

3.5 POWER MECHANICS (447)

The 2014 KCSE examination for Power Mechanics consisted of two papers namely Paper 1 (theory) and Paper 2 (Practical). The theory was worth 60% while practical was worth 40% of the final mark. The format and weighting of the two papers was the same as in the previous years.

General Candidates Performance

The candidate's performance statistics in the KCSE Power Mechanics examination since the year 2009 are as shown in the table below.

Table 13: candidates overall performance in the years 2009 to 2014

Year	Paper	Candidature	Maximum score	Mean score	Standard deviation
2009	1	136	60	28.88	9.27
	2		40	27.05	4.15
	overall		100	56.74	12.37
2010	1	159	60	26.49	8.67
	2		40	26.34	5.24
	overall		100	52.66	12.81
2011	1	136	60	28.79	9.25
	2		40	27.74	4.10
	overall		100	56.53	11.69
2012	1	149	60	34.51	7.35
	2		40	30.74	3.08
	overall		100	65.26	9.07
2013	1	145	60	37.92	8.46
	2		40	28.61	3.19
	overall		100	66.27	11.32
2014	1	166	60	41.14	7.93
	2		40	30.21	2.91
	overall		100	71.35	9.81

From the table it can be observed that:

- (i) The mean score improved from 66.27 in the year 2013 to 71.35 in the year 2014.
- (ii) The candidature increased from 145 in the year 2013 to 166 in the year 2014.
- (iii) The general performance has been increasing steadily since the year 2010.

3.5.1 Power Mechanics Paper 1 (447/1)

The question which was reported to have been poorly performed has been analyzed with a view to pointing out candidates' weaknesses and propose suggestions on some remedial measures that need to be taken in order to improve performance in future. The question in this case is **Question 10 a**.

Question 10 a

Distinguish between the **two** types of engine block construction. (2 marks)

Weaknesses

Most candidates could not distinguish between the two types of engine block construction.

Advice to teachers

Teachers are advised to cover the syllabus conclusively without making any assumptions.

Expected Responses

- Integral - block and crank case are moulded together.
- Separate block and crank case are separate.

3.5.2 Power Mechanics Paper 2 (447/2)

The paper had 10 equally weighted compulsory exercises. It tested competencies in the following areas:

- Drawing the sectional view of a sparking plug and labeling four parts
- Metal fabrication skills of a support bracket using given materials
- Measuring and inspecting the side clearance, free gap and working gap on a piston provided.
- Identification of components labeled A to E, stating the materials used to make them and their use.
- Connection of the ignition circuit of a motor vehicle given the components.
- Identification of parts of a vehicle system, the defects on the parts and their effect on the vehicle performance.
- Identification of parts of a gas welding equipment, lighting the equipment, setting the flame to oxidizing flame and shutting down the equipment.
- Measuring the bore and stroke of a single cylinder engine and calculating the compression ratio of the engine.
- Servicing a fan belt of a multicylinder engine, stating its defects and the cause of the defect.
- Measuring the specific gravity and battery voltage of the six cells of a battery given, checking the electrolyte and battery charge.

Despite the exercises being fairly done by most of the candidates the following challenges were observed.

Some candidates were unable to fabricate the support bracket within the time allocated to the task.

Advice to teachers

Train the students on skills of fabricating various objects which involve marking, soldering, drilling and bending while at the same time emphasizing on speed.

3.6 ELECTRICITY (448)

In the year 2014, Electricity was tested in two papers; paper 1 (448/1) and paper 2 (448/2). Paper 1 was a theory paper which constituted 60% of the final mark while Paper 2 was a practical paper which constituted 40% of the final mark. Both papers followed the usual setting format as those of the previous years.

General Candidates Performance

The candidate's performance statistics in the KCSE electricity examination since the year 2009 are as shown in the table below:

Table 14: Candidates overall performance in the years 2009 to 2014

Year	Paper	Candidature	Maximum score	Mean score	Standard deviation
2009	1	219	60	35.47	9.65
	2		40	24.08	5.66
	overall		100	59.55	13.75
2010	1	161	60	32.96	9.53
	2		40	28.56	4.33
	overall		100	61.52	12.56
2011	1	183	60	35.21	10.57
	2		40	30.17	3.99
	overall		100	65.37	12.63
2012	1	214	60	35.13	9.09
	2		40	25.47	4.29
	overall		100	60.60	11.83
2013	1	173	60	32.80	9.74
	2		40	27.28	4.19
	overall		100	60.06	12.55
2014	1	190	60	41.31	9.05
	2		40	27.98	3.65
	overall		100	69.30	11.50

From the table it can be observed that:

- (i) The candidature increased slightly from 173 in the year 2013 to 190 in the year 2014.
- (ii) The mean score improved from 60.06 in the year 2013 to 69.30 in the year 2014.
- (iii) However, the standard deviation dropped from 12.55 in the year 2013 to 11.50 in the year 2014.

3.6.1 Electricity Paper 1 (448/1)

The questions which were reported to have been poorly responded to have been analyzed with a view to pointing out candidates' weaknesses and propose suggestions on some remedial measures that need to be taken in order to improve performance in future. The questions for discussions include question 3, 10, 11 a, 13 a, and 15.