1 What does the following code fragment print?

```
String string1 = "Hello";
String string2 = string1;
string1 = "World!";
System.out.println(string1);
System.out.println(string2);
```

2 Write a brief explanation for the results in Question #1.

(3)

(3)

- Given a string site that represents a website, write a code fragment to determine its top-level domain (TLD). For example, the TLD for the string "http://www.woodstockschool.in" is: in.
- (5)

(5)

(10)

(20)

4 A string, s, is a circular shift of a string, t, if it matches when the characters are circularly shifted by any number of positions. For example, ACTGACG is a circular shift of TGACGAC and vice versa. Detecting this condition is important in the study of genomic sequences. Write a method that checks whether two given strings, s and t, are circular shifts of one another.

Note: This can be accomplished using a very simple technique involving string concatenation.

- Password Strength Verification. Write a static method that takes a single, String argument and returns true if it meets all of the following conditions and false otherwise.
 - The string is at least 8 characters in length.
 - The string contains at least one numeric digit (0-9).
 - · The string contains at least one upper-case letter.
 - The string contains at least one lower-case letter.

Hint: There is a clever method for testing the last two requirements simultaneously.

6 Kama Sutra Cipher. The Kama Sutra describes a fairly simple encryption technique (listed as the "art of secret writing"). It requires a one-to-one pairing of letters. A message can then be encoding by replacing every letter with its pair.

Example: Suppose that the following table of pairings were being used:

T	H	E	Q	U	I	С	K	В	R	0	W	N
F	Χ	J	М	Р	S	V	L	Α	Z	Υ	D	G

Then, the message "MEET AFTER SCHOOL" would be encoded as: "QJJF BTFJZ IVYYK".

Often, the pairings will be recorded as a series of keywords which are then used to create the table of pairings. (In the above example, the two keywords are: "THEQUICKBROWN" and "FXJMPSVLAZYDG".)

Create a method, KamaSutra(), that will take three, String parameters: the first parameter is the text to be encoded and the remaining two parameters are the two keywords for a Kama Sutra cipher and returns the encrypted text.