

STD: XII

EVERWIN MATRIC HR. SEC. SCHOOL

Material of the Month –November

Physics

LN-9 Semiconductor & Electronics

1. A semiconductor is formed by \_\_\_\_\_ bonds.  
a. Covalent b. electrovalent c. co-ordinate d. None
2. A semiconductor has \_\_\_\_\_ temperature co-efficient of resistance.  
a. positive b. zero c. Negative d. None
3. The most commonly used Semi conductor is \_\_\_\_\_.  
a. Germanium b. Silicon c. carbon d. Sulphur
4. A Semiconductor has generally \_\_\_\_\_ valance electrons.  
a. 2 b. 3 c. 6 d. 4
5. Addition of trivalent impurity to a semiconductor creates many \_\_\_\_  
a. Holes b. free electrons  
c. valence electrons d. Bound electrons
6. The random motion of holes and free electrons due to thermal agitation is called \_\_\_\_\_.  
a. Diffusion b. pressure c. ionisation d. None
7. When base-emitter voltage is subtracted from collector-emitter voltage, it gives value of \_\_\_\_\_.  
a. Source voltage b. Collector-base  
c. base voltage d. Collector voltage
8. If the base current is  $50 \mu\text{A}$  and collector current is  $3.65 \text{ mA}$  then emitter current of BJT will be \_\_\_\_\_.  
a.  $2.3 \text{ mA}$  b.  $3.7 \text{ mA}$  c.  $4.54 \text{ mA}$  d.  $3.5 \text{ mA}$
9. If internal emitter resistance of BJT is  $20 \Omega$  and collector resistor of amplifier is  $1200 \Omega$  then voltage gain will be \_\_\_\_\_.  
a. 60 b. 1200 c. 12 d. 20
10. Cut-off and saturation can be illustrated in relation to collector characteristic curve by use of  
a. input line b. load c. Signal line d. noise line
11. If output of transistor amplifier is  $5 \text{ v}$  and input of that amplifier is  $250 \text{ mv}$  then voltage gain will be \_\_\_\_\_.  
a. 20 b. 5 c. 50 d. 25
12. Device which is used to couple Ac input from source to rectifier is \_\_\_\_\_.  
a. regulator b. modulator c. amplifier d. transformer
13. The potential barrier of silicon PN junction diode is approximately  
a.  $0.3 \text{ V}$  b.  $0.7 \text{ V}$  c.  $1.1 \text{ V}$  d.  $10 \text{ V}$
14. The forbidden energy gap for conductors is \_\_\_\_\_.  
a.  $0.7 \text{ eV}$  b.  $1.1 \text{ eV}$  c. zero d.  $3 \text{ eV}$
15. In the forward characteristics curve, a diode appears as \_\_\_\_\_.  
a. A high resistance b. A capacitor  
c. An OFF switch d. An ON Switch
16. In a PN junction diode on the side of N but very close to the junction there are \_\_\_\_\_.  
a. donor atoms b. Acceptor tons  
c. Immovable positive ions d. Immovable negative ions
17. Barkhausen condition for maintenance of oscillation is \_\_\_\_\_.  
a.  $\beta = \frac{1}{A}$  b.  $A\beta = \alpha$  c.  $A = \beta$  d.  $A\beta = \frac{1}{\sqrt{2}}$
18. The condition for oscillator is \_\_\_\_\_.  
a.  $A\beta = 0$  b.  $A = \frac{1}{\beta}$  c.  $A\beta = \alpha$  d.  $A + \beta = 0$
19. In common emitter amplifiers, the phase reversal between input and output voltage is \_\_\_\_\_.  
a.  $0^\circ$  b.  $90^\circ$  c.  $270^\circ$  d.  $180^\circ$
20. The phase reversal between the inputs and outputs voltages in single phase CE amplifier is \_\_\_\_\_.  
a.  $\frac{\pi}{2}$  b.  $2\pi$  c.  $\pi$  d.  $\frac{3\pi}{2}$
21. The reverse saturation current in PN junction diode is only due to \_\_\_\_\_.  
a. Minority Carriers b. Majority carriers  
c. acceptor ions d. Donor ions
22. For a transistor connected in common emitter mode (CE) the slope of the input characteristic curve gives \_\_\_\_\_.  
a. input impedance b. current gain  
c. Reciprocal of input impedance d. voltage gain
23. According to the laws of Boolean algebra, the expression  $(A+AB)$  is equal to \_\_\_\_\_.  
a. A b. AB c. B d.  $\bar{A}$
24. In a colpitt's oscillator circuit \_\_\_\_\_.  
a. capacitive feed back is used b. tapped coil is used  
c. no tuned LC circuit is used d. no capacitor is used

25. In the forward bias characteristics curve, a diode appears as \_\_\_\_  
 a. high resistance                      b. a capacitor  
 c. an off switch                          d. an ON switch
26. Improper biasing of a transistor circuit produces \_\_\_\_\_.  
 a. heavy loading of emitter current  
 b. distortion in the output signal  
 c. excessive heat at collector terminal  
 d. faulty location of load line
27. Avalanche breakdown is primarily dependent on the phenomenon of \_\_\_\_\_.  
 a. Collision    b. ionisation    c. doping    d. recombination
28. An example for non-sinusoidal oscillator is \_\_\_\_\_.  
 a. Multi vibrator                      b. R C oscillator  
 c. colpitt's oscillator                  d. crystal oscillator
29. Output voltage of centre tapped full wave rectifier will be equals to \_\_\_\_\_.  
 a. primary voltage                      b. secondary voltage/2  
 c.  $\left(\frac{\text{secondary voltage}}{2}\right)-0.7V$     d.  $\left(\frac{\text{secondary voltage}}{2}\right)+0.7V$
30. Rectifier allows unidirectional current through load during entire 360° of input cycle is \_\_\_\_\_.  
 a. halfwave rectifier                      b. full wave rectifier  
 c. multi wave rectifier                  d. regulator

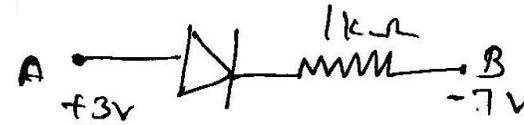
### COMMUNICATION SYSTEM

31. The radio waves after refraction from different parts of ionosphere on reaching the earth are called as \_\_\_\_\_.  
 a. Ground waves                          b. Sky waves  
 c. space waves                              d. Micro waves
32. In amplitude modulation the bandwidth is \_\_\_\_\_.  
 a. equal to signal frequency  
 b. Twice the signal frequency  
 c. four times the signal
33. High frequency wave follow \_\_\_\_\_.  
 a. Ground wave propagation    b. The line of straight  
 c. Ionosphere propagation    d. The curvature of the earth

34. Man made 1<sup>st</sup> artificial satellite \_\_\_\_\_.  
 a. Aryabhata                      b. Sputnik    c. venera    d. Rohini
35. The principle used for transmission of light signals through optical fiber is \_\_\_\_\_.  
 a. Refraction                                      b. Diffraction  
 c. Polarization                                      d. Total internal reflection
36. Digital signals are converted into analog signals using \_\_\_\_\_.  
 a. Fax                      b. Modem    c. Cable    d. coaxial cable
37. The RF channel in a radio transmitter produces \_\_\_\_\_.  
 a. audio signals                                      b. High frequency carrier waves  
 c. low frequency carrier waves    d. None
38. The printed documents to be transmitted by fax are converted into electrical signals by the process of \_\_\_\_\_.  
 a. Reflection    b. Scanning    c. Modulation    d. light variation
39. The first nuclear reactor was built by \_\_\_\_\_.  
 a) Albert Einstein    b) Enrico Fermi    c) Milikan  
 d) Henry Beequre
40. \_\_\_\_\_ is an example for moderator.  
 a) Graphite    b) Boron    c) Germanium    d) Silicon
41. An example for control rod \_\_\_\_\_.  
 a) Cadmium    b) Boron    c) Both a and b    d) Aluminium
42. 1 curie= \_\_\_\_\_.  
 a)  $3.7 \times 10^{10} \text{Bq}$     b)  $3.7 \times 10^{10} \text{Bq}$     c)  $1.6 \times 10^{-27} \text{Kg}$   
 d)  $9.11 \times 10^{31} \text{Kg}$
43. The SI unit of activity is \_\_\_\_\_.  
 a) Becquerel                      b) Kg                      c)  $\text{ms}^{-1}$                       d) None
44. Binding energy curve for Uranium is \_\_\_\_\_.  
 a) 7.6 Mev    b) 8.5 Mev    c) 8.8 Mev    d) 8.6 Mev
45. Hydrogen bomb is based on \_\_\_\_\_ principle.  
 a) Nuclear fission                                      b) Nuclear fusion  
 c) Neutrino particles                                      d) None
46. The mass of nuclei expressed in SI units is about \_\_\_\_\_.  
 a)  $10^{-25} \text{Kg}$     b)  $10^{26} \text{Kg}$     c)  $10^{25} \text{Kg}$     d)  $10^{-26} \text{Kg}$
47. Which of the following electromagnetic waves has the highest frequency?  
 a) radio waves    b) micro waves    c) x-rays    d)  $\gamma$ -rays

48. Which of the following E.M waves has the longest wavelength?  
 a) Radio waves    b) IR    c) X-rays    d) Visible
49. The EM waves do not transport \_\_\_\_\_.  
 a) energy    b) charge    c) momentum    d) information
50. The phase difference between electric and magnetic field vectors in the electromagnetic waves.  
 a)  $\frac{\pi}{4}$     b)  $\frac{\pi}{2}$     c)  $\pi$     d) zero
51. The waves used in physiotherapy and weather forecasting is  
 a) I-R rays    b) U-V rays    c)  $\mu$ -waves    d)  $\gamma$ -rays
52. Cellular phones use radio-waves in \_\_\_\_\_ band.  
 a) long wave    b) ultra high frequency    c) short frequency  
 d) medium frequency
53. Speed of electromagnetic waves through vacuum is equal to  
 a)  $\sqrt{\mu_0 \epsilon_0}$     b)  $\frac{1}{\sqrt{\mu_0 \epsilon_0}}$     c)  $\frac{\sqrt{\mu_0}}{\epsilon_0}$     d)  $\sqrt{\frac{\epsilon_0}{\mu_0}}$
54. The wave length of electromagnetic wave produced by Hertz experiment was \_\_\_\_\_.  
 a) 6mm    b) 60m    c) 6000 mm    d) 60cm
55. Which one of the following is not an electromagnetic waves?  
 a) Gamma rays    b) X-rays    c) Beta-rays    d) Microwaves
56. Electromagnetic Induction is not used in \_\_\_\_\_.  
 a) Transformer    b) Room heater    c) AC generator  
 d) Choke coil
57.  $A \cdot \bar{A} =$  \_\_\_\_\_  
 a) 0    b) A    c) 1    d)  $\bar{A}$
58.  $A \cdot A =$  \_\_\_\_\_  
 a) A    b) 0    c) 1    d) None
59. In a transistor connected in the common base configuration  $\alpha = 0.95$ ,  $I_E = 1\text{mA}$  which among the following values of  $I_C$  and  $I_B$  are \_\_\_\_\_.  
 a) 0.95 and 0.05mA    b) 0.9 and 5mA  
 c) 0.85 and 0.04mA    d) None
60. \_\_\_\_\_ invented the modern version of transistor.  
 a) Hertz    b) William Shockley    c) Hallwach's    d) Einstein

61. Consider an ideal junction diode, find the value of current flowing through AB is \_\_\_\_\_.



- a) I=10mA    b) I=1mA    c) I=0.5mA    d) I=0.3mA