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**FIRST SEMESTER M.Sc. DEGREE EXAMINATION
DECEMBER/JANUARY-2006**

**Branch: PHYSICS
PH 213 –ELECTRONICS**

Time: 3 Hours

Max. Marks: 75

PART-A

Answer any FIVE questions. Each question carries 3 marks.

1. List the sources of harmonic distorters in pomes amplifier.
2. List the four different types of negative feedback.
3. What is special about crystal oscillator?
4. Compare step index and gradual index optical fiber.
5. Explain what is an encoder.
6. Draw the truth table of JK flip flop.
7. Explain the use of delay line in oscilloscope.
8. List the applications of AC bridges.

PART-B

Answer all questions.

9. a. Draw the circuit of a class A power amplifier and explains its operation. Derive equations for efficiency and figure of merit.

(OR)

- b. Draw the circuit of Weinbridge oscillator and explain its operation. Derive equations for its frequency of oscillation and gain.

10. a. Draw the circuits of an a stable multi-vibrator and explain its operation. Derive equations for its frequency of oscillation.

(OR)

- b. i. Draw the circuits of a non inverting amplifier using operational amplifier and derive equation for its gain.
- ii. Explain the operation of Schmitt trigger using circuit.
- 11. a. i. Explain the operations of ILD.
- ii. Discuss the internal quantum efficiency of LED.

(OR)

- b. i. Draw the circuits of an AC voltmeter using rectifier and explain its operation.
- ii. Explain horizontal deflection system of as oscilloscope.

(3 x 15 = 45 marks)

PART - C

Answer THREE questions.

- 12. a. A negative feed back amplifier has voltage gain of 60 and 20 respectively without and with feedback. Calculate the feedback factor of distortion with feedback is 2% what is the distortion with out feedback.
- b. A Wien bridge oscillator has $R=10k$ and $C=0.1\mu$ microfarad in its bridge circuit. Calculate the frequency of oscillation in Hz. What is the minimum gain required to satisfy the condition for oscillation.
- c. A non inverty amplifier using operational amplifier has feed back resistance of 100k ohms and voltage gain of 100. What is the valve of resistance of from invertly terminal to ground? What is the impact resistance in terms of input resistance without feed back.
- d. Simplify using k map $f=\sum m(2,3,5,6,7,8,9,12,13,14)$
- e. If the resolution of a DAC is 4%, calculate the number of bits required if the reference voltage is 10v.
- f. An optical fiber has length of 10 km. It has lass of 1db/km.If the required output power is 10 μ w, what should be its input power.

(3 x 5 = 15 marks)

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