



TECHNICAL UNIVERSITY OF MOMBASA

INSTITUTE OF COMPUTING AND INFORMATICS

Select department

UNIVERSITY EXAMINATION FOR:

BTIT/SEP2016/J-FT

EIT 4204 : ELECTRONICS

SPECIAL/SUPPLEMENTARY EXAMINATION

SERIES: SEPTEMBER 2018

TIME: 2HOURS

DATE: Sep 2018

Instructions to Candidates

You should have the following for this examination

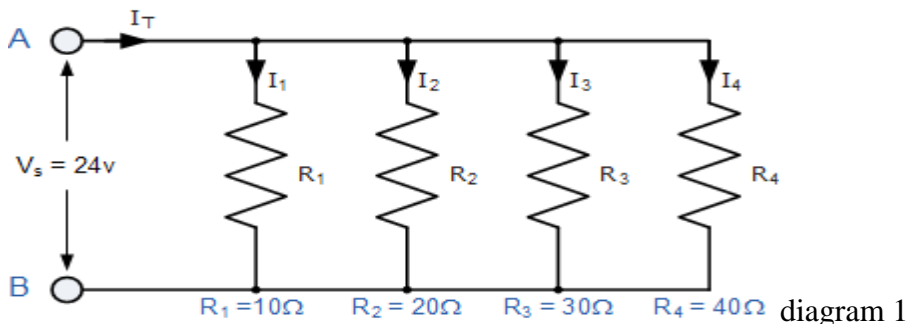
-Answer Booklet, examination pass and student ID

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) Describe any FIVE types of Capacitors (5 Marks)
- (b) Find the current through I_T, I_1, I_2, I_3, I_4 using diagram 1 (5 Marks)



- (c) Distinguish between positive and negative coefficient of a Thermistor (2 Marks)
- (d) Distinguish between clipper and clamper circuits (4 Marks)
- (e) Describe THREE classes of transistor amplifiers with the aid of a sketch (6 Marks)
- (f) Describe with the aid of a sketch any FOUR common optical devices (8 Marks)

Question TWO

- (a) Draw the bias arrangement of an N- Channel JFET and the corresponding V-I curves
(6 Marks)
- (b) (i) Draw an N Channel depletion –mode MOSFET
(ii) Draw the symbol for the depletion –mode MOSFET
(iii) Draw the V/I characteristics of the depletion –mode MOSFET (7 Marks)
- (c) (i) Describe the Enhanced –mode MOSFET
(ii) Draw the symbol for the Enhanced –mode MOSFET
(iii) Draw the V/I characteristics of the enhanced –mode MOSFET (7 Marks)

Question THREE

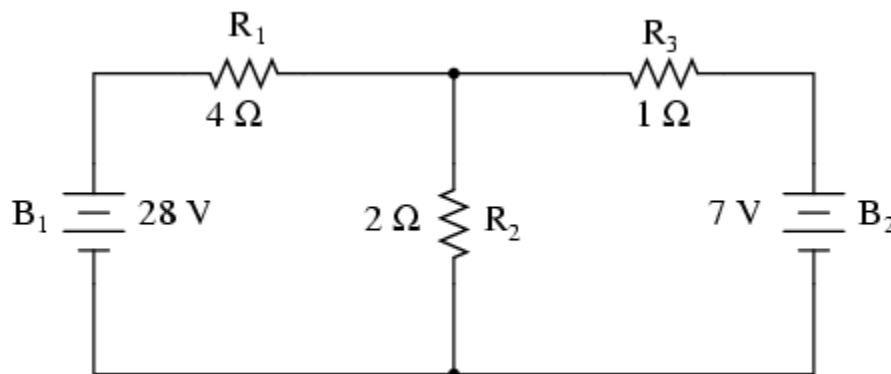


Diagram 2

Using the above diagram 2

- (a) (i) Calculate the current passing through all the resistors in the circuit below (6 Marks)
(ii) Justify the answer using Kirchhoff's voltage law (4 Marks)
- (b) Calculate the current through R2 Using
(i) Norton's theorem (5 Marks)
(ii) Thevenin's theorem (5 Marks)

Question FOUR

- (a) Describe the major application of transistors (2 Marks)
- (b) Describe with the aid of a diagram the THREE (3) common BJT configuration (12Marks)
- (c) With the aid of a single stage Common Emitter Amplifier Circuit sketch
 - (i) Draw a well labeled BJT transistor V/I output characteristics
 - (ii) Draw the DC load-line with the key points (6 Marks)

Question FIVE

- (a) Describe the FOUR (4) different classifications of operational amplifier gain with the aid of a well labeled diagram. (12 Marks)
- (b) Describe any FOUR applications of Operational Amplifier (8 Marks)