT, TEST ½  
WHERE PATIENT.TESTID = TEST.TESTID  
AND Name LIKE '%Sharma%';  
OR  
SELECT NAME, TESTNAME, COST

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FROM PATIENT P, TEST T  
 WHERE P.TESTID = T.TESTID  
 AND Name LIKE '%Sharma%';  
**OR**  
 SELECT PNAME, T.TESTNAME, T.COST  
 FROM PATIENT P, TEST T  
 WHERE P.TESTID = T.TESTID  
 AND Name LIKE '%Sharma%';  
 (iii) UPDATE TEST  
 SET COST = COST + 50.00  
 WHERE COST < 200.00;

1  
 ½  
 ½  
 ½

7. (a) • Transparency of Government processes, policies and decisions  
 • Awareness about new policies and facilities being offered by the Government.  
 • Enabling citizen engagement in the policy processes  
 • Reduces the waiting time  
 • Practices like influences and bribing are reduced  
 (b) • Students can go through the learning material any number of times as per his/her learning abilities  
 • Students can study at their own convenient time anywhere/anytime.

2  
 1

(c)

| S.No. | Function                                                                                                                        |                          |   |
|-------|---------------------------------------------------------------------------------------------------------------------------------|--------------------------|---|
| 1     | To let the user enter NAME                                                                                                      | TextField                | ½ |
| 2     | To let the user enter MOBILE NUMBER                                                                                             | TextField                | ½ |
| 3     | To let the user choose one PROFESSION out of the categories : Teaching/Non Teaching/ Research Scholar                           | RadioButton/<br>Combobox | ½ |
| 4     | To let the user select facilities out of Gym, Yoga, Table Tennis, Badminton and Aerobics. More than one facility may be chosen. | Checkbox/Listbox         | ½ |

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