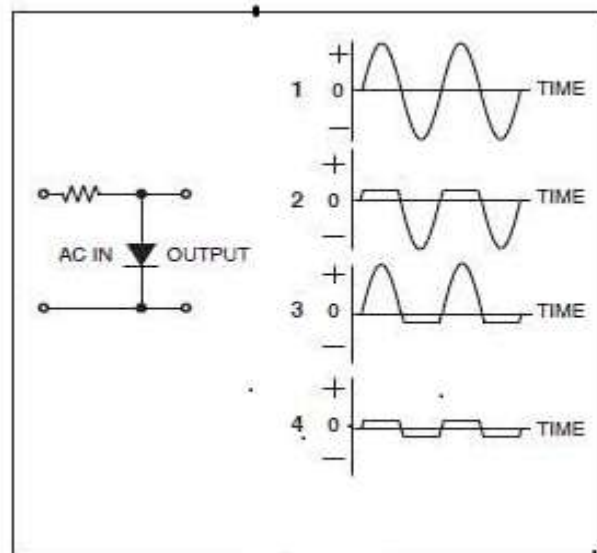


يتكون هذا الاختبار من (100) سؤال موضوعي من نوع الاختيار من متعدد، الإجابة عنها إجبارية. ظلل بقلم الرصاص بشكل غامق الدائرة التي تشير إلى الإجابة الصحيحة في المكان المخصص لذلك في نموذج الإجابة المرفق.

الأجهزة والدارات الإلكترونية 1

1. A silicon diode measures a high value of resistance with the meter leads in both positions. The trouble, if any, the diode is:
 - a- open
 - b- shorted to ground
 - c- internally shorted
 - d- ok
2. A reverse-biased diode has the _____ connected to the positive side of the source, and the _____ connected towards the negative side of the source.
 - a- cathode, anode
 - b- cathode, base
 - c- base, anode
 - d- anode, cathode
3. In an NPN transistor, the majority carriers in the base are:
 - a- free electrons
 - b- holes
 - c- neither
 - d- both
4. The ripple frequency of a bridge rectifier is:
 - a- the same as the input frequency
 - b- double the input frequency
 - c- four times the input frequency
 - d- cannot be determined
5. With a pure AC signal input to the circuit shown in Figure below, what output wave form would you expect to see on an oscilloscope display?



- a- 1
 - b- 2
 - c- 3
 - d- 4
6. The average value of the half-wave rectified output voltage is approximately ____ of V_p .
 - a- 31.8%
 - b- 63.6%
 - c- 70.7%
 - d- 100%

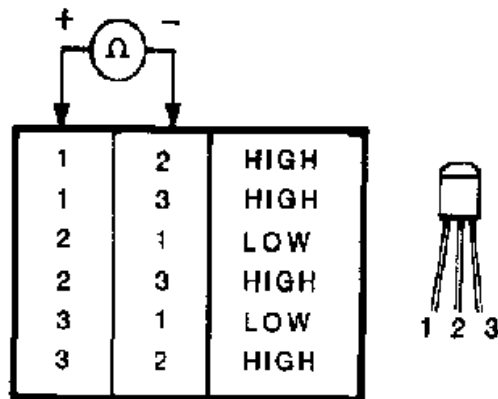
13. In a transistor, collector current is controlled by:

- a- collector voltage
- b- collector resistance
- c- base current
- d- all of the above

14. Saturation and cutoff are operating conditions that are very useful when operating the transistor:

- a- as a linear amplifier
- b- as a switch
- c- as a current amplifier
- d- none of the above

15. The information in the chart below indicates that the transistor is a/an:

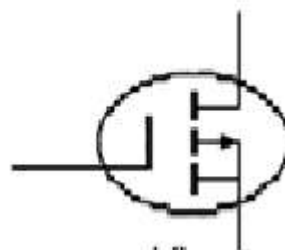


- a- NPN type and that lead 1 is the base lead.
- b- PNP type and lead 1 is the base lead.
- c- NPN type and lead 2 is the base lead.
- d- PNP type and lead 2 is the base lead.

16. A thyristor can be used as:

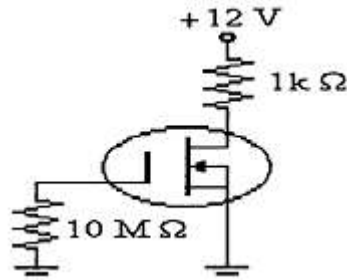
- a- a resistor
- b- an amplifier
- c- a switch
- d- a power source

17. Refer to Figure below. This symbol identifies:



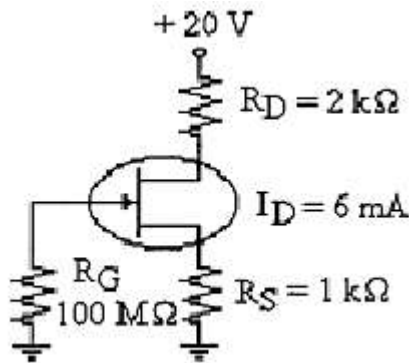
- a- a P-channel E MOSFET
- b- an N-channel D MOSFET
- c- a P-channel D MOSFET
- d- an N-channel E MOSFET

18. Refer to Figure below. If $I_D = 4 \text{ mA}$, the value of V_{DS} is:



- a- 12 V
- b- 8 V
- c- 4 V
- d- 0 V

19. Refer to Figure below. The value of the voltage drop across R_D is:



- a- 20 V
- b- 12 V
- c- 6 V
- d- 3 V

20. The gate-source junction of a JFET is:

- a- normally not biased
- b- normally forward biased
- c- normally reverse biased
- d- a low resistance path for dc current when reverse biased

الهوائيات

21. The SWR on a transmission line is infinity, the line is terminated in:

- a- a complex impedance
- b- a short circuit
- c- a pure reactance
- d- a pure Resistance

22. The velocity factor of a transmission line

- a- is higher for a solid dielectric than for air
- b- increases the velocity along the transmission line
- c- depends on the dielectric constant of the material used
- d- is zero if $Z_0 = Z_L$

23. High- frequency waves are:

- a- reflected by the D layer, night time
- b- absorbed by the f 2 layer
- c- non affected by the solar cycle
- d- reflected by the F layer , night time

- 24. Diffraction of electromagnetic waves**
- a- may occur around the edge of a sharp obstacle
 - b- is caused by reflections from the ground
 - c- arises only with spherical wave fronts
 - d- is caused by refraction from the ionosphere
- 25. The antenna radiation of energy is more efficient when**
- a- the time intervals between +Ve and - Ve half cycles is short
 - b- the time intervals between +Ve and - Ve half cycles is long
 - c- the mid- point impedance is more capacitive
 - d- the mid- point impedance is more inductive
- 26. The coaxial transmission lines are termed unbalanced since:**
- a- they increase the power losses
 - b- they match the load to the source
 - c- they have one grounded conductor
 - d- they have two grounded conductors
- 27. When the two components of electric field are equal in magnitude, the electromagnetic wave polarization is**
- a- elliptical
 - b- spherical
 - c- circular
 - d- horizontal
- 28. The skip distance is:**
- a- the distance within which the wave can be received
 - b- the minimum available distance required to make communication
 - c- the maximum required distance to make communication
 - d- the distance between the transmitter and the receiver
- 29. Which of the following terms does not apply to the Yagi-array:**
- a- parabolic antenna
 - b- folded dipole
 - c- Bi- directional radiation
 - d- balance load
- 30. Horn feed is used with a parabolic reflector to**
- a- increase the gain of the system
 - b- increase the beam width of the system
 - c- reduce the size of the reflector
 - d- reduce the size of the director
- 31. To build $\lambda/2$ dipole to receive a 100MHz broadcast, the actual optimum physical length of the antenna must be:**
- a- 1.43 meter
 - b- 2.57 meter
 - c- 5 meter
 - d- 5.7 meter
- 32. If a frequency of a signal is 3×10^{14} Hz, then its wave length is:**
- a- 1 micro-meter
 - b- 1 meter/second
 - c- 1 milli-meter
 - d- 1 meter

33. Characteristic impedance Z_0 for a transmission line is given by:

a- $Z_0 = \sqrt{\frac{L}{C}}$ ohms

b- $Z_0 = \sqrt{\frac{1}{LC}}$ ohms

c- $Z_0 = \sqrt{\frac{C}{L}}$ ohms

d- $Z_0 = \frac{1}{2\pi LC}$ ohms

34. The quarter-wave antenna generally:

a- has one $\frac{\lambda}{4}$ pole with earth ground instead of the missing quarter wave

b- has one $\frac{\lambda}{2}$ pole with earth ground instead of the missing quarter wave

c- has one λ pole with earth ground instead of the missing quarter wave

d- has 2λ pole with earth ground instead of the missing quarter wave

35. Higher frequency waves have:

a- shorter wave length

b- longer wave length

c- medium wave length

d- variable wave length

36. Radio waves is propagated by sky wave:

a- from the ionosphere

b- from the troposphere

c- in or close to earth

d- in far to earth

37. The troposphere thick is about:

a- 10 miles

b- 20 miles

c- 30 miles

d- 40 miles

38. The angle between electric and magnetic fields in a wave guide is:

a- 90°

b- 0°

c- 180°

d- 360°

39. Impedance inversion may be obtained with:

a- a half wave line

b- a quarter- wave line

c- short- circuited stub

d- an open- circuited stub

40. Frequencies in the UHF range propagate by means of:

a- space waves (LOS)

b- sky waves

c- surface waves (HOS)

d- ground waves

الدارات النبضية

41. The square wave consist of:

a- Odd harmonics

b- Even harmonics

c- Fundamental frequency

d- Odd harmonics +even harmonics

42. In the integrated LR circuit the output will be taken across the:

a- Capacitor

b- Resistor

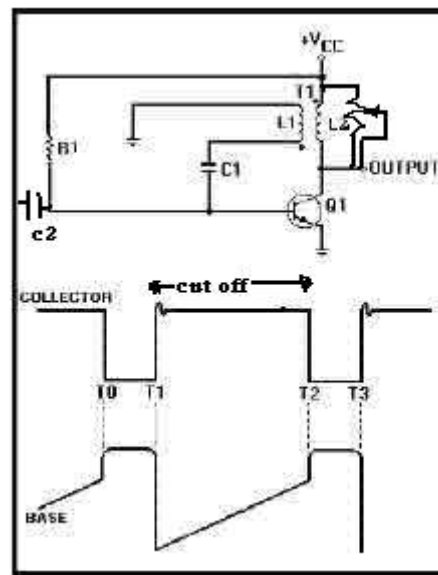
c- Diode

d- Inductor

54. The output frequency of a Bistable multivibrator is:
- a- Double the input frequency b- One half of the input frequency
c- Equals the input frequency d- None of the above
55. Which of the following pulses is used to change states in a flip flop?
- a- A trigger pulse b- A clipping pulse
c- A modulating pulse d- An interference pulse

Blocking oscillator

**** In answering questions 56 through 60, refer to figure 1



56. The blocking oscillator is a special type of wave generator used to produce:
- a- square wave b- Sawtooth wave
c- Narrow pulse d- Non of the above
57. If the frequency of the external trigger is 4kHz, & the free running frequency is 3kHz, then the out put frequency will be:
- a- 12kHz b- 4kHz
c- 3kHz d- 7kHz
58. The parameters that determine the long of cut off region are:
- a- L1,Rc b- L1,C1.
c- C1,R1. d- L1,R1.
59. The component that used to over come the over shoot is:
- a- L2 b- Opposite polarity of L1 & L2
c- Variable R2 d- R1
60. The parameters that determine the pulse width are:
- a- L2,R2 b- L2,L1
c- L1,R1 d- L1,Rc

78. Which of the following are the three basic sections of a microprocessor unit?

- a- operand, register, and arithmetic/logic unit (ALU)
- b- control and timing, register, and arithmetic/logic unit (ALU)
- c- control and timing, register, and memory
- d- arithmetic/logic unit (ALU), memory, and input/output

79. The number of pins that the 8085 microprocessor has is:

- a- 60
- b- 28
- c- 40
- d- 48

80. Which signal controls the lines AD0-AD7

- a- ALE
- b- RD
- c- WR
- d- IOM

مبادئ و الاتصالات

81. Sinusoidal wave signal with 3GHz frequency find its wave length if you know that the speed of light= 3×10^8 m/s :

- a- 0.1 mS
- b- 10 cm
- c- 90 m
- d- 9MHz

82. The period of a 1khz sine wave signal is:

- a- 1 ms
- b- 10 ms
- c- 1 μ s
- d- 10 μ s

83. The circuit function that recovers the information signal from the carrier in a receiver is the:

- a- detector circuit
- b- mixer
- c- IF section
- d- oscillator

84. The modulation index m of an amplitude modulated signal is given by :

- a- V_m/V_c
- b- V_c/V_m
- c- $V_c + V_m$
- d- $V_c - V_m$

85. The problem of increasing in amplitude that interduced by noise can be fixed by using of:

- a- limmiter
- b- modulator
- c- amplifier
- d- frequency filter

86. Changing the electrical energy of the information signal into sound energy is called:

- a- detection
- b- reproduction
- c- selection
- d- amplification

87. A 350 V carrier is being amplitude modulated by 230 V audio frequency signal, the modulation index is :

- a- zero
- b- 25
- c- 54
- d- 66

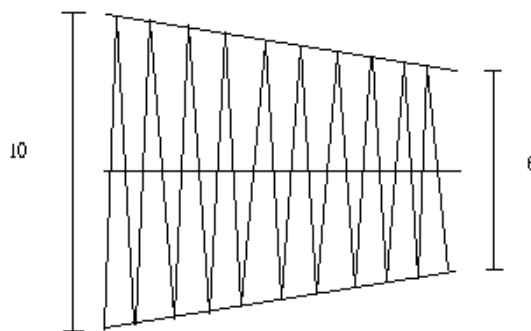
88. What are the principal frequencies that appear at the output of a mixer circuit?

- a- Two and four times the original frequency
- b- The sum, difference and square root of the input frequencies
- c- The original frequencies and the sum and difference frequencies
- d- 1.414 and 0.707 times the input frequency

89. A circuit that converts frequency or phase change into a DC voltage is called a/an:

- a- AM converter
- b- DC phasor
- c- Phase detector
- d- PLL

90. Calculate the modulation depth:



- a- 0.6
- b- 0.25
- c- 1.67
- d- 125

91. The power dissipated by an amplitude modulated wave is 100 W when the depth of modulation is 40%.the modulation depth needed to increase the power to 120W is:

- a- 64%
- b- 77%
- c- 60%
- d- 67%

92. The bandwidth of an FM system ,when $m_f = 5$ and $\Delta f = 75$ khz is equal to:

- a- 140 kHz
- b- 120 kHz
- c- 180 kHz
- d- 90 kHz

93. The telephone signal has a frequency between 300 – 3400 Hz. The sampling frequency that represents this signal is:

- a- 600 Hz
- b- 3100 Hz
- c- 6800 Hz
- d- 6200 Hz

94. One of the advantages of ASK over FSK is:

- a- it needs less bandwidth
- b- it needs twice bandwidth
- c- it has two carrier signals
- d- it hasn't a carrier

95. In comparison between 2PSK and 4PSK with respect to the bandwidth needed:

- a- 2PSK needs less bandwidth
- b- 4PSK needs half the bandwidth
- c- 4PSK needs double bandwidth
- d- both need same bandwidth

