Exam Style Questions

12. The following code has been written to total numbers entered by the user from some dice.

```
Line 13     SET total TO 0
Line 14     REPEAT
Line 15       RECEIVE value FROM KEYBOARD
Line 16       SET total TO total + value
Line 17     UNTIL value = 99
```

The code runs without any reported errors however the total calculated is always incorrect.

(a) Explain why the total is incorrect. **2**

(b) Explain how the code could be corrected to remove the error. **2**

(c) Rather than use physical dice, the program will be edited to automatically generate different numbers from 1 to 12.

What pre-defined function could be used to implement this? **1**

13. Vanessa writes a program to calculate the total calories eaten over seven days.

The first part of the program asks the user to enter his or her weight in kilograms. The program only accepts whole number values from 40 to 130.

```
...
Line 6  SET valid TO FALSE
Line 7  REPEAT
Line 8      RECEIVE weight FROM KEYBOARD
Line 9      IF _____
```

```
Line 10         SET valid TO TRUE
Line 11     END IF
Line 12 UNTIL valid = TRUE
```

(a) Complete line 9 of the code above. 3

(b) State the data type of the variable `weight`. 1

The following section of code calculates the total calories eaten for the seven day period:

```
Line 15 RECEIVE calorie1 FROM KEYBOARD
Line 16 RECEIVE calorie2 FROM KEYBOARD
Line 17 RECEIVE calorie3 FROM KEYBOARD
Line 18 RECEIVE calorie4 FROM KEYBOARD
Line 19 RECEIVE calorie5 FROM KEYBOARD
Line 20 RECEIVE calorie6 FROM KEYBOARD
Line 21 RECEIVE calorie7 FROM KEYBOARD
Line 22 SET totalCalories TO (calorie1 + calorie2 + calorie3 +
calorie4 + calorie5 + calorie6 + calorie7)
Line 23 <display the calories values and totalCalories>
```

(c) When evaluating this code, it is found to be inefficient.

Using a programming language of your choice, rewrite lines 15 to 22 of the code using more efficient constructs.

18. Paul writes a computer program to play a guessing game.

```
Line 1   SEND "Player One: Enter Number to Guess"
Line 2   RECEIVE target FROM KEYBOARD
Line 3   SET attempts TO 0
Line 4   WHILE (attempts < 10) AND (target ≠ guess) DO
Line 5      SEND "Enter your guess" TO DISPLAY
Line 6      RECEIVE guess FROM KEYBOARD
Line 7      IF guess > target THEN
Line 8            SEND "Too high" TO DISPLAY
Line 9      END IF
Line 10     IF guess < target THEN
Line 11           SEND "Too low" TO DISPLAY
Line 12     END IF
Line 13  END WHILE
Line 14  IF (target = guess) THEN
Line 15     SEND "Well done, you guessed correctly" TO DISPLAY
Line 16  END IF
```

(a) When the program is run, line 2 stores the value of `target` and line 8 checks `if guess > target`.

(i) State the part of the processor that temporarily stores the value of `target`. 1

(ii) State the part of the processor that compares `guess` with `target`. 1

(b) When the program is tested, it is possible to make an unlimited number of guesses. Explain why this is possible. 2

(c) The pseudocode above makes use of indentation to show the structure of the code.

(i) State what else has been done to make the code more readable. 1

(ii) State one other way that the code could be made more readable. 1