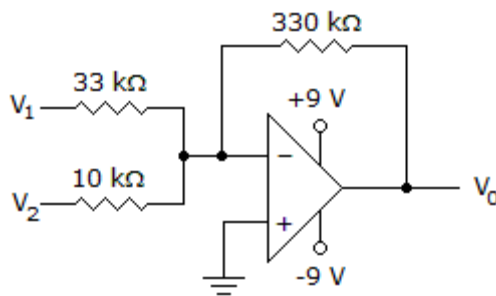# Part A

Answer all Questions: **(10×2 = 20 marks)**

1. Define current amplification factor.

2. What is Zener breakdown voltage?

3. What are the three types of photo electricity?

4. What are the advantages of liquid crystal display?

5. Draw the circuit of an inverting amplifier.

6. Calculate the output voltage if $V_1 = –0.2$ V and $V_2 = 0$ V.

7. Define the term accuracy.

8. A 4-bit R/2R digital-to-analog (DAC) converter has a reference of 5 volts. What is the analog output for the input code 0101?

9. Explain discharge and threshold of IC-555.

10. Draw the waveforms of IC 555 timer.

Part B

Answer **any four** Questions: **(4×7.5 = 30 marks)**

11. Explain the operation of NPN and PNP transistors.

12. What is a photo diode? Explain the working principle of a photo diode.

13. (a)With a neat circuit diagram, explain the working of an inverting amplifier.

(b)For the inverting amplifier given that $R_1=10K\Omega$ and $R_f=100K\Omega$. Assuming an ideal amplifier, calculate the output voltage for the input of 10V.

14. Explain with a neat diagram, the working of a 5 bit Binary weighted resistor D/A converter.

15. With a neat diagram, explain the working of an astable multivibrator.

16. Explain the working of a parallel A/D converter.

Part C

Answer **any four** Questions: **(4×12.5 = 30 marks)**

17. What is a p-n junction? Explain the formation of the depletion region in a p-n junction. How does the width of this region change when the junction is (i) forward biased? (ii) Reverse biased? Explain.

18. Explain in detail, the construction, working and characteristics of an LDR.

19. Explain how an op-amp can be used as, i) a differentiator and ii) an integrator.

20. Explain with a neat circuit diagram, the working of a 4-bit R-2R ladder D/A converter.

21. Draw the circuit arrangement for studying the input and output characteristics of an npn transistor in CE configuration. Draw these characteristics and define input resistance and output resistance.

22. Explain with a neat diagram the working of Schmitt trigger and monostable multivibrator.

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