



تعداد سوالات: تستی: ۲۵ تشریحی: ۵

زمان آزمون (دقیقه): تستی: ۵۰ تشریحی: ۵۰

سری سوال: یک ۱

درس: زبان تخصصی

رشته تحصیلی/گد درس: مهندسی برق-قدرت، مهندسی برق - مهندسی پزشکی (بیوالکترونیک)، مهندسی برق-کنترل، مهندسی برق-مخابرات، مهندسی برق-الکترونیک ۱۳۱۹۰۲۴

### 1-Which one defines best the word “electronics”?

1. the branch of science and technology that manages the flow of power
2. the branch of science and technology that deals with the controlling the flow of information
3. Electronics deals with digital circuits.
4. the branch of science and technology that deals with semiconductors

### 2-The basic job(s) of the electrical devices is(are):

1. Distributing electrical power
2. Managing the flow of power and information
3. Generating, distributing and converting electrical power
4. Distributing and protection of electricity

### 3-All electrical circuits have the following elements:

1. Source of voltage, protection devices, load, control and ground
2. Switches, wires, protection devices, light and power
3. Switches, control buttons, display
4. 2 and 3

### 4-Basic types of circuits are:

- |                               |                                      |
|-------------------------------|--------------------------------------|
| 1. Series and parallel        | 2. Active and passive circuits       |
| 3. Power and control circuits | 4. Series, parallel, series-parallel |

### 5-Which of the followings defines KCL?

1. The sum of the voltage drops around any loop is zero.
2. The sum of the currents into any node of a circuit is zero.
3. The current through a series of elements is the same.
4. The sum of the current drops around any loop is zero.

### 6-Basic linear analog circuit components are:

1. Resistor, capacitor, and inductor
2. Switches, active components, passive components
3. Resistor, capacitor, inductor, transformer
4. 2 and 3



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7-Ideal current meters and voltmeters should have:

1. Zero resistance
2. Zero and infinite resistance, respectively
3. Infinite resistance
4. Infinite and zero resistance, respectively

8-The word "denary" in "a digital meter presents the value of an input dc voltage on a denary digital display" means:

1. binary
2. decimal
3. discrete
4. crystal

9-In terms of their electrical properties, materials can be classified as:

1. Resistors, capacitors, and inductors
2. Conductors, semiconductors, and insulators
3. Copper and fiber
4. Conductors and semiconductors

10-The amount of energy that a valence electron needs to jump from the valence band to the conduction band is known as the:

1. Valence energy
2. Conduction energy
3. Inherent energy
4. Energy gap

11-What is the meaning of the word "intrinsic" in "An intrinsic silicon crystal has enough energy for some valence electrons to jump in the conduction band"?

1. Inherent
2. Intensive
3. Heated
4. Enriched

12-The process of recombination in semiconductors is defined as:

1. Impurities added to a semiconductor
2. A conduction-band electron falls back into a hole in the valence band
3. Removing impurities from a semiconductor
4. Putting semiconductor into their positions after splitting them

13-The word "drastically" in "The conductivity of a semiconductor can be drastically increased by the addition of impurities" means:

1. Suddenly
2. Eventually
3. Gradually
4. Accidentally

14-To increase the number of conduction-band electrons in intrinsic silicon, what kind of impurity has to be added?

1. Copper
2. Carbon
3. Pentavalent impurity
4. Trivalent impurity



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### 15-Biasing an electronic device means:

1. Turning on the device
2. Moving it out of its operating point by applying an ac voltage
3. The dc voltages and currents applied to it to set up the desired dc operating point
4. Decoupling it from other parts of the circuit

### 16-What is the job of a clipping circuit?

1. To remove an ac signal from the circuit
2. To add or subtract a dc voltage to or from an ac signal
3. To change an analog signal to digital
4. To keep an ac signal between a maximum and or a minimum voltage

### 17-Why are FETs known as unipolar devices?

1. Because only one pole is detected on its terminals.
2. Because they operate only with one type of charge carrier.
3. Because they work upon the field effect property.
4. Because they have only one major carrier.

### 18-The word "swing" in "The input signal voltage causes the gate-to-source voltage to swing..." means:

1. Drift below
2. Move in a curve
3. Turn off
4. Drift above

### 19-How is an op-amp used as single-ended input?

1. Only one end of the input signal is connected to the op-amp, and the other is left free.
2. The input signal is applied between two inputs and extracted from one output.
3. The input signal is applied at both inputs and extracted from one output.
4. The input signal is connected to one input with the other input connected to ground.

### 20-"common-mode rejection" in op-amps is defined as:

1. The ratio of the difference gain to the common gain
2. The amount of noise rejection when it is used in common mode
3. The gain of the common mode
4. The rejection rate of the device when it is fabricated



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21-The word "substrate" in "An integrated circuit is a group of devices wired together on a very small substrate" means:

1. printed circuit
2. area
3. an underlying layer
4. scale

22-Basic operations in a digital system are:

1. AND, OR, and NOT
2. NAND and NOR
3. Synchronous and Asynchronous
4. AND, OR, NOT, and FLIP-FLOP

23-Digital circuits are divided into two broad categories:

1. Synchronous and asynchronous circuits
2. Gates and flip-flops
3. Combinational and sequential circuits
4. True or false

24-What are the two limitations on the complexity of LSI and VLSI?

1. Price and compatibility
2. Resolution and technology
3. Protection and heat
4. Size and maximum power dissipation

25-Fetching instructions from memory means:

1. Removing them from memory
2. Taking and bringing back from memory
3. Replacing them in the memory
4. Following the instructions in the memory

### سوالات تشریحی

26-The followings are the acronyms of electrical electronic terms. Please write down what they stand for:

نمره ۱

a.	KCL
b.	KVL
c.	BJT
d.	FET
e.	MOSFET
f.	Op-amp
g.	IC

27-Fill in the blanks with the correct participle of the verbs given in brackets.

نمره ۱

Any Boolean expression can .....(realize) by .....(use) the AND, OR and NOT gates. From these three operations, two more operations .....(derive): the NAND operation and NOR operation. These operations .....(become) very popular, the reason .....(be) the only one type of gates, either NAND or NOR ..... (be) sufficient for the realization of any logical expression. Because of this reason, NAND



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28-Fill in the blanks with the correct form of the words given in the brackets.

نمره ۱

- In pulse .....(circuit), there are a number of waveforms which appear very ..... (regular).
- The 555 IC can operate as an oscillator. This mode is known as .....(stable).
- The 555 IC can act as a flip-flop. This mode is called .....(stable).
- A .....(stable) circuit produces one pulse of a set length in response to a trigger

29-Translate the following paragraph into Persian.

نمره ۲

Digital integrated circuits are miniature, low-cost electronic circuits whose components are fabricated on a single, continuous piece of semiconductor material and interconnected in such a way that they perform a high level function. Such circuits, first introduced in 1958, have had a profound impact on the electronics industry; in fact, both Business Week and Scientific American have referred to the effect of integrated circuits

۳۰- Translate the following paragraph into English :

نمره ۲

وظیفه اولیه واحد محاسباتی - منطقی عبارت است از اجرای عملیات محاسباتی و منطقی. دستورالعمل های محاسباتی امکان محاسبه و بررسی اطلاعات را به ریزپردازنده می دهند. دستورالعمل های اصلی محاسباتی عبارتند از دستورالعملهای جمع، تفریق، افزایش و کاهش. دستورالعملهای افزایش و کاهش، مقدار ۱ را به محتویات یک رجیستر ریزپردازنده یا محلی در حافظه اضافه یا از آن کم می کنند.