



# Scoring instructions VSBO PKL 2026

period 1

Monday May 18

7:30 – 10:00 a.m.

## Physics & Chemistry 1

### Submitting scores

Process scores of all candidates in the online AWP program.

The scores must be posted no later than Monday June 1, 2026 at 12.00 noon.

The scoring instructions comprise:

- 1 Assessment standards
- 2 General rules
- 3 Subject-specific rules
- 4 Appraisal model

## 1 Assessment standards

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The candidate's work is assessed with due observance of articles 30, 31 and 32 of the Federal Examination Decree vwo-havo-vsbo of 23-06-2008, PB 2008 no 54.

The following passages from the articles of the Federal decree mentioned above are of essence.

- 1 The school principal submits the completed exam assignments including a copy of the exam questions, the scoring instructions and the official report of the exam to the examiner. The examiner evaluates the work and submits it to the principal along with his/her evaluation. The examiner applies the assessment standards and the appraisal model decreed by ETE (the Examination Bureau).
- 2 The principal immediately submits the deposited exams, including a copy of the exam questions, the scoring instructions and the official report of the exam to the external examiner.
- 3 The external examiner promptly evaluates the work, applying the appraisal model and the assessment standards decreed by ETE (Examination Bureau).
- 4 The examiner and the external examiner confer and jointly determine the score totals for the national exam.
- 5 If they cannot reach a consensus, the score totals are determined by way of a mathematical average of the scores proposed by each of them, rounded off upwards if so required.

## 2 General rules

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As far as evaluation of the exam goes, the following stipulations apply:

- 1 The examiner declares on a list, the candidate names and/or numbers, the scores awarded to each candidate for each question and the total score acquired by each candidate.
- 2 The examiner and the external examiner award scores to the answer to a question in accordance with the appraisal model. Scores are represented by the numbers 0, 1, 2, ..., n, whereby n represents the maximum score attainable for a question. Additional scores, not being a whole integer, or a score being less than 0, are not legitimate.
- 3 Scores are awarded in compliance with the following rules
  - 3.1 If a question is answered correctly in full, the maximum score attainable is awarded;
  - 3.2 If an answer to the question is partially correct, a portion of the score attainable is awarded, in compliance with the appraisal model;

- 3.3. If the answer to an open-end question does not appear on the appraisal model, while said answer may be deemed correct or partially correct by virtue of demonstrable arguments with regard to subject matter content, scores must be awarded on the analogy or in the spirit of the appraisal model;
  - 3.4 If solely one example, reason, elaboration, quote or answer of a different nature is required, then only (and exclusively) the first-offered answer is evaluated;
  - 3.5 If more than one example, reason, elaboration, quote or answer of a different nature is required, then only (and exclusively) the first-offered answers are evaluated, up to a maximum of the number of answers asked for;
  - 3.6 If a required statement or explanation or derivation or calculation is missing or wrong in an answer, then a score of 0 is awarded, unless the appraisal model indicates otherwise;
  - 3.7 If various options separated by the symbol / appear in the appraisal model, then said options are valid as different phrasings of the same answer or part of the answer;
  - 3.8 If a portion of the answer is bracketed in the appraisal model, then said portion is not absolutely required in the candidate's answer.
- 4 The correct answer to a multiple-choice question is the capital letter that matches the correct choice. For a correct answer to a multiple-choice question, the number of points listed in the appraisal model is awarded. For each other answer, no points are awarded. If more than one answer is given, no points are awarded either.
  - 5 An error in the elaboration of a question may be charged but once, unless said error simplifies the question significantly and/or unless the appraisal model states otherwise.
  - 6 A same-like error in the response to different questions must be charged consistently for each individual case, unless the appraisal model states otherwise.
  - 7 If the examiner or the external examiner is of the opinion that there is an error or discrepancy in an exam or in the appraisal model of said exam, then he evaluates the work as if the exam and its appraisal model were correct. He should, however, report the error or discrepancy to ETE. It is not allowed to deviate independently from the appraisal model. Such errors, if any, will be taken into account when the final marking of the exam is determined by ETE.
  - 8 Points are awarded on the basis of answers given by the candidate to each question. No points shall be awarded in advance.
  - 9 The grade for the national exam is arrived at in the following fashion: The first and second corrector determine the score of each candidate. Said score is conveyed to the principal.  
The principal determines the grade of the national exam on the basis of standards with regard to converting score to grade. Said grade may be read from conversion tables that are made available by ETE after the final marking of the exam has been established.

### 3 Subject-specific rules

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For this national written exam PSVE PKL Physics & Chemistry 1 first period 2026, a maximum of 76 points can be scored. The exam consists of 35 questions.

The following subject-specific rules have been established for this exam:

1. Per question, no more than 1 score point can be deducted for giving an incorrect unit or not mentioning the corresponding unit. In the entire exam, no more than 2 score points may be deducted in this respect.
2. The total number of score points that may be deducted in the entire exam for rounding off incorrectly, is no more than 2. That is to say, a maximum of 1 point if the candidate rounds up incorrectly once or several times and also a maximum of 1 point if the candidate rounds down incorrectly once or several times.
3. If there is no instruction with regard to the manner in which an answer must be rounded off, then all approaches to the answer that ensue from a correct calculation and that are also plausible, are outright correct. In the entire exam the following applies: unless the appraisal model explicitly awards points for rounding off, the instruction: "round off to ... decimals" serves only as an indication to the candidate how accurately he may round off and is never intended for examining the skill of *rounding off numbers*.
4. If, from the answer given, it appears that the candidate has simplified the formulation of the problem, it is not allowed to award the maximum score to the answer given.

## 4 Appraisal model

Question	Answer	Scores
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*The correct answer to a multiple-choice question is awarded 1 point.*

*For all questions that require a step-by-step calculation, the following applies:  
Only the correct final answer written down without showing the calculation steps is fully correct and must be awarded the maximum score.  
The purpose of the instruction “write down your calculation(s)” is to allow the awarding of part of the maximum score (partial scores).*

- |   |  |                     |
|---|--|---------------------|
| 1 | C  |                     |
| 2 | B  |                     |
| 3 | C  |                     |
| 4 | <b>maximum score 3</b><br>Total mass = 295 + 113 + 326 = 734 grams.<br>Total mass = 0.734 kg.<br>Fg = 0.734 × 10 = 7.34 N.   | 1<br>1<br>1         |
| 5 | D  |                     |
| 6 | <b>maximum score 2</b><br>The <b>contact</b> surface between the <b>measuring glass</b> and the <b>grate/burner</b> .  | 1<br>1              |
|   | <i>grate/burner</i> followed by <i>measuring glass</i> , also correct.   |                     |
| 7 | <b>maximum score 2</b><br>density<br>corrosion resistance  | 1<br>1              |
| 8 | <b>maximum score 3</b><br>1). Copper is suitable for installing gas pipelines because copper is <b>pliable</b> .<br><br>2). Copper is suitable for installing water pipes because copper is <b>corrosion resistant</b> .<br><br>3). Copper is suitable for installing electricity lines because copper is a <b>conductor</b> . | 1<br><br>1<br><br>1 |

Question	Answer	Scores
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9 A

10 C

11 C

12 B

13 maximum score 3

type of raw material	<b>does</b> run out	<b>doesn't</b> run out
water		X
cotton		X
iron ore	X	
petroleum	X	
wood		X

Five or four rows correct: 3 points  
 Three or two rows correct: 2 points.  
 Only one row correct: 1 point.  
 Zero rows correct: 0 points.

14 maximum score 3

information	name
handing in vegetables, fruit and garden waste separately	separate (waste) collection/ VFG collection/ VFG waste processing
converting kitchen, garden and other organic waste into new material	composting/recycling
waste processing which generates heat that can be applied usefully	incineration

Just the abbreviation like VFG for the type of waste is **not** a method of waste management.  
 Three correct: 2 points  
 Two or one correct: 1 point.  
 Less than one correct: 0 points.

Question	Answer	Scores
15	<p><b>maximum score 2</b></p> <p>P is a type <b>S<sub>1</sub></b> switch.</p> <p>Such a switch is called <b>reed contact/reed switch</b>.</p>	1 1
	<p><i>The second partial score applies as follows:</i></p> <p><i>If S2 is indicated as relay or S3 is indicated as earth leakage circuit breaker, only the second partial score of 1 point is awarded.</i></p>	
16	<b>A</b>	
17	<b>C</b>	
18	<b>C</b>	
19	<b>D</b>	
20	<p><b>maximum score 1</b></p> <p>The incandescent bulb has (by far) the highest energy consumption (of 25 W compared to 2 W and 5 W).</p>	
21	<p><b>maximums core 2</b></p> <p>The calculation should show that the price per hour of the LED bulb is less than the price per hour of the energy-saving bulb.</p> <p><math>6.30 \div 10,000 &lt; 4.40 \div 6,000</math>.</p>	
	<p><i>Possibly through ratio tables:</i></p> <p><i>Price of LED bulb divided by the lifespan of the LED bulb, 1 point.</i></p> <p><i>Price of the energy-saving bulb divided by the lifespan of the energy-saving bulb, 1 point.</i></p> <p><i>Writing an additional conclusion is not required.</i></p>	
	<p><i>The inverse ratio (time ÷ price) is also correct if it is explained that this demonstrates that for the same amount of money, the LED bulb can burn for more hours than the energy-saving bulb.</i></p>	
22	<p><b>maximum score 3</b></p> <p>1). magnet field/magnetic field/magnetism.</p> <p>2). (electric) current/voltage/induction/ induction voltage.</p> <p>3). coil/winding.</p>	1 1 1
23	<p><b>maximum score 2</b></p> <p>Words to be underlined are:</p> <p>a higher voltage.</p> <p>a lower voltage.</p>	1 1

Question	Answer	Scores
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**24 maximum score 4**

Calculation of equivalent resistance:

$$\frac{1}{R_v} = \frac{1}{30} + \frac{1}{30} + \frac{1}{20} + \frac{1}{20} = \quad 1$$

$$\frac{1}{R_v} = \frac{2}{30} + \frac{2}{20} = \frac{4}{60} + \frac{6}{60} = \frac{10}{60} \quad 1$$

$$\frac{1}{R_v} = \frac{4}{60} + \frac{6}{60} = \frac{10}{60} \quad 1$$

$$10 \times R_v = 60, R_v = \frac{60}{10} = 6 \text{ (ohms)}. \quad 1$$

*These calculations shown in decimal numbers are also completely correct. Subject-specific rule number 3 is then applicable.*

**25 maximum score 3**

Applying  $s = v \times t$ . 1

$$S = 1510 \times 14.6 = 22,046 \text{ m.} \quad 1$$

The bottom is  $22,046 \div 2 \approx 11$  (km) below the ship. 1

*Subject-specific rule number 3 applies.*

**26 maximum score 3**

1). sea water. 1

2). 1510 m/s. 1

3). density. 1

**27 D**

**28 maximum score 3**

Read vibration time is: 0.05 seconds. 1

$$f = \frac{1}{T} \quad 1$$

$$1 \div 0.05 = 20 \text{ Hz.} \quad 1$$

Question	Answer	Scores
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**29 maximum score 3**

force number	effect of the force	name
2	force between the floor and the crowbar	friction force
3	force within the nail	tension force
4	force on the head of the nail	moment force/tensile force
5	Melvin's force on the crowbar	muscle/muscular force

*Four rows correct: 3 points*  
*Three rows correct: 2 points.*  
*Two rows or only one row correct: 1 point.*  
*Zero rows correct: 0 points.*

**30 maximum score 3**

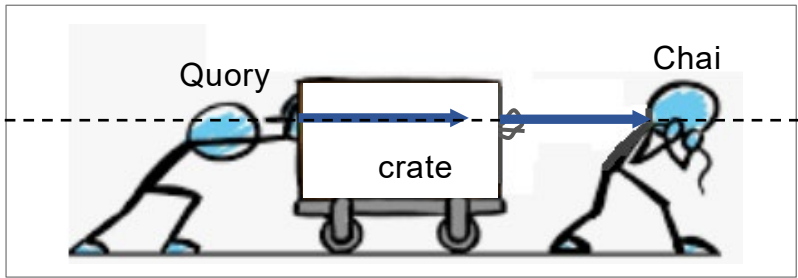
force number	effect of the force	<b>does</b> have a moment	<b>does not</b> have a moment
1	force of gravity on Melvin		x
2	force between the floor and the crowbar		x
3	force within the nail		x
4	force on the head of the nail	x	
5	Melvin's force on the crowbar	x	

*Five or four rows correct: 3 points*  
*Three or two rows correct: 2 points.*  
*Only one row correct: 1 point.*  
*Zero rows correct: 0 points.*

Question	Answer	Scores
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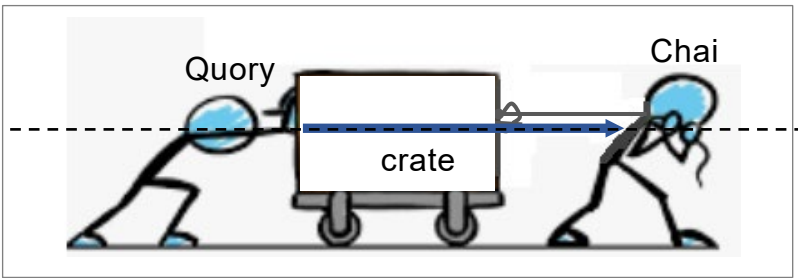
31 maximum score 4

Picture 1



Line of action of the forces

Picture 2



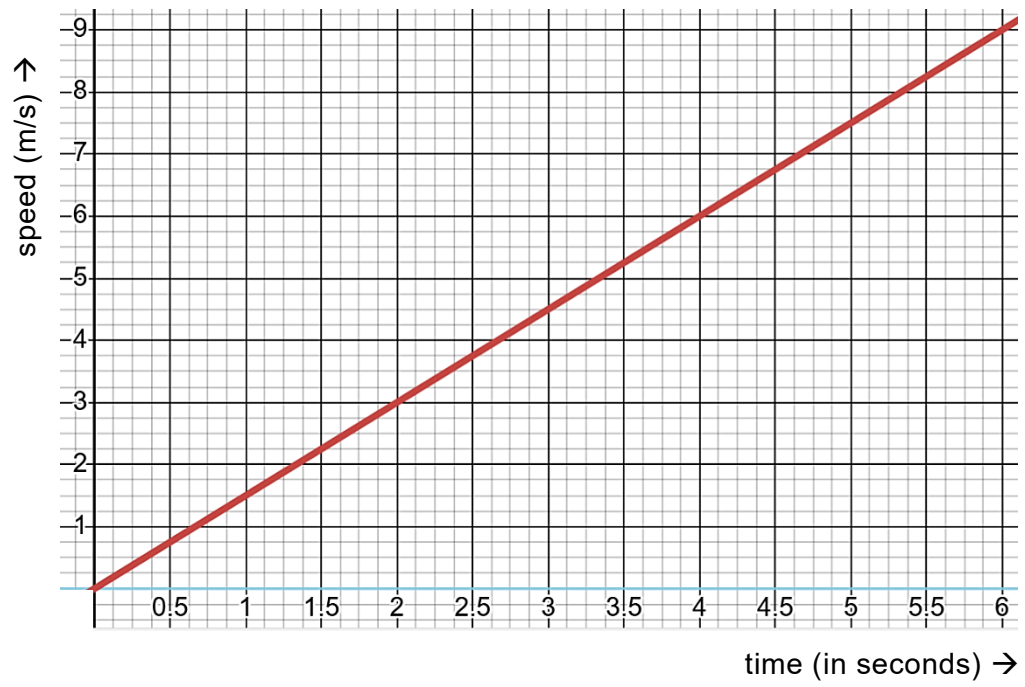
Line of action of the forces

- Forces drawn in parallel lines of action and directed towards Chai. 1
- Length of Quory's force is: 2.25 cm / 22.5 mm. 1
- Length of Chai's force: 2 cm / 20 mm. 1
- Length of resultant force = 4.25 cm / 42.5 mm. 1

*A margin of error of 1 mm is allowed.  
Should the drawings not be 100% accurate, then each drawing which, in the opinion of the correctors, shows that the technique of drawing and adding-up forces has been applied correctly, is worth at least 3 points.*

Question	Answer	Scores
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**32 maximum score 3**



A correct axis layout. 1  
 The axis names must have the unit. However, without a unit also count as correct: So for example: t/time/time (in seconds)/seconds and v/speed/speed (in m/s)//the symbol **m/s**. 1  
 Straight line through (0,0) and (6,9). 1

**33 maximum score 3**

- (1). seconds. 1
- (2). speed. 1
- (3). 1.5 m/s 1

**34 maximum score 3**

$t_1 = 1.6 \div 70 = 0,022857143 \dots$  hours. 1  
 $t_2 = 0.006 \div 10 = 0.0006$  hours and  $t_3 = 0.453 \div 50 = 0.00906 \dots$  hours. 1  
 $0.022857143 + 0.0006 + 0.00906 = 0.032517$  hours.  
 $0.032517 \times 60 = 1.951029$  minutes ( $\approx 2.0$  minutes). 1

*Subject-specific rule number 3 applies.*

Question	Answer	Scores
35	<p><b>maximum score 5</b></p> <p>Total mass = <math>70,500 + 4,000 = 74,500</math> kg.</p> <p>Total force = <math>74,500 \times 10 = 745,000</math> N.</p> <p>Total contact surface = <math>6 \times 55 = 330</math> cm<sup>2</sup>.</p> <p>Convert total area: <math>330</math> cm<sup>2</sup> = <math>0.0330</math> m<sup>2</sup>.</p> <p>Pressure on the road surface = <math>745,000 \div 0,0330 = 22575757.575\dots</math>  (<math>\approx 22575758</math> N/m<sup>2</sup>).</p>	<p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p>

*Subject-specific rule number 3 applies.*