**Electronics I **

**Lab Written Test**

**Date: 10th November 2014 Time: 60 Minutes Max Marks. 40**

**Notes: All questions are compulsory and each question carries 1 mark.**

**Assumptions made/clarifications should be written clearly.**

1. What is full form of CRO?
2. What is the maximum frequency that can be obtained from the function generator used in our lab?
3. What is the maximum voltage that can be accurately measured using the CRO in the lab?
4. How to obtain 24V DC voltage difference by using a single power supply unit available in the lab?
5. What is the purpose of test pin in CRO?
6. What is written on the body of 100nF ceramic capacitor?
7. If you have four 1kΩ resistors in parallel and one of them shorted, then what is the effective resistance offered by the combination?
8. What is the colour code for a 220Ω, 5% resistor?
9. When parallel resistors are of three different values, which have the greatest power loss?
10. The electrical energy consumed by a coil is stored in the form of (which type of field):
11. Typical Resistance of Ammeter should be:
12. When a step-input is given to an op-amp integrator, the output will be
13. The open-loop gain of an op-amp available in the market may be around.
14. It is required to construct a counter to count upto 100(decimal). The minimum number of flip-flops required to construct the counter is
15. For NOR circuit SR flip flop the not allowed condition is
16. The logic gate which detects equality of two bits is
17. A negative feedback of β = 2.5 x 10-3 is applied to an amplifier of open loop gain 1000. Calculate the change in overall gain of the feedback amplifier if the gain of the internal amplifier is reduced by 20%.
18. The input to an op-amp differentiator circuit is a sinusoidal voltage of peak value 10μV and frequency of 2 kHz. If the values of differentiating components are given as R = 40 kΩ and C =3μF, determine the output voltage.
19. Obtain the minterms of the function ƒ(A,B,C) = A + BC
20. What is the major difference between latches and flip flops?
21. JK flip-flop is capable of storing how many bits of data?
22. If you have Thevenin equivalent of a circuit then how to find the Norton equivalent of the same?
23. Perform 100010 ÷ 101 in binary number system.
24. You have only 1kΩ resistors with you. How would you obtain 400Ω using minimum number of such transistors?
25. Why is it important to maintain an impedance match from the source to the load when sending signals?
26. The amount of useful output power provided by a device is 1.5 W. It is powered by a 48-V supply with 100 mA of current. How much power is wasted in heat?
27. As the efficiency of a device DECREASES, which of the following will INCREASE?

a) power output

b) amplifier gain

c) heat output

d) output impedance

1. A 1-mW signal is attenuated at the rate of 5 dB/1,000ft. What is the power level into a receiver that is 6,000 feet from the signal source?

a) –5 dBm

b) –10 dBm

c) –20 dBm

d) –30 dBm

1. A power amplifier has a gain of 20 dB and an input level of 2 volts. Assuming that the input and output impedances are the same, what is the voltage level at the amplifier output?
2. What is the relationship between current (I) and voltage (E) in a circuit consisting of a capacitor in series with a resistor?

a) I and E are in phase across the capacitor.

b) I leads E across the resistor.

c) E leads I across the capacitor.

d) I and E are in phase across the resistor.

1. The frequency of a signal is INVERSELY proportional to which of the following:

a) period

b) amplitude

c) phase

d) power

1. Why do we connect voltmeter in parallel to the circuit under test?
2. Explain the concept of virtual ground in association with Op-Amp.
3. Why can’t the output of Op-Amp be more than +Vcc?
4. An Ideal Amplifier should have

a. zero Off Set voltage

b. high Input current

c. high output impedance

d. moderate gain

1. Perform 01100 – 0100 using 2’s complement number system.
2. Other than color coding how can you measure resistance?
3. What are the pin numbers of the outputs of the gates in a 7432 IC?
4. The cut off frequencies of a BPF are which one is higher?
5. What is the function Pin no 1,5,8 in 741 op-Amp?