(b) Describe weight resistor type digital to analog converter along with its digitally control switch.   8

9. (a) Describe OP-AMP as second order high pass Butterworth active filter circuits.   8

(b) Describe OP-AMP as square wave generator.   8

M.Sc. 4th Semester (New) Examination,
May–2016
PHYSICS
Paper–XVII, (Opt–ii) Spl.–1
Electronics–II (New)

Time allowed : 3 hours]   [Maximum marks : 80

Note : Attempt five questions in all selecting **one** question from each unit. **Question No. 1 is compulsory.**

1. (a) Explain Vacuum photodiode.   4×4=16

(b) Describe Pulse Code Modulation (PCM)

(c) Explain op-amp as summing amplifier.

(d) Describe op-amp as AC to DC converter.

Unit–I

2. (a) Discuss the process of amplification of photocurrent using photo multiplier tube.   8

(b) Discuss light emitting diode.   8

3. Explain pn junction photo diode and photo transistor and differentiate between the two in term of amplification of the input signal.   16
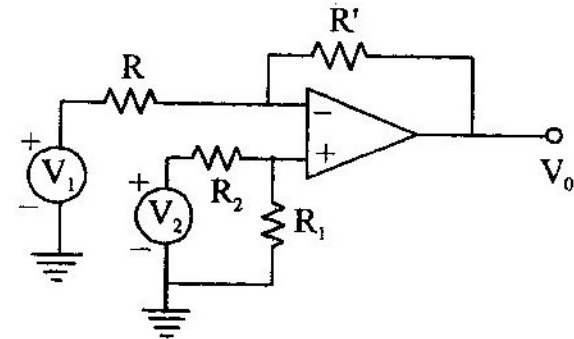
Unit—II

4. (a) A carrier wave is amplitude modulated at audio frequency. Deduce an expression to show two side band are produced. What is the relative power in each side band when modulation index is 0.5 ? 9

(b) Explain efficiency modulation and illustrate its circuit diagram. 7

5. (a) Describe Balanced modulator ? Explain how the circuit produces side bands without carriers. 10

(b) Describe product detector. 6

Unit—III

6. (a) Explain with circuit diagram how the emitter coupled differential amplifier can be made independent of the temperature. 10

(b) Draw the circuit of OP-AMP as bridge amplifier and explain its operation. 6

7. (a) Explain how the operational amplifier can be voltage to current converter with grounded load. 6

(b) The circuit shown is a differential amplifier using an ideal op-amp. 10

(i) Find output voltage

(ii) Show that the output correspond to the common mode voltage $V_c = (V_1 + V_2)/2$ is equal to zero if $R'/R = R_1/R_2$, Find V_0 in this case.

Unit—IV

8. (a) Explain how OP-AMP can be used to find the solution of differential equation

$$\frac{d^2V(t)}{dt^2} + K_1 \frac{dV(t)}{dt} + K_2 V(t) - V_1(t) = 0$$

where $V_1(t)$ is given function of time and K_1, K_2 are positive constants. 8