(1) Draw flowchart symbols to represent the following:
   (a) start - end
   (b) input - output
   (c) different types of decisions
   (d) processing
   (e) looping / repetitions

(2) Choose the best answer: The arrows in flowcharts ________.
   (a) Represent when something is input into the program or output from
   the program.
   (b) Ask a question and then determines which route the program will
   take.
   (c) Show actions done by the program.
   (d) Show the direction and sequence of processes.

(3) Draw flowcharts and write the algorithm to:
   (a) input dimensions of a rectangle and print its area.
   (b) input dimensions of a rectangle and print its perimeter (محيط).
   (c) input length of square sides and print its area. Produce an error
   message if the length is negative.
   (d) input three numbers and print either “all three are equal” or “not all
   are equal” message.
   (e) input three numbers and print the biggest one.

(4) Draw flowcharts and write the algorithm for:
   (a) withdraw (سحب) cash from ATM machine.
   (b) calculate the interest (فائدة) of a bank deposit (وديعة). Hint: you should
   read (input) amount, years and interest rate from the keyboard and print
   the interest amount.
   (c) print what to do when driving to a traffic signal.
   (d) input (read) a number from the keyboard and print whether it is an
   even number or odd number.
(5) A, B, and C are the marks scored by a student in Science, Mathematics and English.

(a) Design an algorithm and the corresponding flowchart to calculate the average mark of that student.

(b) A student whose average marks is above 75 passes this semester while a student whose marks is equal to or below 75 fails in the semester. Given that the grades of students were as a follows:

<table>
<thead>
<tr>
<th></th>
<th>Science</th>
<th>Mathematics</th>
<th>English</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sara</td>
<td>75</td>
<td>80</td>
<td>72</td>
</tr>
<tr>
<td>Ahmed</td>
<td>72</td>
<td>70</td>
<td>82</td>
</tr>
</tbody>
</table>

Find the average of each student and print whether he “passes” or “fails” in the semester.

(6) Lengths of three sides of a triangle A, B, C are given as input. The following flowchart finds if the triangle is isosceles, equilateral, or scalene. Some boxes in the flowchart are filled in for you, fill in the rest of the details

*Hint: In an equilateral triangle three sides are equal. In an isosceles triangle two sides are equal. In a scalene triangle three sides are not equal.*
(7) There are four types of fruits Apples, Oranges, Bananas and Grapes (عنب).
Each student can pick up two fruits. There are some restrictions (قيود) which have to be used to pick up the fruits. Draw a flowchart which takes the name of first fruit as an input and prints the names of available choices for the second one. The restrictions are:
(a) If you pick an apple you can pick banana.
(b) If you pick orange you can pick grapes .
(c) If you pick grapes you can pick banana.

Good luck