



higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE
COMMUNICATION-ELECTRONICS N5

(8080235)

1 February 2022 (X-paper)
09:00–12:00

Drawing instruments and nonprogrammable calculators may be used.

This question paper consists of 6 pages and a formula sheet of 5 pages.


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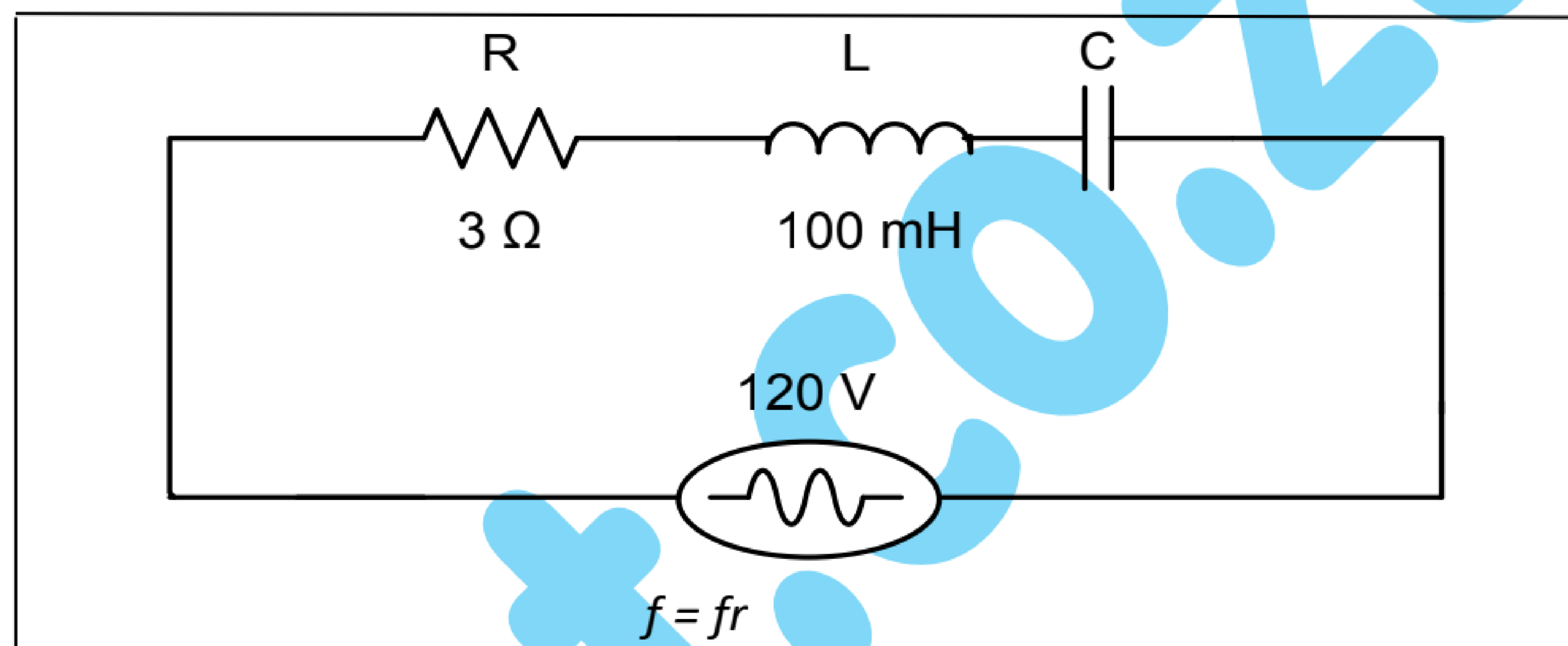
DEPARTMENT OF HIGHER EDUCATION AND TRAINING
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TIME: 3 HOURS
MARKS: 100


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. Sketches should be large and neat and may be done in pencil.
 5. Only use a black or blue pen.
 6. Write neatly and legibly.
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QUESTION 1: AC NETWORKS



- 1.1 Refer to the circuit diagram in FIGURE 1 (below) and calculate the following if the Q-factor is 75:
- 1.1.1 The voltage across the resistor (3)
- 1.1.2 The voltage across the inductor  (3)
- 1.1.3 The voltage across the capacitor (2)
- 1.1.4 The capacitor value at resonance (3)
- 1.1.5 The resonance frequency (3)

**FIGURE 1**

- 1.2 The dynamic impedance $Z_D = L/CR$ for a parallel resonant circuit. Prove that $Z_D = XL.Q$  (7)
- 1.3 Define *mutual inductance*. (2)

[23]**QUESTION 2: TRUE OR FALSE**

Indicate whether the following statements are TRUE or FALSE by writing only 'True' or 'False' next to the question number (2.1–2.10) in the ANSWER BOOK.

- 2.1 In parallel resonance circuits, the current is maximum and the circuit is called a rejecter circuit. 
- 2.2 A symmetrical two-port network has similar input and output ports that may not be interchanged.
- 2.3 An L-type attenuator is not normally used for matching purposes.
- 2.4 In a low-pass filter circuit, all reactance-frequency curves slope upwards to the right and they have a positive slope. 
- 2.5 Over-modulation in an AM transmitter has the effect of signal distortion.