



MAASAI MARA UNIVERSITY

REGULAR UNIVERSITY EXAMINATIONS

2017/2018 ACADEMIC YEAR

SCHOOL OF SCIENCE AND INFORMATION SCIENCES

**UNIVERSITY EXAMINATIONS FOR THE DEGREE OF BACHELOR
OF SCIENCE (COMPUTER SCIENCE)**

THIRD YEAR FIRST SEMESTER EXAMINATION

COURSE CODE: COM 313

COURSE TITLE: ELECTRONICS II

DATE: 20TH APRIL 2018

TIME: 11:00AM-1:00PM

INSTRUCTIONS

- Answer Question **ONE** and any other **TWO**

This paper consists of 4 printed pages. Please turn over.

SECTION A. COMPULSORY

QUESTION ONE (30 MARKS)

- a.) i. Differentiate between linear and non linear amplifier (2 marks)
- ii. Define the frequency response of Amplifier (2mks)
- iii. Based on the transistor configuration how amplifiers are classified. (2marks)
- b). Define the following terms as used in BJT amplifier
- i.input resistance (1mark)
- ii.current gain. (1mark)
- iii.power gain (1mark)
- (c) i. State four factors considered when classifying amplifiers (2 marks)
- ii). Compare class A ,class B and class C amplifiers its output . (3 marks)
- d. In an amplifier with negative feedback, the gain of the basic amplifier is 100 and it employs a feedback factor of 0.02. If the input signal is 40mV, determine
- (i) voltage gain with feedback and (2marks)
- (ii) value of output voltage (2marks)
- e. A BJT has a base current of 250 μ A and emitter current of 15mA Determine the collector current gain and β (2marks)
- f. List the four basic feedback topologies (3 marks)
- g. Why N-channel FET's have a better response than P-channel FET's (3marks)
- h. i.) Define the principle of feedback (1 mark)
- ii. Briefly explain positive feedback and negative feedback (2 marks)
- iii. State two advantages of and one disadvantage of negative feedback. (1marks)

SECTION B:ANSWER ANY TWO QUESTIONS

QUESTION TWO (20 MARKS)

- a).** Draw the circuit of the common emitter transistor configuration. Why common emitter configuration is mostly used? Give its typical uses. **(8 marks)**
- b).** What are the advantages of the FET over a conventional bipolar junction transistor **(4marks)**
- c).** Define
- i. pinch off voltage, **(2marks)**
 - ii. trans-conductance, **(2marks)**
 - iii. amplification factor and **(2marks)**
 - iv. drain resistance of a FET. **(2marks)**

QUESTION THREE (20 MARKS)

- a).** Briefly explain 'multistage transistor amplifier ? State four coupling schemes used in amplifiers. **(12marks)**
- b.).** With a negative feed back an amplifier gives an output of 10v with an input of 0.5v. When the feedback is removed, it requires 0.25v input for the same output. Calculate
- i.. gain without feedback **(4 marks)**
 - ii. feedback ratio β **(4 marks)**

QUESTION FOUR (20 MARKS)

Determine the following for the network figure 2

- a) (i) V_{GSQ} (2marks)
- (ii) I_{DQ} (2marks)
- (iii) V_{DS} (2marks)
- (iv) V_D (2marks)
- (v) V_G (2 marks)
- (vi) V_S (2 marks)

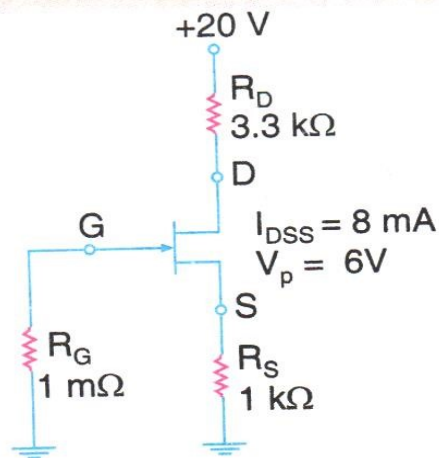


Fig.2.0.

- b. i. Define Feedback Amplifier and draw its diagram (3marks)
- ii. Briefly explain the impact of negative feedback on noise in circuits. (2marks)
- iii. Give some applications of voltage feedback. (2marks)

End and Good Luck