**MFANLOG – QUIZ No. 1**

***Name :*** _____

***ID # :*** _____ ***Score :*** _____

A. Multiple Choice.

___1. Are *ac* circuit calculations for resistive circuits the same for DC?
a. True c. Depends on freq.
b. False d. None of the above

___2. As frequency increases, the capacitance ___.
a. increases c. has no effect
b. decreases d. acts as short circuit

___3. A 1 C charge is equal to how many in e–:
a. 1.602E-19 c. 6.24E18
b. 1.602E19 d. 6.24E-18

___4. A ___ is any closed connection of branches.
a. mesh c. element
b. node d. loop

___5. Which of the ff. does not belong to the group?
a. Joule c. BTU
b. N/m d. Calorie

___6. The value of $i^{-323}$ is equal to:
a. *i* c. *1*
b. *-i* d. *-1*

___7. Which of the following statements is TRUE?
a. $depletion\ region_{RB} < depletion\ region_{FB}$
b. $depletion\ region_{RB} = depletion\ region_{FB}$
c. $depletion\ region_{RB} > depletion\ region_{FB}$
d. No depletion region if $V_{BIAS} = 0$.

___8. Which is TRUE about resistors in parallel?
a. $R_{total}$ increases c. $G_{total}$ increases
b. $R_{total}$ approaches α d. $G_{total}$ approaches 0

___9. An inductor is a passive element that has the ability to store energy in its electric field.
a. True c. Call me
b. False d. Maybe

___10. In circuit theory, power can be expressed as:
a. $V^2R$ c. VIt
b. $I^2/R$ d. VI

___11. The diode's behavior is like a resistor in *ac*.
a. Always c. Also in *DC*
b. Never d. Only in *DC*

___12. Resistance of the material is dependent on the following except for _____.
a. wire length c. voltage and current
b. temperature d. cross-sectional area

___13. Example of passive elements.
a. Resistor, transistor, capacitor
b. Source, ground, meters
c. Resistor, inductor, capacitor
d. Source, wires, inductors

___14. A square wave has a definite period.
a. True c. Depends on $\omega$ or $f$
b. False d. None of the above

___15. As spacing distance ↑, its capacitance ____.
a. ↑ c. has no effect
b. ↓ d. became α

___16. During FB, which of the ff. is more TRUE.
a. $V_F \geq V_{BIAS}$ c. $V_F \leq V_{BIAS}$
b. $V_F > V_{BIAS}$ d. $V_F < V_{BIAS}$

___17. The minority charge carrier of *p-type* diodes.
a. Electron c. Both *a* and *b*
b. Hole d. None of the above

___18. The negatively-charged ion is called _____.
a. Anion c. Electron
b. Cation d. Idk

___19. RMS voltage is less than the peak voltage.
a. Always true c. Sometimes
b. Never d. Depends on $\omega$ or $f$

___20. For *Ge*, as temperature ↑, barrier potential ↓.
a. True c. Works only for *Si*
b. False d. Idk

___21. In an ideal diode, the barrier potential is *0*.
a. True c. Relatively small
b. False d. None of the above

___22. The process of losing a valence electron.
a. Hole recombination c. Ionization
b. PN junction d. Electron-hole pair

___23. Which of the ff. does not belong to the group?
a. *Si* c. *GaAs*
b. *Ge* d. None of the above

___24. The diode's arrow-like symbol denotes ___.
a. Electron flow c. Conventional flow
b. Ion flow d. None of the above

___25. A diode has linear *I-V* characteristics.
a. Always c. For ideal diode
b. Never d. Only during FB

B. Problem Solving. Box your final answer.

1. Express the voltage function, $v(t) = 101 \cos(20t + \pi/12)$, in *sine* form? (5 pts.)
2. A 12-m wire has a 2-Ω resistance. If the length increases by 18 m, what is $\boldsymbol{R_{new}}$?

C. Essay

1. Why is the inductor letter **L**?
2. Other names or terms used for inductors.
3. Provide the complete name of famous people in Electrical Engineering.
a. Current d. Power
b. Voltage e. Energy/Work
c. Charge

*RGBaldovino*