**Homework 1: Computer systems**

1. What is meant by “top-down design”? [3]

2. An exam board uses a computer system to record examination entries, record marks for each exam, and report on results for each subject.

Reporting on results involves collating results for each student in each centre (school or college) for which there are results, sending out certificates for each student showing exams passed and grades obtained, and preparing national statistics on how many students took each exam and the percentage of students gaining each grade in each subject.

Draw a structure diagram to illustrate how this computer system may be broken down into sub-systems, which in turn may be made up of further subsystems. [5]

3. The flowchart on the next page shows part of a computer system which allows bank users to use an ATM (cash machine) to check their bank balances, withdraw cash or top up their mobile phones. Several statements are missing from the flowchart.

Complete the flowchart, using **item numbers only** from the list below. [12]

|  |  |
| --- | --- |
| **Item number** | **Description** |
| **1** | Display menu of options |
| **2** | Dispense cash |
| **3** | Check customer balance |
| **4** | Display other options |
| **5** | Display “PIN incorrect” |
| **6** | Customer wants to perform another transaction? |
| **7** | PIN correct? |
| **8** | Customer inputs amount to withdraw |
| **9** | Enough cash in customer account? |
| **10** | Input PIN |
| **11** | Eject card |
| **12** | Bank retains card |
| **13** | Customer wants to withdraw cash? |
| **14** | Display “Insufficient funds in account” |
| **15** | Has customer had 3 attempts to input PIN? |

[Total 20 marks]

**Start**

Read and validate card ID

**4**

**3**

**End**

No

No

Yes

Yes

No

No

Yes

Yes

No

Yes