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**University Examinations 2014/2015**

SECOND YEAR, FIRST SEMESTER EXAMINATION FOR DIPLOMA IN ELECTRICAL ENGINEERING

**EEE 0225: ELECTRONICS II**

**DATE: DECEMBER 2014 TIME: 1**$\frac{1}{2}$ **HOURS**

**INSTRUCTIONS:** *Answer questions* ***on****e**and any other* ***two*** *questions*

**SECTION A**

**QUESTION ONE (30 MARKS)**

1. List two types of regulations (2 marks)
2. Define rectification (2 marks)
3. The voltage gain of amplifier without feedback is 400. If the feedback ration (β) required equal to 0.1, find the voltage gain of the amplifier with negative feedback (3 marks)
4. List four features of i.c voltage regulators (4 marks)
5. A voltage regulator has a load regulation of 20$μv/mA$. Under no load conditions, the output voltage is 5v. Calculate the voltage under full-load condition if the load current is 40 $mA$ (3 marks)
6. State the requirement of feedback network (3 marks)
7. Differentiate between positive and negative feedback amplifier and give one application for each (4 marks)
8. Define OP-AMP and draw its symbol (3 marks)
9. Draw the circuit of differentiator (3 marks)
10. Outline two classes of power amplifier (3 marks)

**SECTION B**

**QUESTION TWO (15 MARKS)**

1. List two types of rectifier (2 marks)
2. With the help of circuit and waveforms describe the operation of a single phase full wave rectifier (8 marks)
3. Show that the output voltage of a half wave rectifier is VO=0.318VM (5 marks)

**QUESTION THREE (15 MARKS)**

1. Draw block diagram of power supply (4 marks)
2. The zener diode has the following ratings

VZ=8.8V at 1z=50mA

r2=2Ω 1z=50mA

1z (minimum) =4mA 1z (maximum) =120mA

1. Calculate voltage regulation of the regulator (5 marks)
2. Calculate load voltage when current varies from 29mA to 110 mA (6 marks)

**QUESTION FOUR (15 MARKS)**

1. With aid of graphs show that negative feedback increases bandwidth (4 marks)
2. Define the following OP-AMP parameters
3. Slew rate (2 marks)
4. Gain (2 marks)
5. Calculate the common-mode rejection ration (CMRR) of an op-Amp that has a differential gain of 200,000 and a common mode gain of 9.33 (3 marks)
6. Differentiate inverting and non-inverting mode of an op-Amp (4 marks)