

COMPUTER APPLICATIONS

SAMPLE PAPER

(As Per Re-reduced Syllabus - For ICSE 2021 Exam)

Time - 2 Hours

Max. Marks: 80

General Instructions:

1. You will not be allowed to write during the first 15 minutes. This 15 mins is to be spent reading the question paper.
2. The time given at the head of this paper is the time allowed for writing the answers.
3. Attempt **all** questions from **Section A** and **any four** questions from **Section B**.
4. The intended marks for the question or parts of questions are given in the brackets ().

SECTION A (40 Marks)

Attempt all questions

Question 1

[10]

- (a) Name the keyword which:
- (i) Allows you to exit from a loop
 - (ii) Allows you to refer to the currently calling object.
- (b) If $a=4$, $b=8$, calculate the value of $a + = a ++ - ++ b + a$;
- (c) Give the output of the following expressions:
- (i) If $x = -9.99$, calculate `Math.abs (x)`;
 - (ii) If $x = 4.0$, calculate `Math.pow (x, x)`;
- (d) If `a [] [] = {{ 1,2,3}, {4,5,6}}`;
- (i) What is `a [1][1]`?
 - (ii) What is `a.length`?
- (e) What is the difference between a static member function and a member function which is not static?

Question 2

[10]

- (a) Write the memory capacity (storage size) of long and double data types in bytes.
- (b) Identify and name the following tokens:

(i) void

(ii) !=

(c) State the data type and value of result after the following is executed:

```
char ch = 'A'
```

```
result = Character.isLetterOrDigit(ch);
```

(d) Write a Java expression for the following: $|a - \sqrt{b}|$

(e) Rewrite the following using ternary operator:

```
if (basic > 25000)
```

```
    tax = 200;
```

```
else
```

```
    tax = 100;
```



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Question 3

[20]

(a) Give the output of the following code and mention how many times the loop will execute?

```
Int i;
```

```
for (i=10; i>=2; i --)
```

```
    if (i % 3 == 0)
```

```
        break;
```

```
    System.out.println(i);
```

```
}
```

(b) Differentiate between **isUpperCase(char)** and **toUpperCase(char)**.

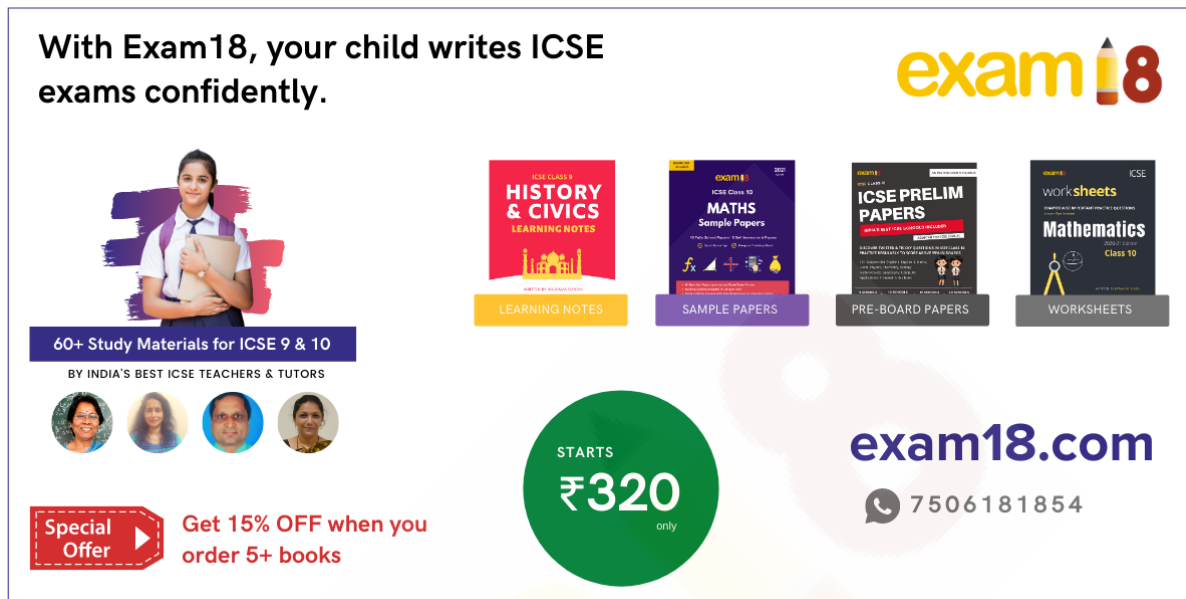
- (c) Classify the following as primitive and non-primitive data types:
- (i) double
 - (ii) integer
- (d) Name the package that contains:
- (i) Wrapper classes
 - (ii) Scanner classes
- (e) Give the output of the following code:
`System.out.println("\ I can do this!\");`
- (f) Convert the following if else if construct into switch case:
- ```
if (stars == 5)
 System.out.println("Excellent");
else if(stars == 4)
 System.out.println("Good");
else if(stars == 3)
 System.out.println("Average");
else
 System.out.println("Poor");
```
- (g) Name the type of operators listed below:
- (i) ==
  - (ii) !
- (h) Write the output:
- ```
Char ch = 'Z';
int a = ch;
a - = 5;
System.out.println(a + "," + ch);
```
- (i) In the following statement, identify and name the constructor and the keyword used:
`Car c1 = new Car ("Red");`
- (j) Give an example of a single line and a multiline comment.

SECTION B (60 Marks)

Attempt *any four* questions from this section.

The answer in this section should consist of the programs in either Blue J environment or any program environment with Java as the base. Each program

should be written using variable descriptions/mnemonic codes so that the logic of the program is clearly depicted.



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Question 4

[15]

Design a class Ticket with the following description:

Instance variables/data member:

int num: to store the number of tickets purchased.

double price: to store the total price of the tickets purchased.

char type: to store the type of ticket purchased.

Member methods;

Ticket (int, char) – parameterized constructor to initialize the data members.

void calculate () – to calculate the total price of the tickets based on the following criteria:

Type of Ticket	Price per Ticket
‘G’	Rs. 200
‘S’	Rs. 150
‘B’	Rs. 120

void display () – To display the number of tickets, type of ticket, and the total price the customer needs to pay. Also include main () method to create an object of the class and call the methods accordingly to enable the task.

Question 5

[15]

Write a menu driven program for the following:

(i) To find and display the sum of the series given below:

$$S = x^1 - x^2 + x^3 - x^4 + x^5 - \dots - x^{20}$$

(where $x = 2$)

(ii) To display the following series:

11 111 1111 11111

For an incorrect option, an appropriate error message should be displayed. (use switch-case).

Question 6

[15]

Write a program to input an integer from the user and find and display the largest and the smallest digit in it.

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Question 7

[15]

Write a program to input a string from the user and find and display the total number of uppercase alphabets, lowercase alphabets, and digit present in the string.

Example: INPUT: I have JDK 1.5 installed. OUTPUT: Number of uppercase alphabets: 4
Number of lowercase alphabets: 13 Number of digits: 2

Question 8

[15]

Using switch-statement, write a menu-driven program to do the following:

a) To check if a given integer is a perfect square. A number is a perfect square if its square root is an integer.

Example: 49 is a perfect square because its square root is 7, which is an integer.

b) To display all the factors of a given integer.

Example:
INPUT: 12
OUTPUT: 1,2,3,4,6,12

Question 9

[15]

Design a class to overload a function work () as follows:

(a) Work (int a) – to display all the digits of the given number in words.

Example:

INPUT: 468

OUTPUT: FOUR EIGHT SIX

(b) Work (int p, int n) – to display first n even numbers starting from p.



Example:

INPUT: p=5, n=3

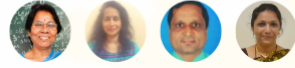
OUTPUT: 6,8,10


You need not create the main () method.

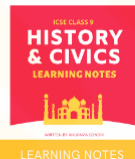
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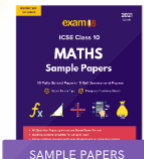
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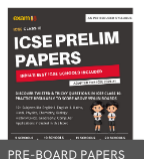
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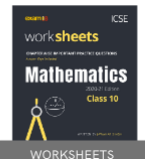
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