

Engineering Entrance Exam C, 2018

ANSWERS:

1. a) $\frac{3}{4}$ (2 p)

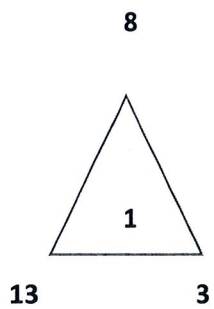
b) $3a + 1$ (2 p)

c) x^2 (2 p)

2. a) $x = \frac{1}{5}$ (2 p)

b) $C = 9$ (2 p)

3.



(4p)

4. a) $AD = 5$ and $DB = \sqrt{7}$ (2 p)

b) 14 % (2 p)

5. $Y = -\frac{1}{3}X + \frac{5}{3}$ ja $A = \frac{25}{6}$ (4 p)

6. A (4 p)

7. a)

$$v_0 t = 15 \text{ m}$$

$$\frac{1}{2} a t^2 = 5 \text{ m}$$

Result: 20 m

(intermediate results: 15m = 1p; 5m = 2p, result 1p)

b)

butane



Molecular weight: 58 g/mol 116

How many liters (NTP) is 88 g butane? 25 l/mol -> 50 liters

(structural formula 1p; molecular weight 58 g/mol 1p; 2 moles 1p, 50 liters 1p)

8. a)

$$y(30\text{s}) = 1000 \text{ m}$$

$$y(50\text{s}) = 600 \text{ m}$$

$$dt: 20 \text{ s}$$

velocity: -20 m/s

(Places: 1p; dt: 1p; velocity 2p. Velocity is a vector... direction is important. Wrong answer +20m/s = -2p)

b)

		needed:	
NaOH:	40 u	H ₂ SO ₄	1,5 mol
NaOH:	120 g	H ₂ SO ₄	98 u
NaOH:	3 mol	H₂SO₄	147 g

(NaOH: 3 mol 1p; H₂SO₄ 1,5mol 1p; H₂SO₄ 98 u 1p;
H₂SO₄ 147g 1p NOTE: ONE H₂SO₄ GIVES TWO H₃O⁺ IONS)

Task 9. SWOT analysis essay is graded as follows:

- Understanding the assignment: max 4 p
 - The student understands the idea of SWOT and discusses all four aspects (strengths, weaknesses, opportunities and threats) using full sentences.
 - Each properly handled aspect: 1 p
 - The length of the answer is approximately 250 words.
- The use of language: max 2 p
 - The use of language is so weak that the text is difficult to read and/or understand: 0 p
 - The text is relatively easy to read and understand despite obvious problems with grammar and/or vocabulary: 1 p
 - The use of language is fluent, mostly flawless and easy to read: 2 p
- If necessary, half a point can be used.

➔ **Maximum is 6 points.**

Part II (English test)

True/false statements 1-4:

- Each correct answer gives 0.5 point.
 1. T
 2. F
 3. F
 4. F

Essay question 5 is graded on a scale 0-6 as follows:

The candidate

- has not understood the question or cannot produce understandable text: 0 p
- understands the question but produces text which is difficult to read or understand: 2 p
- understands the question well and produces easy-to-read text which contains some flaws: 3 p
- gives a nearly complete answer and produces easy-to-read text which is nearly flawless: 4 p
- answers with around 150 words: 2 p
- has a very short answer: - 1 p

The length of the answer is approximately 150 words.