PHOTOVOLTAIC SYSTEMS 3
5265

CAMEROON GENERAL CERTIFICATE OF EDUCATION BOARD

Technical and Vocational Education Examinations

JUNE XXXX **INTERMEDIATE LEVEL**

Subject Title	**PHOTOVOLTAIC SYSTEMS**
Subject Code No.	**5265**
Paper No.	**THREE**

Duration: Three Hours

Answer all the questions.

All sketches must be neat and clear.

You are allowed to use non programmable calculators' mathematical sets

You are reminded of the necessity for good English and orderly presentation in your answers.

1. Photovoltaic systems **(35 marks)**

You have been provided with the following components of a solar home system:

- A 80W PV panel
- 1 charge controller: 10A-12V
- 1 battery: 12V, 125Ah
- 1 inverter: 12V DC – 220V AC
- A 220V lamp.

Work required

1.1 Position all the components of the photovoltaic system

1.2 Wire the solar components to the charge controller

1.3 Connect the incandescent lamp to the solar system

1.4 The lamp must come ON. If the system does not work correctly at the first trial, the candidate is given two more chances to make it work correctly. The candidate loses 5mks after each unsuccessful trial. If after three trials the circuit does not work, it is the duty of the examiners to make it work so that the candidate can continue with the rest of the examination.

(Total = 35 marks)

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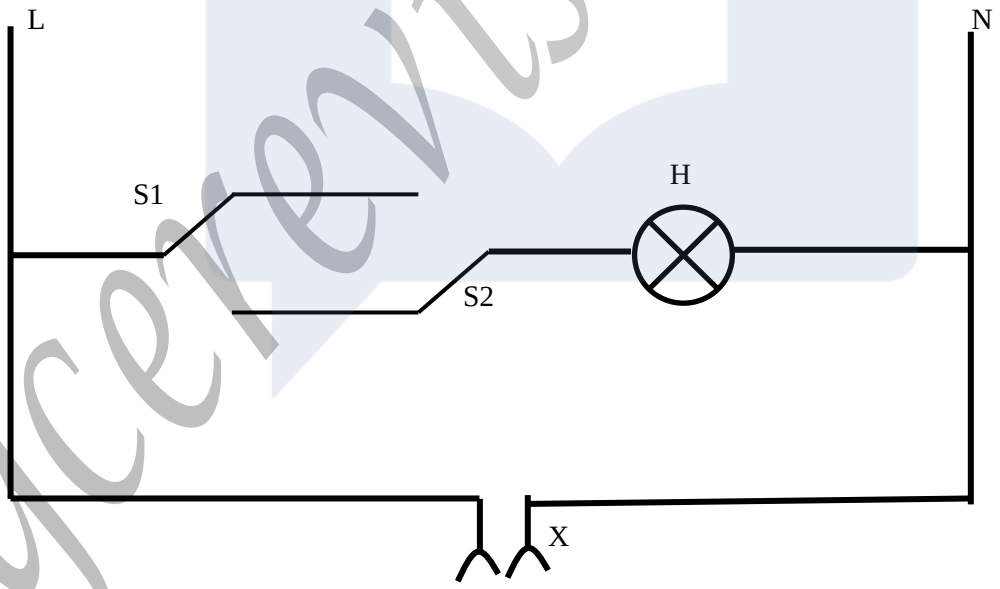
2. Electrical Installation **(35 marks)**

Theme: Two way lighting: Figure 1 shows the developed diagram of a double lighting circuit.



Work required

1. Wire the diagram on a board or on an appropriate wall
2. Power the circuit from the photovoltaic system
3. The system should work properly
4. Test the socket if it is supplied by the photovoltaic system.

   If the system does not work correctly at the first trial, the candidate is given two more chances to make it work correctly.

(Total = 35 marks)

3. **Maintenance of an Electronic, Electrical or Solar installation (30 marks)**

3.1 **Maintenance (15 marks)**

1. A 5V regulated power supply presents the following breakdown symptoms
- When it is supplied, the indicator lamp which indicates the presence of power supply is OFF;
2. Work to be done:
   - Troubleshoot the regulated power supply
   - Identify the defective block or section
   - Carry out repairs

3.2 **Servicing (15 marks)**

3.2.1 The photovoltaic system implemented in question 1 works well for some time and later on presented the following symptom

- The lamp is OFF

Troubleshoot the system so as to bring back the lighting of the lamp to normalcy.

(Total = 30 marks)

MARK GUIDE

3.1	Identification of the faults;	**(5 marks)**
3.2	Logical search for defective component(s);	**(2 marks)**
3.3	Respect of the maintenance procedure;	**(2 marks)**
3.4	Proper operation of the repaired or maintained installation;	**(2 marks)**
3.5	Organization of the work post;	**(2 marks)**
3.6	Proper filing of the maintenance form;	**(2 marks)**

APPENDIX

MAINTENANCE OF ELECTRONIC AND SOLAR EQUIPMENT

MAINTENACE REPORT FORM

Subject: _____

Identification of the owner of the equipment

First name and surname : NIC No: of : at:

Adresse :

Identification of the equipment

Mark : Model : Series number:

Information pertaining to maintenance

N°	Diagnostic			Repairs
	Dysfunctioning observed	**Causes or hypotheses**	**Faults identified and procedure to repair**	**Measures taken to solve the problem**

_____ ***Turn Over***