

b. Explain how a bipolar transistor is connected.

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..... [2 mark]

3. a. i. Sketch and label and label a modulated output waveform with respect amplitude modulation.

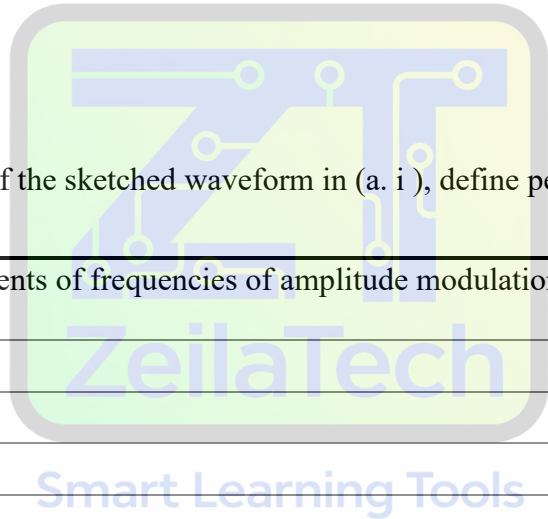
ii. with the aid of the sketched waveform in (a. i), define percentage modulation.

b. State **three** components of frequencies of amplitude modulation.

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c. List **three** disadvantages of frequency modulation

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4. a. State the difference between series and parallel circuits in terms of the following parameters.:

- i. current
- ii. voltage
- iii. resistance

Parameters	Series circuit	Parallel circuit

[6marks]

SECTION B

Answer two questions only from this section

5. An iron ring of mean circumference 50cm and cross-sectional area 1cm^2 is wound uniformly with 400 turns of wire. If a current of 0.07A flows in the windings with a flux of $6 \times 10^{-6}\text{Wb}$, calculate the

- i. Magnetomotive force
- ii. Flux density, B
- iii. Magnetic field strength, H

[6 marks]

b. State the electric circuit equivalent for the following magnetic parameters

- i. Magnetic flux
- ii. Magnetomotive force
- iii. Reluctance
- iv. Permeability

Magnetic	Electric field

[4 marks]

6. a. Define the following terms in a.c. theory.
- i. average value
 - ii. r.m.s value
 - iii. peak-to-peak value

[6 marks]

- b. Draw a sinusoidal waveform and indicate the following:
- i. maximum value
 - ii. peak-to-peak value
 - iii. a cycle.

[4 marks]

7. a. Describe with the aid of a sketch, the construction and principle of operation of a double wound transformer. [6 marks]

- b. Explain what causes the copper loss in the transformer.

.....[2 marks]

- c. Define the term voltage regulation as applied to a single-phase transformer.

.....[2 marks]

END OF PAPER