**Name………………………………………………………Class…………………………………**

 **447/2**

 **POWER MECHANICS**

 **Paper 2**

 **DECEMBER 2021**

 **2 ½ hours**

**BUNAMFAN CLUSTER EXAMINATION 2021**

**Kenya Certificate of Secondary Education**

POWER MECHANICS

**Paper 2**

**(PRACTICAL)**

2 ½ hours

**Instructions to candidates**

 *(a) Write your name and index number in the spaces provided above.*

 *(b) Sign and write the date of examination in the spaces provided above.*

 *(c) There are* ***TEN*** *stations in this examination.*

 *(d) Candidates are allowed* ***15 minutes*** *at each station*

 *(e) At each station, candidates are not allowed to either review the previous stations’ work or read instruction for other stations*

 *(f) Attempt* ***ALL*** *exercises in each station*

 *(g) All dimensions are in millimeters unless otherwise stated.*

**For examiner’s use only**

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Stations** | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | **Total** |
| **Marks** |  |  |  |  |  |  |  |  |  |  |  |

***This paper consists of 7 printed pages.******Candidates should check the question paper to***

***ascertain that all the pages are printed as indicated and that no questions are missing***

 **STATION l**

The **figure** below shows a truncated air cleaner assembly. On the drawing paper provided, sketch in good proportion the exploded view of the assembly and label **four** parts. (10 marks)

,;



 **STATION 2**

 **INSTRUCTIONS:**

 Use the tools, equipment and materials provided to make the

 template shown in the figure below.

 

 *(10 marks) )*

  **STATION 3**

1. Demonstrate to the examiner how to test the cylinder head provided for warpage.
2. For the piston provided determine:
	1. taper;
	2. ovality . (6 marks)

(4 marks)

 **STATION 4**

 Change the wheel marked on the vehicle provided.

 Let the examiner check your work

 **. STATION 5**

 Using the measuring tools provided, take and record each of the measurements

|  |  |  |  |
| --- | --- | --- | --- |
| (a) | Valve: | (i) | length |
|  |  | (ii) | margin width |
|  |  | (iii)(iv) | stem diameterhead diameter |

 listed below:

 PART AND MEASUREMENT REQUIRED READING

 (b) Valve spring free length

 (c) Piston ring:

 (i) free gap

* + 1. width
		2. working gap

(10 marks)

STATION **6**

 Using the tools provided, determine the compression ratio of the given engine. Take the clearance

 volume to be 30 c.c.

 (10 marks)

**STATION 7**

'From the vehicle parts labelled **F, G,** **H, J** and **K**. For each part, identify **one** defect, state **two**

Possible effects and complete the table below. ( 10 marks)

"

|  |  |  |  |
| --- | --- | --- | --- |
| **PART** | **NAME** | **DEFECT** | **EFFECTS** |
| F |  |  |  |
| G |  |  |  |
| H |  |  |  |
| J |  |  |  |
|  |
| K |  |  |  |

**STATION 8**

Using the tools, materials and components provided, connect the starting circuit of a vehicle.

(10 marks)

For the tyre provided:

* 1. Identify and record the following:
		1. Maximum load
		2. Maximum inflation limit
		3. Type of construction
		4. Tyre size
		5. Rim size
		6. Date of manufacture

**STATION 9**

* 1. Identify the defect at the section marked X and state one possible cause of the defect.

DEFECT......................................................................................................................................... .

*I*

POSSIBLE CAUSE ........................................................................................................................ .

(2 marks)

1. Demonstrate to the examiner how to measure the following:
	1. inside diameter

.............................................................................................................................................

* 1. height

.............................................................................................................................................

* 1. width

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* 1. tread depth
	2. tread width

 (5 marks)

**STATION 10**

1. Using the multicylinder engine provided, demonstrate to the examiner how to identify the misfiring cylinder. (6 marks)
2. State:
	1. **Two** possible causes of the misfiring in (a) above. (2 marks)

(ii) How each cause in (b) (i) above is determined. (2 marks)