Concurrent Systems and Applications

(a) What are Class Literals in the context of generics in Java? [2 marks]

(b) Under what circumstances might type erasure occur in a Java program that uses generics? Illustrate your answer with sample Java code. [4 marks]

(c) Consider the two overloaded methods shown below. Is it valid to have these overloaded methods in a Java class? Explain your answer.

```java
public static <T extends Long>
    void myMethod(List<T> x)
{
    // ...
}

public static <S extends String>
    void myMethod(List<S> x)
{
    // ...
}
```

(d) Consider two class definitions: A, and B which extends A. In the context of the relationship between the types A[] and B[], explain the difference between covariance and contravariance. Is Java covariant or contravariant? [4 marks]

(e) If a field is declared with protected access, from where can it be accessed? Is there any situation in which a private field defined on some class A can be accessed but a protected field defined on A cannot? [5 marks]