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**University Examinations 2015/2016**

SECOND YEAR FIRST SEMESTER EXAMINATION FOR DIPLOMA IN ELECTRICAL ENGINEERING

**EEE 2204: ELECTRONICS II**

**DATE: AUGUST 2016 TIME: 11/2 HOURS**

**INSTRUCTIONS:** *Answer question* ***one*** *and any other* ***two*** *questions*

**QUESTION ONE (30MARKS)**

1. With the aid of a circuit diagram, describe the working of a full wave bridge rectifier. (7 Marks)
2. State three characteristics of operational amplifier. (3 Marks)
3. A differential amplifier has an output of 1v with a differential input of 10mV and an output of 5 mV with a common mode input of 10 mV. Find the CMRR in dB. (4 Marks)

DIAGRAM

The figure above shows one application of op-Amp when used as an adder/summer. Derive on output expression for the circuit. (6 Marks)

1. The overall gain of a multistage amplifier is 140. When negative voltage feedback is applied, the gain is reduced to 17.5. Find the fraction of the output that feedback to the input. (5 Marks)
2. Derive an expression for voltage gain of a negative feedback amplifier. (5 Marks)

**QUESTION TWO (15 MARKS)**

1. With the aid of block diagrams, describe the working of:
2. Negative feedback
3. Positive feedback (9 Marks)
4. Discuss three effects of negative feedback in amplifiers. (6 Marks)

**QUESTION THREE (15 MARKS)**

1. With the aid of a circuit diagram, describe the working of class B push pull amplifier. (9 Marks)
2. With the aid of circuit diagrams, differentiate between inverting and non inverting configurations op-Amp. (6 Marks)

**QUESTION FOUR (15 MARKS)**

1. With the aid of a circuit diagram, explain how a zener diode may be used in voltage regulation. (5 Marks)
2. Draw a block diagram of regulated power supply and label all the blocks. (4 Marks)
3. For the circuit shown below, calculate:
4. Current through the series resistance
5. Minimum and maximum load currents
6. Minimum and maximum zener currents (6 Marks)

DIAGRAM