Department of Physics, St. Joseph's College, Devagiri
V Semester Bsc Physics Model Examination October 2011
PH5B12: Electronics

Time: 2 hours   Total weightage: 20

Section A
(Answer any 6; 6x1=6 weightage)

1. Mention any two advantages of direct coupled amplifier.
2. State any three differences between voltage and power amplifiers.
3. Distinguish between positive and negative feedback related to amplifiers.
4. Distinguish between Class A, Class B and Class C amplifiers.
5. Define Peak Inverse Voltage. What is its importance in a rectifier circuit?
6. Distinguish between single input and differential input amplifiers.
7. Briefly explain the working of an LCD display.
8. Make a comparison between BJT and FET.

Section B
(Answer any 3; 3x2= 6 weightage)

9. An amplifier has an open circuit voltage gain of 70dB and an output resistance of 1.5kΩ. Determine the minimum value of load resistance so that so that the voltage gain is not more than 67dB.
10. Draw the circuit diagram of a phase shift oscillator. How the conditions for oscillations are satisfied?
11. A transistor amplifier uses transformer coupling for amplification. The output impedance of the transistor is 10kΩ while the input impedance of the next stage is 2.5kΩ. Determine the inductance of the primary and secondary of the transformer for perfect impedance matching at a frequency of 200Hz.
12. An op-amp connected in non-inverting configuration has R_i=1kΩ and R_F=22kΩ. Calculate the maximum voltage that can be applied to the input to get a linear amplification. What would be the output for the same input if it is connected in inverting configuration. The supply voltage is $\pm$15V.
13. A voltage regulator using zener diode has the following components. Series limiting resistance R=5kΩ, load resistance R_L=10kΩ and zener voltage V_Z=50V. If the input voltage varies between 80-120V, calculate the maximum and minimum current through the zener diode.

Section C
(Answer any 2; 2x4=8 weightage)

14. Draw the circuit diagram of a two stage RC Coupled amplifier and explain its working. Mention applications of the amplifier.
15. Discuss the working of a bridge type rectifier with the help of a circuit diagram and hence derive the expession for its efficiency and ripple factor.
16. What is meant by modulation? Discuss in detail amplitude modulation and obtain expressions for modulation index, sideband frequencies and power distribution in amplitude modulated waves.