



**Series 3HKP3B/C**



**SET~4**

**Code No. 490**

**Roll No.**

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

**NOTE :**

- (i) Please check that this question paper contains **9** printed pages.
- (ii) Code number given on the right hand side of the question paper should be written on the title page of the answer-book by the candidate.
- (iii) Please check that this question paper contains **7** questions.
- (iv) Please write down the serial number of the question in the answer-book before attempting it.
- (v) 15 minute time has been allotted to read this question paper. The question paper will be distributed at 10.15 a.m. From 10.15 a.m. to 10.30 a.m., the students will read the question paper only and will not write any answer on the answer-book during this period.

**INFORMATICS PRACTICES (OLD)**



Time allowed : 3 hours



Maximum Marks : 70

**Instructions :**

*All questions are compulsory, however questions no. 2, 4 and 6 have internal choices.*



1. (a) A school with 20 stand-alone computers is considering networking them together. Which type of network would you suggest to form out of LAN/MAN/WAN ? Name two hardware resources that can be shared by the computers, when connected in the network. 1
- (b) One of your relatives, lives in a city, which is more than 1000 km away from your home, requests you to set up MySQL on her desktop. Suggest any one popular software name so that you can *remotely access* her desktop from your home and set up MySQL on her desktop. 1
- (c) Expand the following terms : 1
- (i) URL
- (ii) ODF
- (d) Identify the open standards out of the following : 1
- (i) .HTML
- (ii) .BMP
- (iii) .CSS
- (iv) .DOC
- (e) Write any two differences to distinguish between ASCII and Unicode. 2
- (f) How can an IT security expert ensure that the data in her organization is secure and is available only to the intended and authorized persons ? Suggest any two methods. 2
- (g) Briefly explain any two advantages of using open source software. 2
2. (a) In context of Java programming, briefly define the following terms and give two suitable examples of each : 4
- (I) Data type
- (II) Arithmetic operator
- OR**
- (a) In context of Java programming, briefly define the following terms and give two suitable examples of each : 4
- (I) Comparison operator
- (II) Logical operator
- (b) Write any two differences to distinguish between HTML and XML. 2
- OR**
- (b) Mention any two main features of XML for which it is used extensively. 2
- (c) Noor Begum, working with a reputed school as a website developer, has written the following code :
- ```
<school>
  <teacher tid=1>
    <name>David Abraham</name>
    <sub sid="cs">Computer Science</sub>
  </teacher>
  <teacher tid=2>
    <name>Rupam Sinha</name>
    <sub sid="ip">Informatics Practices</sub>
  </teacher>
</school>
```



Observe the code and answer the following questions :

4

- (I) Are these tags part of HTML code or XML code ?
- (II) Identify the root element.
- (III) Mention any two child elements.
- (IV) Mention any two attributes.

**OR**

(c) Solve both the subparts :

2+2

(I) Give examples of two sets of initial values for the variables **int a** and **int b** such that the following two codes give

- (1) same outputs
- (2) different outputs

First Code :

```
while(a<=b) {
    jTextField1.setText(""+a);
    a=a+1;
}
```

Second Code :

```
do {
    jTextField1.setText(""+a);
    a=a+1;
} while(a<=b);
```

(II) Write the output of the following code :

```
int n=10,p=1,i;
for(i=1;i<=n;i++)
{
    p=p*i;
}
jTextField1.setText(""+p);
```

3. (a) Write the values of C and D after execution of the following code :

1

```
int A = 10; int B = 20;
int C; int D;
C = ++A;
D = B++;
C++;
```

**OR**

(a) How is JLabel different from JTextField control at run time ?

1

(b) Rewrite the following code after correcting errors. Underline each of the corrections made.

2

```
int N, Sum;
10 = N;
0 = Sum;
do while(0<N)
{
    Sum = N + Sum;
    N = = N - 1;
}
jTextField1.setText(Sum);
```

**OR**



- (b) Suggest any two basic methods commonly available with all the four controls mentioned below : 2

`jButton, JLabel, JTextField, JCheckBox`

- (c) How many times will the following loop execute ? 2

```
int N = 10;
int I = 1;
do
{
    I = I + 1;
    N = N - 1;
}
while(I <= N);
```

**OR**

- (c) Using if-else statements; rewrite an equivalent code of the following program segment : 2

```
switch (GP)
{ case 1 : jTextField1.setText("Grade D"); break;
  case 2 : jTextField1.setText("Grade C"); break;
  case 3 : jTextField1.setText("Grade B"); break;
  case 4 : jTextField1.setText("Grade A"); break;
  default : jTextField1.setText("PASS");
}
```

- (d) Write the output in jTextField1 when the following code is executed : 2

```
int c, n, sum=0;
for(c = 1; c < 5; c++)
{ n = c + 2 * 3;
  sum = sum + n;
}
jTextField1.setText(""+sum);
```

**OR**

- (d) Write the output in jTextField1 when the following code is executed : 2

```
int c, n=0, sum=0;
c = 2;
while ( c < 10 )
{ n = c + 4;
  sum = sum + n;
  c = c + 2;
}
jTextField1.setText(""+sum);
```



- (e) Write the values that will be assigned to S1, S2, S3 and L after executing the following Java code :

2

```
string Str1, Str2, Str3, S1, S2, S3;
int L;
Str1 = "Hello World";
Str2 = "I Love India";
Str3 = "  AISSE 2021  ";
S1 = Str1.substring(0, 5);
S2 = Str2.substring(6, 12);
S2 = S1.concat(S2);
S3 = Str3.trim();
L = S3.length();
```

OR

- (e) Briefly explain the uses of pow() method with the help of suitable Java code.
- (f) Ms. Anandita works as a programmer in a Taxi Service Company, "Vahana" where she has designed a basic software to compute charges to be paid by the traveller.

2

User interface of her software looks as follows :

- Total Distance Travelled is entered by the user.
- Total Time Taken on the trip is entered by the user.
- Category (AC or Non-AC) is selected by the user.

Based on the Data entered and Category selected, Total Charges is computed according to the following criterion :

Service	Charges
Basic Service	₹ 600 for 4 hours and 40 km
For additional km	₹ 10/km beyond 40 km
For additional hour	₹ 50/hour beyond 4 hours
Non-AC Category	No additional cost for Non-AC vehicle
AC Category	Additional 30% is charged on subtotal for AC vehicle



Example 1 : For a Non-AC trip covering 34 km completed within 6 hours :

$$\text{SubTotal} = 600 + (0)*10 + (6 - 4)*50 = 600 + 0 + 100 = 700$$

Total Charges = ₹ **700**

Example 2 : For an AC trip covering 54 km completed within 5 hours :

$$\text{SubTotal} = 600 + (54 - 40)*10 + (5 - 4)*50 = 600 + 140 + 50 = 790$$

$$\text{Total Charges} = 790 + 0.30*790 = 790 + 237 = ₹ \mathbf{1027}$$

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

4+1+1=6

- (I) When **CALCULATE CHARGES** button is clicked, **Total Charges** should be calculated and displayed in the text field.
- (II) When **CLEAR** button is clicked, all the text fields and radio buttons should be cleared.
- (III) When **EXIT** button is clicked, the application should close.

**OR**

- (f) Ms. Amaira works as a programmer in 'QLS — Quick Loan Service', where she has designed a basic software to compute interest to be paid by the borrower.

User interface of her software looks as follows :

**QLS**  
Quick Loan Service

Principal Amount (in Rs):

Rate of Interest (Monthly):

Time (in Months):

Category:  Simple Interest  
 Compound Interest

Total Amount :

- Principal Amount (in ₹) is entered by the user.
- Rate of Interest (Monthly) is entered by the user.
- Time (in Months) is entered by the user.
- Category (Simple Interest or Compound Interest) is selected by the user.

Based on the Data entered and Category selected, Total Amount (Principal + Interest) is computed according to the following formulae :

Category	Total Amount
Simple Interest	$= \text{Principal} + \frac{\text{Principal} * \text{Rate} * \text{Time}}{100}$
Compound Interest	$= \text{Principal} * \left(1 + \frac{\text{Rate}}{100}\right)^{\text{Time}}$



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

4+1+1=6

- (I) When **CALCULATE AMOUNT** button is clicked, **Total Amount** should be calculated and displayed in the text field.
- (II) When **CLEAR** button is clicked, all the text fields and radio buttons should be cleared.
- (III) When **EXIT** button is clicked, the application should close.

4. (a) What is RDBMS ? Write any two advantages of RDBMS. 2  
 (b) Consider the following table STUDENT :

**STUDENT**

SID	NAME	DOB	AadhaarNo
S2016312	Ajay Mishra	2011-06-20	234598764567
S2017102	Rekha Mahkija	2012-03-21	567854342123
S2017178	Shamim Khan	2012-04-26	765434569876

- (i) Suggest the most suitable data type and appropriate size for NAME column, used to store the full name of each student.
  - (ii) Suggest the most suitable data type for DOB column, used to store the date of birth of each student.
  - (iii) Suggest the constraints required for SID column, to store the Student's ID, if we wish to use SID to identify each student uniquely in the table STUDENT.
  - (iv) Suggest the constraints required for AadhaarNo column, to store the Student's Aadhaar Number, if we wish to avoid any duplicate AadhaarNo in the table STUDENT. 4
- (c) Write the complete SQL command to create the empty table STUDENT as described above. You can use any suitable data types for the columns (attributes) and constraints. 2
- (d) Write SQL command to add a new row (a tuple) into the table STUDENT having the following values : 2

SID	NAME	DOB	AadhaarNo
S2018012	John Roger	2013-12-25	123459876456

5. Mr. Rajnish, working as a database administrator in an IT organization — 'WebLink Inc', has created the following table named "Project2021" to store the basic details of the team members involved in an upcoming project.

**Project2021**

EID	EName	Designation	Gender	MSalary	EmailID
E104	Manisha	Team Leader	Female	120000	mk@gmail.com
E107	Karim	Sr. Programmer	Male	80000	kk@wl.com
E113	Saira	Sr. Programmer	Female	80000	sj@gmail.com
E118	Malala	Programmer	Female	50000	mk@wk.com
E124	Rajesh	Programmer	Male	62000	rk@wk.com

- (a) Which attribute (or key) of the table "Project2021" can be used as a Primary Key ? Justify your answer. 1



- (b) Help him in writing SQL commands for the following queries : 4
- (i) To change the EmailID of EID='E104' from mk@gmail.com to mk@wl.com.
- (ii) To display details of all members who are having EmailID with 'gmail.com'.
- (iii) To display the average MSalary of all the Male team members.
- (iv) To display the Designation-wise number of members in the team.
- (c) Observe the above table named "Project2021" carefully and write the output of the following queries : 4

- (i) `SELECT COUNT(*) FROM Project2021 WHERE MSalary > 75000;`
- (ii) `SELECT EName FROM Project2021 ORDER BY MSalary DESC;`
- (iii) `SELECT MAX (MSalary) - MIN(MSalary) FROM Project2021;`
- (iv) `SELECT EName FROM Project2021 WHERE Designation LIKE "%Programmer";`

(d) What is the degree and cardinality of the above given table named "Project2021"? 1

6. (a) Give a suitable example to explain the term 'Foreign Key' in context of SQL. 2

**OR**

(a) Give a suitable example to explain the term 'Equi-Join' in context of SQL. 2

(b) In a database BANK, there are two tables, CUSTOMER and TRANSACTION as shown below :

Database : BANK				
Table : CUSTOMER				
AccNO	CName	AadhaarNO	RPhoneNO	Balance
1001379	Ajay	123456098765	9810010234	60000
1001465	David	567890765432	8810020432	75000
1002113	Saira	345678098765	9910002341	75000
1002241	Ameena	234567987654	7634512365	65000

  

Table : TRANSACTION				
TranID	Date	AccNO	TranType	Amount
D012	2021-03-02	1001379	Credit	5000
W324	2021-03-07	1002113	Debit	7000
W453	2021-03-13	1002241	Debit	10000
D675	2021-03-16	1001379	Credit	8000
W798	2021-03-21	1002113	Debit	12000

Consider these tables while attempting the questions given below :

- (i) Identify the valid candidate key(s) of the CUSTOMER table. 1

**OR**

- (i) Give a valid example of an Alternate key from the CUSTOMER table, where AccNo is used as the Primary Key. 1





(ii) Which attribute (column) can be considered as Foreign Key in TRANSACTION table ? 1

**OR**

(ii) Identify the Primary Key attribute (column) of TRANSACTION table. 1

(c) With reference to the above given tables, answer the following questions :

(i) Write an SQL query to display customer's name (CName) who has withdrawn money (TranType='Debit'). 2

**OR**

(i) Write an SQL query to display CName, TranType, Amount from the tables CUSTOMER and TRANSACTION. 2

(ii) Write an SQL query to display customer's name (CName) who has more than one transaction in the TRANSACTION table. 2

**OR**

(ii) How many rows and columns will be there in the Cartesian product of the above tables ? 2

(iii) Write an SQL query to display AccNO from the table CUSTOMER who has not made any transaction in the table TRANSACTION. 2

**OR**

(iii) Write the output of the following SQL query : 2

**SELECT CName, Amount FROM CUSTOMER C, TRANSACTION T  
WHERE C.AccNO=T.AccNO;**

7. (a) In the era of e-Commerce, your friend Richa is confused and cannot decide whether to buy something online or not. Briefly explain to her any two advantages of online shopping. Also suggest her two precautions that she must follow while doing online shopping. 2

(b) How does e-Governance empower citizens ? Write any two advantages. 1

(c) Mr. Imran is creating a form for admission in Global Vidyapeeth. Help him 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 of the applicant.
2.	To let the user enter PHONE NUMBER of any one parent.
3.	To let the user choose one GENDER out of Female/Male/Others.
4.	To let the user choose SPECIAL CATEGORY out of Alumni/Single Child/EWS. More than one category may be chosen.