Scoring instructions VSBO PKL

2025

Period 1
Tuesday, May 20
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 2, 2025 at 12.00 midday.

The scoring instructions comprise:
1   Assessment standards
2   General rules
3   Subject-specific rules
4   Appraisal model

1   Assessment standards

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

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

For this national written exam PSVE PKL Physics & Chemistry 1 first period 2025, a maximum of 79 points can be scored. The exam consists of 35 questions.

The following subject-specific rules have been established for this exam:
1. For each calculation error, 1 score point is deducted to the maximum of the number of score points that can be given for that part of that particular question.
2. If the candidate has made a notation error when answering a question and if it is evident that this has no further influence on the final answer, no score point will be deducted for this.
3. 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.
4. 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.
5. 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 <u>may</u> round off and is never intended for examining the skill of *rounding off numbers*.
6. 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

The correct answer to a multiple-choice question is awarded 1 point.

1 **maximum score 3**
936 ml = 0.94 liters. 1
75.9 oz = 2.15 kg. 1
50 Hz = 50 times per second. 1

Not round off or rounded off incorrectly, do not grade as incorrect.
Niet afgerond of niet goed afgerond, niet fout rekenen. Subject-specific rule
no 5 applies.

2 **maximum score 2**
The words to be underlined are:
noise nuisance 1
electrical power 1

3 **maximum score 3**

material	corrosion resistant
wood	x
metal	
plastic	x

material	corrosion resistant
stone	x
concrete	x
glass	x

Six rows correct, 3 points.
Five or four rows correct, 2 points.
Three or two rows correct, 1 point.
Less than two rows correct, 0 points.

4 **maximum score 2**
Advantage 1: aluminum does not rust. 1
Advantage 2: aluminum is lighter than copper. 1

5 **maximum score 2**
Liquid P is **oil** and liquid Q is **water**. 1
Liquid Q stays under liquid P because the density of Q/water
is greater than the density of P/oil. 1

6 **maximum score 3**
(1). corrosion 1
(2). skin 1
(3). eyes 1

Question	Answer	Scores

7 **maximum score 3**

phenomenon	physical process	chemical reaction
melting ice	x	
from wood to charcoal		x
evaporating seawater	x	
rusting iron		x

Four rows correct, 3 points.
Three rows correct, 2 points.
Two rows or one row correct, 1 point.

8 **maximum score 5**
Finding that the speed of sound through iron = 5,100 m/s.   1
Converting 12 km to 12,000 m.   1
Applying s = v × t and converting this to: t = s ÷ v.   1
Calculating: time = 12000 ÷ 5100 = 2.35… .   1
Final answer: time ≈ 2 seconds.   1

Award the final score point only if the unit is correct.
No deduction for not rounding off or rounding off incorrectly.

9 **A**

10 **maximum score 1**

oscilloscope image number	frequency
1.	10 MHz
2.	20 MHz
3.	1 MHz

11 **maximum score 2**
The period (T) is 1 div is ½ second.   1

$f = \dfrac{1}{T}$ $f = \dfrac{1}{½}$ frequency = 2 (Hz).   1

Question	Answer	Scores

12 **maximum score 2**

A. Type of sound: **an extremely loud sound**.

B. Risk of hearing loss : **increasing risk of hearing loss**

1

C. Hearing loss begins to set in after: **15** minutes.

1

A correct en B incorrect: 1 point, A incorrect en B correct 1 point,
A en B correct: 1 point.
C correct: 1 point.

13 **maximum score 2**

loca-tion	all three lightbulbs **are** protected	**not** all three lightbulbs **are** protected
1	x	
2	x	
3	x	

Three correct: 2 points
Tow or one correct: 1 point.
None of the rows: 0 points.

14 **D**

15 **maximum score 2**

component number	name component
1.	**resistor**
2.	**variable resistor**
3.	**transistor**
4.	**power supply**

Correct synonyms for variable resistor are: potentiometer, adjustable resistor.
Correct synonyms for power supply are: voltage source, power (source), mains
voltage, voltage source, current source.

Four or three rows correct: 2 points
Two rows correct: 1 point
Less than two rows correct: 0 points

16 **B**

Question	Answer	Scores

17 **maximum score 2**
The lights are not on because the **glass rod** is an
insulator, which makes the circuit **open** and therefore there **is no** current

Deduct 1 point for each incorrect item.

18 **maximum score 3**
Series drawing: Any drawing in which all four lightbulbs are in series   1
                 and also four lightbulbs in series with a battery.   1
Parallel drawing: all four lightbulbs and the battery in parallel.   1

19 **maximum score 2**

technical issue	**is** a probable cause	**is not** a probable cause
A cord is broken on the inside.	x	
The switch is not working properly.		x
The capacity of the voltage source is too small.		x

Three rows correct: 2 points
Two rows or one row correct: 1 point.
None of the rows correct: 0 points.

20 **maximum score 2**
Calaculation of amperage
$U = I \times R$ convert to $I = U \div R$.   1
Amperage in the branch of lightbulb A = 9 ÷ 30 = 0,3 A.   1

21 **maximum score 3**
Use of the formula for a parallel circuit: 1
Calculation of equivalence resistance:

$$\frac{1}{Rv} = \frac{1}{30} + \frac{1}{30} = \frac{2}{30}$$ 1

$$2 \times Rv = 30, \quad Rv = \frac{30}{2} = 15 \text{ (ohm)}.$$ 1

22 **B**

Question	Answer	Scores

23   **maximum score 4**
From 8:30 AM to 4:30 PM is altogether 8 hours.   1
$E = P \times t$, $E_{comp} = 235 \times 8$.   1
$E_{computer} = 1880$ Wh.   1
$E_{computer} = 1.88$ (kWh).   1

Not round off or rounded off incorrectly, do not grade as incorrect.
Subject-specific rule no 5 applies.

24   **maximum score 3**
Air conditioner number **2**   1
Elements of the reason that warrants 1 score point are:
- 3.7 kW consumption is more economical than 5.3 KW consumption.   1
- In the long run you save (much) more (than the difference in price).   1

25   **maximum score 1**
Words to be underlined are: **alternating current** and **greater**.

26   **maximum score 2**
Chosen words are:
(1). **solar cells**, (2). **radiation energy** and (3). **electrical energy**.

Three words correct: 2 points
Two words or one word correct : 1 point.
No word at all correct: 0 points.

27   **maximum score 2**
(1). conduction   1
(2). convection   1

28   **maximum score 2**
(1). 15   (2). temperature   (3). is/becomes less/lower/falls
(4). more/greater/bigger/increased

The language used for a correct fil-inn can differ from the above.
Four or three fill-ins correct: 2 points
Two fill-ins or one fill-in correct : 1 point.
No correct fill-ins: 0 points.

29   **maximum score 3**
Time required to reach boiling point is 120 seconds.   1
$Q = E = P \times t$ and $P = 75$ watts.   1
$Q = E = 75 \times 120 = 9.000$ (J) / $Q = 9$ (kJ).   1

30 **maximum score 2**
1. muscle force
2. tension force
3. friction force

If mentioned, rule normal force/power correct.
Every erroneous or missing sort of force, deduct 1 point.

31 **A**

32 **maximum score 3**

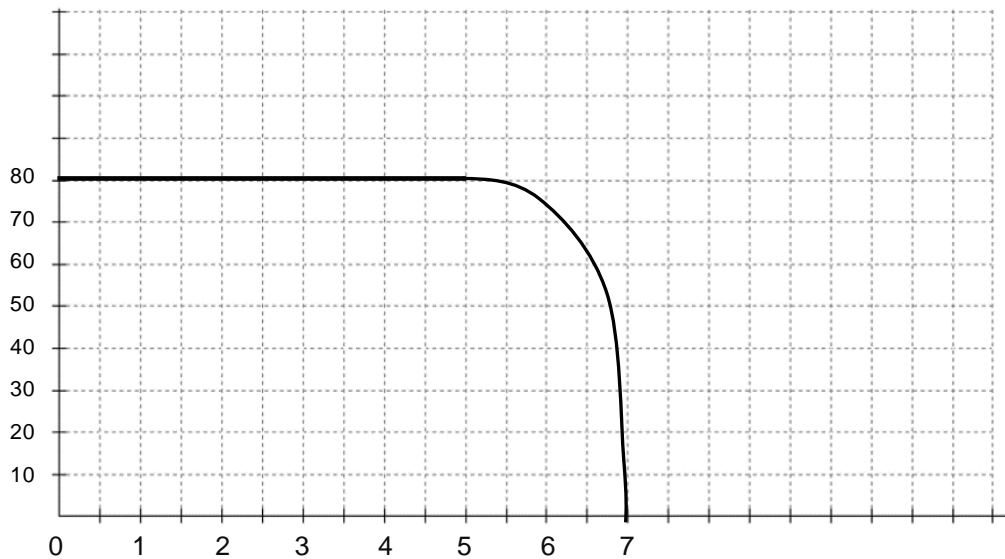| statement	true	false
1. Pulley 1 doubles the amount of rope pulling.	x	
2. Pulley 1 reduces the pull up load by half to 5 newtons.	x	
3. Pulley 2 makes lifting easier.	x	
4. Pulley 2 reduces the pull up load by half to 5 newtons.		x

Four rows correct, 3 points
Three rows correct, 2 points.
Two rows or one row correct, 1 point.

33 **B**

34 **maximum score 4**

The vertical axes is appropriately numbered.	1
The name **speed/velocity.**	1
The graph is horizontal between points (0,80) and (5,80).	1
The graph is an exponentially sloping curve between points (5,80) and (7,0).	1

For the record:
Officially, the name for the vertical axes should be: speed/velocity (in km/h).

35 **maximum score 3**

The contact surface area of the four car tires is: 4 × 34.7 = 138.8 (cm^2)	1
F = m × a: force = 1250 × 10 = 12500 (N).	1
P = F ÷ A: pressure = 12500 ÷ 138.8 = 90.05…. (≈ 90.1 N/cm^2)	1

Not round off or rounded off incorrectly, do not grade as incorrect.
Niet afgerond of niet goed afgerond, niet fout rekenen. Subject-specific rule no 5 applies.