

Probable Viva Questions

Analog

1. Semiconductor, insulator, conductor – definition and example.
2. Energy band diagram, Fermi Level, Conduction and Valance band.
3. Half & full wave rectifier, ripple factor, filter circuit, why bridge is used?
- advantages and disadvantages, efficiency(η), value of η .
4. Transformer – Primary and Secondary, Equation of transformer, air core and iron core.
5. Single strand bias, function of diode, function of transistor.
6. Operational Amplifier – all operations, opamp as a comparator, CMRR(values for ideal and practical), characteristics of opamp(ideal and practical).
7. Oscillator, distinguish between sin-cos oscillator and multivibrator.
8. Implementation of multivibrator using transistor, opamp, 555 timer.
Why the name 555? (There are three 5K ohm resistances used in series)
9. Regulated power supply – operation. What other ICs can be used?
There advantages and disadvantages. Why is Zener used? Function of capacitors and inductors.
10. Distinguish between coupling capacitors and bypass capacitors.
Distinguish between AC and DC. Name different AC-DC converters.
11. What do you mean by transient?
12. Reverse saturation current, thermal run away, biasing, Q point, load line, load line equation, significance of load line equation.
13. Transistor biasing – Fixed and self.
14. KCL, KVL, Thevenin's, Norton's, Maximum power transfer theorems.

15. Distinguish between virtual and actual ground. What is sink and source?
16. Early effect. I/P and O/P transfer characteristics. Distinguish between FET and BJT.
17. Direct and indirect band gap semiconductors.
18. Distinguish between Schottky and Ohmic effect.
19. Voltmeter → Ammeter conversion and vice versa.
20. Cathode Ray Oscilloscope – uses and function.
21. Difference between PCB – breadboard.
22. Open collector type, tristate output characteristics.

Digital

1. Why do we need power supply for digital ICs?
2. Negative and positive logic.
3. Distinguish between -
 - 1) Combinational – Sequential Logics
 - 2) Asynchronous – Synchronous Logics
 - 3) Level – Edge triggered flipflops
4. What is a clock pulse? How to measure frequency of clock pulse?
5. What is De-bouncer? Implementation using NAND and NOR. Values of resistances used in a de-bouncer circuit. Why that particular value is used?
6. Amount of current flowing through each IC in a circuit.
7. Fan in, Fan out, Propagation delay, power dissipation.
8. Fastest logic (ECL). Problems with ECL.
9. What kind of ICs are used in lab – LSI, VLSI, SSI?
10. In the IC number 74LS08, what is the implication of LS? What is HC?
11. All four classifications of TTL.
12. Advantages of CMOS.
13. Why do we need TTL in lab?
14. Where do we use CMOS?
15. IC numbers, including RAM(7489, 74189), encoder, parity checker and generator, counter ICs.
16. Programmable logic array and programmable array logic.
17. IC7490 – Decade counter.
IC7493 – 4 bit binary counter.
18. Common anode and common cathode.

19. What is decoder/driver?
20. Why 220ohm resistance is needed with LEDs?
21. What is cutoff and threshold?
22. Universal gates using OR and XOR.
23. Implementation of expressions using :
 - 1) AND-OR
 - 2) NAND-NAND
 - 3) NOR-NOR
 - 4) 2level circuit – 3 level circuit
 - 5) Multiplexer
 - 6) Decoder
 - 7) PLA
 - 8) PAL
24. 3 bit odd counter design.
25. Convert MOD-10 → MOD-12 counter using a flipflop. Frequency divider, parallel and series.
26. MOD5 → MOD-10 counter using IC7483 and necessary gates.
27. Minterm and maxterm generator. Canonical and non-canonical form.
28. Huntington postulates.
29. Laws of boolean algebra, de Morgan's theorem.
30. Inequality detector circuit.
31. All types of register design and operation.
32. All types of RAM and ROM design and operation.
33. What is glitch?
34. What is 1's catching and 0's catching?
35. What is SNR? What is noise?

36. Transparent mode and latch mode flipflops.
37. Algorithmic State Machines and their timing diagram.
38. Maly model and Moore model.