Electronics Question Bank-2

Questions Collected from Candidates Appeared for Various Competitive Examinations
## Compiled by Vishnu .N .V

1. The concentration of minority carriers in an extrinsic semiconductor under Equilibrium is:
a) Directly proportional to the doping concentration
b) Inversely proportional to the doping concentration
c) Directly proportional to the intrinsic concentration
d) Inversely proportional to the intrinsic concentration

2. The Maximum spectral response of the germanium and silicon is in the –
a) Infrared region
b) Ultraviolet region
c) Visible region
d) X-ray region

3. The circuit shown in fig is
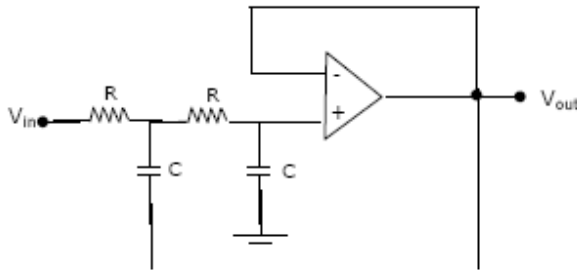
    a) Low pass filter
    b) High pass filter
    c) Band pass filter
    d) Band Reject filter   (MTNL JTO 2008)

4. The master slave flip flop has the characteristics that
    a) change in the input immediately affects the output
    b) change in the output occurs only when state of master is affected
    c) change in the output occurs only when state of slave is affected
    d) both master and slave are affected at the same time   (MTNL JTO 2008)

5. TV receiver antennas are usually
   a) dipoles
   b) Parabolic dishes
   c) Helical
   d) Yagi

6. The intrinsic impedance of free space is
   a) 75 ohms
   b) 73 0hms
   c) 120π ohms
   d) 377 ohm

7. Which of the following antennas are best excited by a waver guide?
   a) biconical
   b) helical
   c) horn
   d) Yagi

8. The minimum no. of 2:1 MUX required implementing a 4:1 MUX is
   a) 1
   b) 2
   c) 3
   d) 4   (MTNL JTO 2008)

9. No of comparators present in an 8 bit flash type ADC?
   a) 256
   b) 128
   c) 255
   d) 127   (MTNL JTO 2008)

10. If the voltage applied across a capacitance is triangular in waveform then the waveform of the current is-

   a) Triangular
   b) Trapezoidal
   c) Sinusoidal
   d) Rectangular

11. One of the following statements which is true for relative dielectric constant is
    a) It is dimensionless
    b) It is not equal to unity for vacuum
    c) Its value for all substances is less than one.
    d) None

12. Intrinsic semiconductors are those which –
    a) Are available locally
    b) Are made of the semiconductor material in its purest from
    c) Have more electrons than holes
    d) Have zero energy gaps

13. Which of the following modulation scheme is used in video broad cast in TV?
    a) SSB
    b) VSB AM
    c) VSB FM
    d) None of the above.

14. Suppressed carrier FM is possible by suitably selecting the _____
    a) RF Filters
    b) Channel bandwidth
    c) Modulation index.
    d) Suppressed carrier FM is not possible.

15. The effect of adding poles and zeros can be determined quickly by
    a) Bode plot
    b) Polar plot
    c) Nyquist plot
    d) Nichols chart

16. The MUF for an angle of incidence 60deg and a critical frequency 60MHz is
    a) 45.9MHz
    b) 111.7 MHz
    c) 120 MHz
    d) 150MHz

17. A kelvin's double bridge is best suited for the measurement of
    a) inductance
    b) capacitance
    c) low resistance
    d) High resistance

18. The primary control on drain current in a JFET is exerted by -
    a) Channel resistance
    b) Size of depletion regions
    c) Voltage drop across channel
    d) Gate reverse bias

19. When biased correctly, a zener diode
    a) acts as a fixed resistance
    b) has a constant voltage across it
    c) has a constant current passing through it
    d) never overheats

20. Pirani gauge is used to measure
    a) inductance
    b) capacitance
    c) Very low pressure
    d) High resistance

21. Intel's smallest processor is
    a) Pentium 4
    b) core2duo
    c) dual core
    d) atom   NIC 2009

22. Which of the following is a spooled device?
    a) Monitor
    b) Hard disk
    c) Flash drive
    d) Printer   NIC 2009

23. The dominant mode in a rectangular wave guide is
   a) TE_{01}
   b) TE_{10}
   c) TM_{01}
   d) TM_{10}

24. The maximum efficiency of Class B amplifier is
   a) 50%
   b) 78.5%
   c) 85%
   d) 48.5%   Kerala PSC

25. When microwave signal follows the curvature of earth it is known as
   a) Faraday's effect
   b) ducting
   c) troposphere scatter
   d) Ionospheric reflection

26. For low attenuation the most suitable transmission medium is
   a) Coaxial cable
   b) flexible wave guide
   c) rectangular wave guide
   d) Copper line

27. A DE MOSFET differs from a JFET in the sense that it has no
   a) channel
   b) gate
   c) P-N junctions
   d) substrate

28. A two port network having a 6 dB loss will give
   a) an output power which is one quarter of the input power
   b) an output power which is one half of the input power
   c) an output voltage which is 0.707 of the input voltage
   d) an output power which is 0.707 of the input power

29. The Fourier series of a real periodic function has only

                P. cosine terms if it is even

                Q. sine terms if it is even

                R. cosine terms if it is odd

                S. sine terms if it is odd

    Which of the above statements is correct?

  a) P and S

  b) P and R

  c) Q and S

  d) Q and R   GATE 2009

30. A function is given by $f(t) = \sin^2 t + \cos 2t$. Which of the following is true?

  a) f has frequency component at 0 and $\frac{1}{2\pi}$ Hz

  b) f has frequency component at 0 and $1/\pi$ Hz

  c) f has frequency component at $1/\pi$ and $\frac{1}{2\pi}$ Hz

  d) f has frequency component at 0, $1/\pi$ and $\frac{1}{2\pi}$ Hz   GATE 2009

31. The ROC of Z-transform of the discrete time sequence $(1/3)^n u(n) - (1/2)^n u(-n-1)$ is

  a) $1/3 < |z| < \frac{1}{2}$

  b) $|z| > 1/2$

  c) $|z| < 1/3$

  d) $2 < |z| < 3$ GATE 2009

32. Which of the following is true regarding the fundamental mode of the metallic wave guides?

    P: Coaxial   Q: Cylindrical   R: Rectangular

  a) Only P has no cut off frequency

  b) Only Q has no cut off frequency

  c) Only R has no cut off frequency

  d) All the three have cut off frequency   GATE 2009

33. The ratio of mobility to diffusion coefficient in a semiconductor has the units

  a) V^{-1}

  b) $cm.V^{-1}$

  c) $V.cm^{-1}$

  d) V.s   GATE 2009

34. In a micro processor, the service routine for a certain interrupt starts from a fixed location of memory which cannot be externally set, but the interrupt can be delayed or rejected. Such an interrupt is
   a) Non maskable and non vectored
   b) maskable and non vectored
   c) Non maskable and vectored
   d) maskable and vectored   GATE 2009

35. For a message signal m(t)= cos ($2\pi f_m t$) and carrier of frequency f_c which of the following represents a SSB signal ?
   a) cos ($2\pi f_m t$) cos ($2\pi f_c t$)
   b) cos ($2\pi f_c t$)
   c) cos ($2\pi (f_{m+} f_c)t$
   d) [1+ cos ($2\pi f_m t$)] cos ($2\pi f_c t$)   GATE 2009

SOLUTIONS

1. b) Inversely proportional to the doping concentration. From Law of mass action.
2. b) ultraviolet region
3. a) The circuit shown is second order Low pass Butterworth filter.
4. c) change in the output occurs only when state of slave is affected
5. d) Yagi
6. c) 120π ohms
7. c) horn
8. b) 2 MUX is enough if we are using an OR gate to combine the output of the 2 MUXes.
9. c) In an N bit ADC 2^N comparisons have to be made and so 2^N-1 comparators are sufficient.
10. d) Rectangular. Current, i = c dV/dt.
11. a) It is dimensionless
12. b) Are made of the semiconductor material in its purest from
13. b) VSB AM.

14. c) Carrier component of the FM wave disappaear completely for certain values of modulation index known as "**Eigen values**". These values are approximately 2.4, 5.5, 8.6, and 11.8 and so on.

15. a) bode plot

16. c) 120MHz. MUF=fc sec θ Here MUF= 60 sec 60= 120 MHz

17. c) For accurate measurement of low resistance

18. d)Gate reverse bias

19. b)has a constant voltage across it

20. c) Very low pressure

21. d) atom

22. d) Printer

23. b) TE_{10}

24. b) 78.5%

25. b)ducting

26. c) rectangular wave guide.

27. a) channel

28. a) an output power which is one quarter of the input power 10log (1/4)=-6dB

29. a) cosine terms if it is even and sine terms if it is odd

30. b) $f(t)=\sin^2 t + \cos 2t. = (1-\cos 2t)/2 + \cos 2t = (\cos 0 - \cos 2t)/2 + \cos 2t$;compairing each term with the general form $\cos 2\pi ft$, we find f has frequency component at 0 and $1/\pi$ Hz.

31. a) $1/3 < |z| < \frac{1}{2}$.
    $\alpha^n u(n) \leftarrow Z \rightarrow 1/(1-\alpha Z^{-1})$ with ROC $|z| > \alpha$
    $-\alpha^n u(-n-1) \leftarrow Z \rightarrow 1/(1-\alpha Z^{-1})$ with ROC $|z| < \alpha$

32. a)Only Coaxial cable has no cut off frequency.

33. a) $D/\mu = kT/q \rightarrow$ Volt equivalent of Temperature. so μ/D has dimension V^{-1}

34. d) By definition it is maskable and vectored

35. c) $\cos(2\pi(f_{m+} f_c)t$. represents single side band.

Mail your suggestions to nvvishnu@gmail.com