



higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE COMMUNICATION ELECTRONICS N5

(8080235)

**1 April 2021 (X-paper)
09:00–12:00**

This question paper consists of 5 pages and a formula sheet of 5 pages.

005Q1A2101

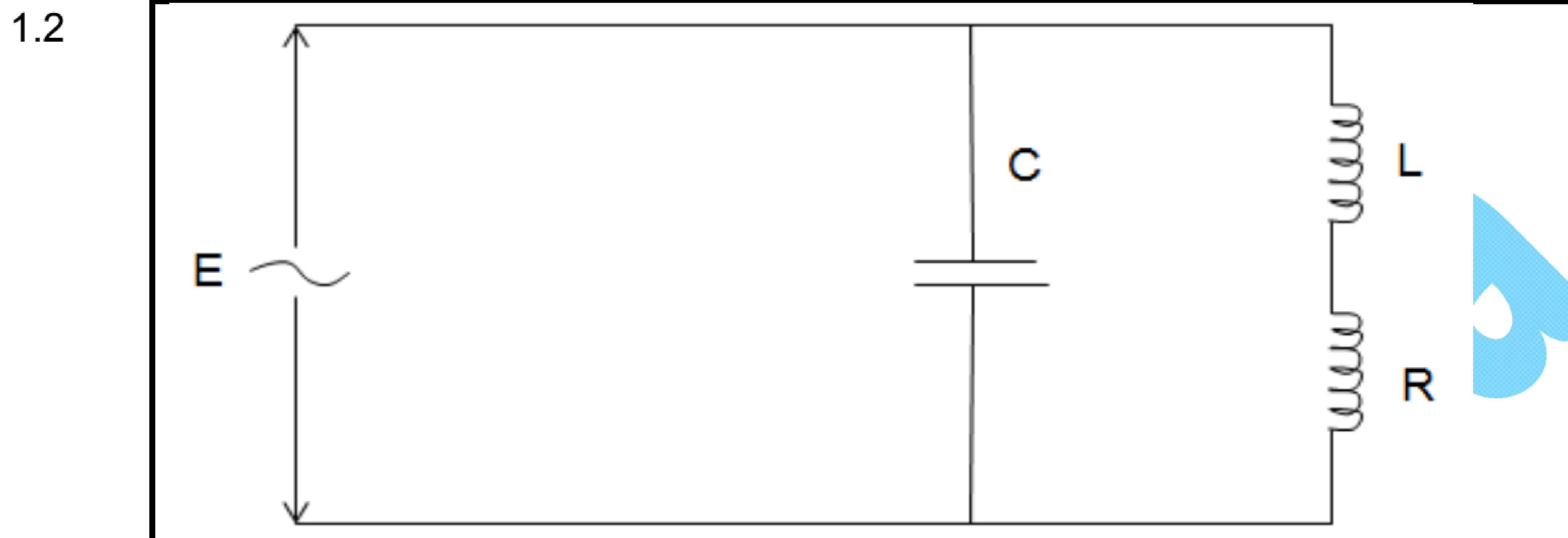
DEPARTMENT OF HIGHER EDUCATION AND TRAINING
REPUBLIC OF SOUTH AFRICA
NATIONAL CERTIFICATE
COMMUNICATION ELECTRONICS N5
TIME: 3 HOURS
MARKS: 100

INSTRUCTIONS AND INFORMATION

1. Answer all the questions.
 2. Read all the questions carefully.
 3. Number the answers according to the numbering system used in this question paper.
 4. Diagrams must be large, neat and clear and may be done in pencil.
 5. Use only a blue or black pen.
 6. Write neatly and legibly.
-

QUESTION 1: AC NETWORKS

- 1.1 Use any method to derive the equation for the resonance frequency of a parallel resonant circuit. (10)

**FIGURE 1**

$$R = 20 \Omega$$

$$C = 22 \text{ pF}$$

$$L = 50 \mu\text{H}$$

Study FIGURE 1 and calculate the following:

- 1.2.1 The resonant frequency
- 1.2.2 The inductive reactance at resonance
- 1.2.3 The capacitive reactance at resonance
- 1.2.4 The Q-factor of the circuit

(4 × 2) (8)
[18]

QUESTION 2

- 2.1 Draw diagrams and derive the expression for the series impedance Z_1 of a symmetrical T-type network. (11)

- 2.2 Draw the π -network with the following values and convert it to a T-network:

$$Z_A = 200 \text{ ohms}$$

$$Z_B = 200 \text{ ohms}$$

$$Z_C = 400 \text{ ohms}$$

(10)
[21]