



TECHNICAL UNIVERSITY OF MOMBASA

INSTITUTE OF COMPUTING AND INFORMATICS

DEPARTMENT OF COMPUTER SCIENCE & INFORMATION

TECHNOLOGY

UNIVERSITY EXAMINATION FOR:

DIPLOMA IN INFORMATION COMMUNICATION TECHNOLOGY

EEE 2135: ELECTRONICS

END OF SEMESTER EXAMINATION

SERIES:AUGUST2019

TIME:2HOURS

DATE:Pick DateAug2019

Instructions to Candidates

You should have the following for this examination

-Answer Booklet, examination pass and student ID

This paper consists of **FIVE** questions. Attempt question ONE (Compulsory) and any other TWO questions.

Do not write on the question paper.

Question One

- a) Using diagrams explain the formation and properties of the following semiconductors
- i. n-type
 - ii. p-type
 - iii. P-n Junction (9 Marks)
- b) With examples differentiate between passive and active electronic components (5 Marks)
- d) Describe the formation of a capacitor stating the variable parameters. (6 Marks)

Question Two

- a) With aid of diagrams describe the operation of a Centre tap full wave rectifier (10 Marks)
- b) Explain with an illustration the operation of power supply filters and regulator (10 Marks)

Question Three

- a) Calculate the current through each resistor in the circuit below. (10 Marks)

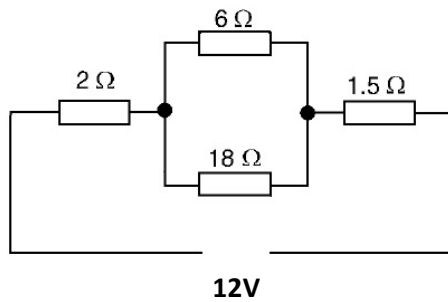


Figure 1

- b) Provide the color codes for the following resistor values. (6 Marks)
- i. 3,900 Ohms
 - ii. 5,200,000 Ohms
 - iii. 600 Ohms
- c) Provide the values of resistors with the following color codes. (4 Marks)
- i. Red White Red
 - ii. Blue Green Orange

Question Four

- a) Using diagrams explain the working of a bipolar junction transistor (8 Marks)
- b) Determine I_B , I_C , I_E , V_{CE} , and V_{CB} in the circuit of figure 1 below. The transistor has a $\beta_{DC}=100$, $V_{CC}=10V$, $R_B=93K\Omega$ assume $V_{BE}=0.7V$, and $R_C=500\Omega$. (12 Marks)

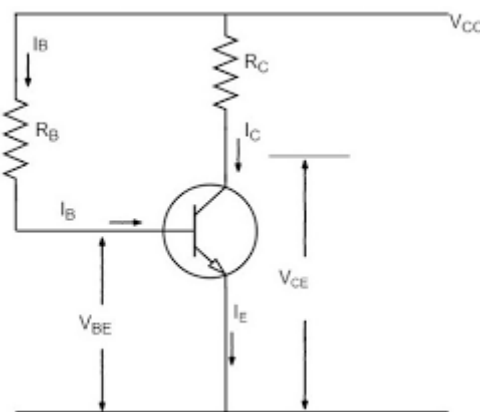


Figure 2

Question Five

- a) List and explain the applications of a capacitor. (6 Marks)
- b) Use diagrams to explain the working of a FET Transistor. (8 Marks)
- c) With aid of diagrams explain the charge discharge waveforms of a capacitor (6 Marks)