COMPUTER SCIENCE TRIPOS Part IA – 2018 – Paper 1

3 Object-Oriented Programming (RKH)

Consider the following Java class.

```
 1  public class Child extends Parent {
 2
 3      public int x=0;
 4
 5      public boolean equals(Object obj) {
 6              if (this == obj) return true;
 7              if (!super.equals(obj)) return false;
 8              if (getClass() != obj.getClass())
 9                      return false;
10              Child other = (Child) obj;
11              if (x != other.x) return false;
12              return true;
13      }
14  }
```

(a) Explain why it is bad practice for member variables such as x to be public.
[2 marks]

(b) For each of the lines 6–12, explain its purpose. Illustrate your answer with examples. [7 marks]

(c) What could result from a call to c.equals(null), assuming c is a reference to a Child object? [3 marks]

(d) What would be the consequences of replacing the equals signature with public boolean equals(Child obj)? [4 marks]

(e) Explain why Child should also override the hashCode() method. [4 marks]