

1. Consider two coils having self inductance of 20 mH and 15 mH. If the effective inductance is 50 mH when connected in series aiding, what is the equivalent inductance when they are connected in series opposing?
 - A. 20 mH
 - B. 15mH
 - C. 10mH
 - D. None of these

2. Which of the following is the reason for not using a Wheatstone bridge for precision measurement?
 - A. Errors are introduced because of thermo-electric emfs
 - B. Errors are introduced because of resistance of connecting leads
 - C. Both A and B
 - D. None of these

3. Which of the following strategies can be used to increase the sensitivity of a potentiometer?
 - A. Reducing the length of potentiometer wire
 - B. Decreasing the current in the potentiometer wire
 - C. Both A and B
 - D. None of these

4. What is the current through a DC voltmeter when it measures half full scale in the range of 100V, given that the voltmeter has a sensitivity of 1000 Ω/V ?
 - A. 50 mA
 - B. 100 mA
 - C. 500 mA
 - D. None of these

5. Capacitive transducers are normally used for which of the following?
 - A. Intermediate measurements
 - B. Static measurements
 - C. Dynamic measurements
 - D. None of these

6. Which of the following is true with thermocouples?
 - A. They are widely used as temperature sensor for measurement and control
 - B. They can convert a temperature gradient into electricity
 - C. Both A and B
 - D. None of these

7. Which of the following give the right order of their sensitivity (from highest to lowest) among the three types of temperature transducers?
 - A. Thermistors, thermocouples, RTDs
 - B. RTDs, Thermistors, thermocouples
 - C. Thermistors, RTDs, thermocouples
 - D. None of the above

8. What is the primary purpose of using bifilar winding in some of the wire-wound resistors?
- To reduce inductance of winding
 - To increase inductance of winding
 - To increase thermal stability
 - None of these
9. What is the change in the resistance of a metal strain gauge when it is exposed to a strain of 10^{-5} ? Assume that it has a strain factor of 2.5 and a nominal resistance of 150 ohms.
- 3.75×10^{-3} ohms
 - 3.75×10^{-5} ohms
 - 2.5×10^{-3} ohms
 - None of these
10. Which of the following differentiate thermistors from resistance temperature detectors (RTDs)?
- Thermistors are generally made of ceramic or polymer, while RTDs use pure metals
 - RTDs are useful over larger temperature ranges, while thermistors typically achieve a higher precision within a limited temperature range
 - Both A and B
 - None of these
11. What is the change in the units of capacitance if we increase the units of I and V 200 times?
- Zero
 - 200 times
 - 400 times
 - None of these
12. A particular single phase energy meter operating 230 V, 50 Hz supply made 2760 revolutions in 3 hours with a load of 20 A. What is the meter constant?
- 100
 - 150
 - 200
 - None of these
13. The traditional analog wattmeter which consists of a pair of fixed coils, known as *current coils*, and a movable coil known as the *potential coil* belongs to which of the following types?
- Electrolytic instruments
 - Electrodynamic instruments
 - Potentiometer
 - None of these
14. What is the current required to deflect the meter movement to full scale if the sensitivity of the meter is $25000 \Omega/V$
- $40 \mu A$
 - $25 \mu A$
 - $400 \mu A$
 - None of these

15. Which of the following is not an energy source?
- A. Potentiometer
 - B. Solar Cell
 - C. Generator
 - D. Leclanché cell
16. What is the resistance of a $2000 \Omega/V$ meter which is used to measure the resistance on 200 V scale?
- A. 20 ohms
 - B. 10 ohms
 - C. 0.1 ohms
 - D. None of these
17. Consider a single phase wattmeter operating on 230 V and 5 A and 400 as the constant in revolutions. If it made 2000 revolutions in 5 hours, what is the power factor of the load (rounding off to two decimal places)?
- A. 0.87
 - B. 0.43
 - C. 0.98
 - D. None of these
18. What is Hysteresis in an instrument?
- A. A typical mark of hysteresis is that the output does not change even if a given input alternately increases and decreases
 - B. A typical mark of hysteresis is that the output forms a loop, if a given input alternately increases and decreases
 - C. A typical mark of hysteresis is that the output changes based on the changes in temperature, even if a given input does not change
 - D. None of these
19. Consider a resistance strain gauge fastened to a steel member which is subjected to a stress of 150 N/mm^2 . Given that the modulus of elasticity of steel is $2 \times 10^5 \text{ N/mm}^2$ and the gauge factor of the strain gauge is 4, what is the percentage change in resistance?
- A. 0.2
 - B. 0.3
 - C. 0.4
 - D. None of these
20. What is the sensitivity of a voltmeter using 0 to 10 mA meter movement?
- A. 100 ohm/V
 - B. 200 ohm/V
 - C. 10 ohm/V
 - D. None of these
21. Which of the following is measured by an ammeter?
- A. Power
 - B. Voltage
 - C. Current
 - D. None of these

22. Which of the following is measured by a ohmmeter?
- A. Power
 - B. Current
 - C. Voltage
 - D. Resistance
23. What is the degree equivalent of $\pi/2$ rad?
- A. 90°
 - B. 60°
 - C. 120°
 - D. 165°
24. What is the secondary current in a loaded transformer where the secondary voltage is one-third of the primary voltage?
- A. One third the primary current
 - B. Nine times the primary current
 - C. Three time the primary current
 - D. None of these
25. What is the turns ratio required to step up 120 V ac to 600 V ac?
- A. 4
 - B. 5
 - C. 6
 - D. None of these
26. Which of the following statements is true?
- A. In step down transformer the number of turns in secondary winding (N_s) will be less than the number of turns in primary (N_p).
 - B. In step up transformer the number of turns in secondary winding (N_s) will be more than the number of turns in primary (N_p).
 - C. Both A and B
 - D. None of these
27. What is a center tap of a transformer?
- A. It is a direct connection between the primary coil and the secondary coil located at the center of the transformer
 - B. It is a contact made to a point halfway along a secondary winding of a transformer
 - C. It is a point where current is tapped from the primary and fed into the secondary
 - D. None of these
28. What is the unit of measurement of frequency?
- A. Freq
 - B. Hertz
 - C. Heinz
 - D. None of these

29. Consider a circuit with 3 resistors. What happens to the total resistance if two more resistors are added to then circuit?
- A. The total resistance increases
 - B. The total resistance is reduced by 50%
 - C. The total resistance will remain as earlier
 - D. None of these
30. What is the total resistance of a circuit consisting of three resistors with values of $160\ \Omega$, $230\ \Omega$, and $370\ \Omega$?
- A. $760\ \Omega$
 - B. $370\ \Omega$
 - C. $1/760\ \Omega$
 - D. None of these
31. Consider a circuit which has 6 equal value resistors connected in series. What is the dissipation of each of them if the total power is 24 W?
- A. 2 W
 - B. 3 W
 - C. 4 W
 - D. None of these
32. A circuit consists of a $3.2\ \text{k}\Omega$ and a $6.4\ \text{k}\Omega$ resistors in series. What is the voltage across $6.4\ \text{k}\Omega$ resistor if the voltage drop across $3.2\ \text{k}\Omega$ resistor is 10 V?
- A. 10 V
 - B. 20 V
 - C. 5 V
 - D. None of these
33. What is the efficiency if a power supply uses 0.96 W input to produce 0.72 W output?
- A. 133.33%
 - B. 25.00%
 - C. 75.00%
 - D. None of these
34. If the utility bill for a time-share apartment for 7 days is 17 kWh, what is the average daily power?
- A. 10 kWh
 - B. 2.43 kWh
 - C. 1.215 kWh
 - D. 0.41 kWh
35. What is the the power for 18 V 50 mA?
- A. 900 mW
 - B. 0.9 W
 - C. 900,000 μW
 - D. All the above

36. What is the current when a $4.5\text{ k}\Omega$ resistor dissipates 0.65 W ?
- A. 12.02 mA
 - B. 120.2 mA
 - C. $12.02\text{ }\mu\text{A}$
 - D. 12.02 A
37. What is the power when the current through a $16\text{ k}\Omega$ resistor is 14 mA ?
- A. 31.36 mW
 - B. 3136 mW
 - C. 3584 mW
 - D. 35.84 mW
38. Which of the following is true?
- A. Energy equals power divided by time
 - B. Energy equals power multiplied by time
 - C. Energy equals sum of power and time
 - D. Energy equals time divided by power
39. What is the output voltage of the power supply when a 81Ω load uses 4 W of power?
- A. 36 V
 - B. 9 V
 - C. 20.25 V
 - D. 18 V
40. How much energy is used in 4 minutes when a 15 V source is connected across a 20Ω resistor?
- A. 0.75 Wh
 - B. 7.5 Wh
 - C. 11.15 Wh
 - D. None of these
41. What is the total resistance when three $1.6\text{ k}\Omega$ resistors are in series and this series combination is connected in parallel with a $5.2\text{ k}\Omega$ resistor?
- A. $24.96\text{ k}\Omega$
 - B. $10,000\text{ }\Omega$
 - C. $2,496\text{ }\Omega$
 - D. None of these
42. Consider a circuit with two $10\text{ k}\Omega$ resistors connected in series and a $20\text{ k}\Omega$ resistor connected in parallel across one of these $10\text{ k}\Omega$ resistors. What is the total current in the circuit if the voltage source is 24 V ?
- A. $1440\text{ }\mu\text{A}$
 - B. 1440 A
 - C. 1440 mA
 - D. None of these

43. What is permeability?
- A. It is the measure of the ability of a material to support the formation of a magnetic field within itself
 - B. It is the measure of the ability of a material to oppose the formation of a magnetic field within itself
 - C. It is the measure of the ability of a material to support conductance of electric current through itself
 - D. None of these
44. What is the power dissipated by a $54\ \Omega$ resistor connected across the terminals of a 6 V battery?
- A. 600.00 mW
 - B. 666.67 mW
 - C. 900 mW
 - D. None of these
45. What is the total capacitance when six $0.20\ \mu\text{F}$ capacitors are in parallel?
- A. $0.20\ \mu\text{F}$
 - B. $1.20\ \mu\text{F}$
 - C. $3.6\ \mu\text{F}$
 - D. None of these
46. Which of the following is equal to $0.03\ \mu\text{F}$?
- A. 3,000 pF
 - B. 30,000 pF
 - C. 300 pF
 - D. None of these
47. What is the total capacitance if 3 capacitors of $2\ \mu\text{F}$, $5\ \mu\text{F}$, and $10\ \mu\text{F}$ respectively are connected in series?
- A. $17\ \mu\text{F}$
 - B. $5.66\ \mu\text{F}$
 - C. $1.25\ \mu\text{F}$
 - D. None of these
48. Which of the following is true with a Y – configuration?
- A. This configuration of voltage sources is characterized by a separate connection for each source
 - B. This configuration of voltage sources is characterized by a common connection between two sources and a separate connection with the third source
 - C. This configuration of voltage sources is characterized by a common connection point joining one side of each source
 - D. None of these
49. What is the amount of power in each phase in a balanced three-phase load?
- A. One-ninth of the total power
 - B. Two thirds of the total power
 - C. Half of the total power
 - D. One-third of the total power

50. Which of the following is the correct statement?
- A. In a three-phase system, the phases are separated from each other by one-third of the period
 - B. In a three-phase system, each phase carries a sinusoidal alternating current whose phase exactly coincides with the other two neighbors
 - C. Both A and B
 - D. None of these
51. An uniform conversion of electrical to mechanical energy implies
- A. Variable load power
 - B. Constant load power
 - C. Load power varying between 0.1X and 0.9X where X is a given constant
 - D. None of these
52. Which of the following statements is true?
- A. A simple three-phase generator consists of three conductive loops separated by 120° .
 - B. A balanced load is one in which all the impedances are equal.
 - C. Both A and B
 - D. None of these
53. What is the amount of current that flows through a $3.3 \text{ M}\Omega$ resistor across a 30 V source?
- A. $1.1 \mu\text{A}$
 - B. $0.11 \mu\text{A}$
 - C. $18.18 \mu\text{A}$
 - D. None of these
54. What is the current when 18 V are applied across a 72Ω resistor?
- A. 816 mA
 - B. 250 mA
 - C. 90 mA
 - D. None of these
55. If a light bulb is drawing 18 mA from a 24 volt source, what is the filament resistance of the light bulb?
- A. 750Ω
 - B. $750 \text{ k}\Omega$
 - C. $750 \text{ m}\Omega$
 - D. None of these
56. How much voltage is produced by a source when six amperes of current are measured through a 22Ω resistor?
- A. 132 V
 - B. 3.67 V
 - C. 28 V
 - D. None of these
57. What should the increase in the voltage from the present 24 V, the amount of current in a resistor is to be increased from 150 mA to 200 mA?
- A. 32 V
 - B. 8 V
 - C. 40 V

D. None of these

58. Which of the following is the unit for measuring reluctance?

A. At/Wb

B. H/Wb

C. Columb/Wb

D. None of these

59. Which of the following describes Gauss's law for magnetism? states that the total magnetic flux through a closed surface is equal to zero. (A "closed surface" is a surface that completely encloses a volume(s) with no holes.)

A. The total magnetic flux through a closed surface is equal to zero

B. The total magnetic flux through any surface is equal to zero

C. The total magnetic flux through a closed surface is equal 2 times the area of the surface

D. None of these

60. Which of the following is the units for magnetic flux density? having the unit of (tesla),

A. Wb/m²

B. Tesla

C. Bothe A and B

D. None of these

61. What is the magneto-motive force in a 125-turn coil of wire when there is 6 A of current through it?

A. 125 At

B. 375 At

C. 750 At

D. None of these

62. When the South poles of two bar magnets are brought close to each other, they _____

A. Repel each other

B. Attract each other

C. Lose their magnetic property

D. Increase their magnetic property

63. What is retentivity?

A. The ability of a material to lose magnetism when of the magnetizing force is removed

B. The ability of a material to remain magnetized after removal of the magnetizing force

C. The ability of a material to remove magnetism from any material that comes closer to it

D. None of these

64. What is the amount of current induced when the voltage induced across a coil is 220 mV with a 88 Ω resistor connected to its terminals?

A. 19.36 mA

B. 2.5 mA

C. 19.36 A

D. None of these

65. Which of the following is true when a loop in a basic dc generator is made rotate at a faster?

- A. The induced voltage does not change
- B. The induced voltage will increase
- C. The induced voltage will decrease
- D. None of these

66. Which of the following statements describes Lenz's law?

- A. If an induced current flows, its direction is always such that it will oppose the change which produced it
- B. If an induced current flows, its direction is always be same as that of the change which produced it
- C. If an induced current flows, its direction is independent of the direction of the change which produced it
- D. None of these

67. Which of the following constitute a magnetic field?

- A. Magnetic flux lines
- B. Increasing electrical resistance
- C. Decreasing voltage
- D. Conducting material

68. What is a solenoid?

- A. It is a type of electromagnet which produces a magnetic field in the presence of solar energy
- B. It is a type of electromagnet which produces a magnetic field due to increase in temperature
- C. It is a type of electromagnet which produces a uniform magnetic field in a volume of space
- D. None of these

69. Which of the following are possible uses of a solenoid?

- A. Pneumatic valves
- B. Hydraulic valves
- C. Automobile starter
- D. All the above

70. When a current carrying conductor is brought into magnetic field, the force that moves the Conductor depends upon which of the following?

- A. Length of the conductor
- B. Amount of current
- C. Thickness of conductor
- D. Gravitational force exerted on the conductor

PART II –A
ELECTRICAL

1. What is permeance?
 - A. In general, it is the degree to which any material admits a flow of matter or energy
 - B. In electromagnetism, it is a measure of the quantity of flux for a number of current-turns in magnetic circuit
 - C. Both A and B
 - D. None of these

2. The SI unit of magnetic permeance?
 - A. Webers per ampere-turn
 - B. Webers per mm^2
 - C. Webers
 - D. None of these

3. Which of the following is used to measure Dielectric reluctance?
 - A. Wb^{-1}
 - B. F^{-1}
 - C. H^{-1}
 - D. None of these

4. What is resistive heating?
 - A. It is the process by which the passage of an electric current through a non-conductor releases heat
 - B. It is the process by which the passage of an electric current through a conductor releases heat
 - C. It is the process by which the passage of an magnetic retentivity through a conductor releases heat
 - D. None of these

5. Which of the following happens when a magnet is heated?
 - A. It generates electric current
 - B. It gains magnetism
 - C. Both A and B
 - D. None of these

6. Which of the following is the main reason for preferring HVDC transmission?
 - A. Low cost of DC conversion equipment
 - B. It can be used for bulk power transmission over very long distances with low transmission losses
 - C. Both A and B
 - D. None of these

7. Which of the following statements is true with respect to HVDC?
 - A. HVDC allows power transmission between unsynchronized AC transmission systems
 - B. HVDC can stabilize a network against disturbances due to rapid changes in power
 - C. HVDC allows transfer of power between grid systems running at different frequencies
 - D. All the above

8. What is synchronization is the process of matching the speed and frequency of a generator or other source to a running network
- A. It is the process of matching the production capacities of different generators connected to a particular network
 - B. It is the process of matching the speed and frequency of a generator or other source to a running network
 - C. It is the process of matching the speed and frequency of a generator or other source to a running network
 - D. none of these
9. What is the output power to the load if 12.2 W are lost to the winding resistance, given that the input power to the primary in a transformer is 150 W?
- A. 162.2 W
 - B. 150 W
 - C. 138.8 W
 - D. None of these
10. What is the reflective load on the source when a 100Ω load is connected across the secondary winding of a transformer with a turns ratio of 2?
- A. 50Ω
 - B. 25Ω
 - C. 100Ω
 - D. None of these
11. What is the required turns ratio if you want to step up 220 V ac up to 1100 V ac?
- A. 0.2
 - B. 5.0
 - C. 6
 - D. None of these
12. Which of the following is true with respect to a single-phase induction motor?
- A. It requires separate starting circuitry
 - B. normal running windings within a single-phase motor can cause the rotor to turn in either direction
 - C. the starting circuit determines the operating direction
 - D. All the above
13. Fleming's left-hand rule (for motors) helps to figure out the direction of motion of which of the following?
- A. mechanical force
 - B. magnetic field
 - C. electric current
 - D. all the above
14. An armature can be used _____
- A. Only as a stator
 - B. Only as a rotor
 - C. Either as a rotor or a stator
 - D. None of these

15. Which of the following is true with respect to a dynamo?
- A. The magnetic field can be provided by either or permanent magnets
 - B. electromagnets mounted on either the rotor or the stator
 - C. Both A and B
 - D. None of these
16. Which of the following is the advantage of two-phase electrical power over a single-phase one?
- A. The two-phase system are simple, self-starting electric motors
 - B. The revolving magnetic field produced with a two-phase system allowed electric motors to provide torque from zero motor speed
 - C. Both A and B
 - D. None of these
17. What is the phase separation in a two-phase electrical system?
- A. 180°
 - B. 90°
 - C. 120°
 - D. None of these
18. What is a squirrel cage?
- A. It is a single phase AC generator
 - B. It is a two phase AC generator
 - C. It is a three phase AC generator
 - D. None of these
19. What is a delta-wye transformer?
- A. It employs delta-connected windings on its primary
 - B. It is a three phase system
 - C. It employs wye/star connected windings on its secondary
 - D. All the above
20. What is the phase separation in a three-phase electrical system?
- A. 180°
 - B. 90°
 - C. 120°
 - D. None of these
21. What is advantage of high voltage transmission lines?
- A. Increasing the voltage reduces the current in transmission and distribution lines reducing the distribution losses
 - B. Increasing voltage leads to higher current which in turn leads to bulk carriage of power over long distances
 - C. Increasing voltage is not an advantage at all because it involves expensive equipment to step up voltage initially and then step down later
 - D. None of these

22. Which of the following can be used to increase the capacitance?
- A. Increase the plate area
 - B. Increase the width of dielectric thereby increasing the separation
 - C. Both A and B
 - D. None of these
23. An electrical insulator that can be polarized by an applied electric field is called _____
- A. A super conductor
 - B. A dielectric
 - C. Compressed conductors
 - D. None of these
24. Which of the following capacitors has the highest capacitance to volume ratio? much higher than to and
- A. Ceramic capacitors
 - B. Film capacitors
 - C. Electrolytic capacitors
 - D. All have the same ratio
25. Faraday's law is the the fundamental operating principle for which of the following?
- A. Solenoids
 - B. Inductors
 - C. Electric motors
 - D. All the above
26. What is a magnetic flow meter?
- A. Magnetic flow meters are used for measuring the flow of electrically conductive liquids and slurries using the principle of electromagnetic induction
 - B. Magnetic flow meters are used for measuring the resistance to electrical conductivity of insulators using the principle of electromagnetic induction
 - C. Magnetic flow meters are used for measuring the magnetic retentivity of electro magnetic materials using the principle of electromagnetic induction
 - D. None of these
27. What is the current flow in the coil with a winding resistance of 156Ω , connected to a 16 V power supply?
- A. 0.975 mA
 - B. 9.75 mA
 - C. 97.5 mA
 - D. None of these
28. Two resistors are connected in parallel and the total resistance of the circuit is $1,875 \Omega$. If one of the resistors is $3 \text{ k}\Omega$, what is the value of the other resistor?
- A. $3 \text{ k}\Omega$
 - B. $4 \text{ k}\Omega$
 - C. $5 \text{ k}\Omega$
 - D. None of these

29. Three resistors are connected in series with a source supplying 12 V. What happens to the current in the circuit if one of the resistors is removed?
- A. The current will increase
 - B. The current will decrease
 - C. The current will increase by 12 A
 - D. The current will remain the same
30. How much continuous current can be drawn from a 75 Ah battery for 15 h?
- A. 4 A
 - B. 4.5 A
 - C. 5 A
 - D. None of these

Part II – B
Electronics

1. How many neutrons does a Silicon-30 has?
 - A. 14
 - B. 15
 - C. 16
 - D. None of these

2. What is the impact of increase in temperature on the conductivity of semiconductors?
 - A. Conductivity increases
 - B. Conductivity decreases
 - C. Conductivity remains the same
 - D. The change in conductivity depends on the atmospheric pressure

3. What is recombination
 - A. It is a process by which electrons are created
 - B. It is a process by which electrons and electron holes are created and eliminated
 - C. It is a process by which electron holes are created
 - D. None of these

4. Which of the following is a photoconductive material?
 - A. Selenium
 - B. Lead sulphide
 - C. Polyvinylcarbazole
 - D. All the above

5. Fleming's right hand rule is applicable to which of the following?
 - A. Generators
 - B. Motors
 - C. Capacitors
 - D. None of these

6. What is the binary equivalent of decimal number 11?
 - A. 1010
 - B. 1011
 - C. 1100
 - D. None of these

7. Which of the following is an important characteristic of CMOS?
 - A. high noise immunity
 - B. low static power consumption
 - C. both A and B
 - D. none of these

8. Which of the following is true with the octal system?
 - A. It has 7 digits (1 to 7)
 - B. It has 8 digits (0 to 7)
 - C. It has 8 digits (1 to 8)
 - D. None of these

9. What is the hexadecimal equivalent of decimal number 123?
- 7B\$
 - 70
 - 7F
 - None of these
10. Which of the following is an example of bistable multivibrator circuit?
- Relaxation oscillator
 - Flip flop\$
 - Both A and B
 - None of these
11. Which of the following is true with a half-adder?
- It adds two single binary digits and has two outputs\$
 - It adds two single binary digits and has one output
 - It adds half a binary digits and has half binary output
 - None of these
12. What are Hamming codes?
- They are a class of binary non-linear codes used for carry over decision
 - They are a compendium of multivariate linear codes used for carry over decision
 - They are a class of binary linear codes used for error detection\$
 - None of these
13. Consider a binary number 11101001. What is its equivalent hexadecimal number?
- E9\$
 - E9
 - F0
 - None of these
14. How many memory locations can be accessed by 8 address bits?
- 2^8 \$
 - $(2^8) - 1$
 - 2^{8-1}
 - None of these
15. Which of the following is a property of CE amplifier?
- The base terminal of the transistor serves as the input, the collector is the output, and the emitter is common to both\$
 - The base terminal of the transistor serves as the output, the collector is the input, and the emitter is common to both
 - the emitter serves as input as well as output
 - none of these
16. what is the name given to a unidirectional voltage that rapidly rises to a peak and then drops to zero very rapidly?
- Impulse voltage
 - Pulse voltage
 - Both A and B\$
 - None of these
17. Which of the following has the most volatile memory?

- A. CD Rom
 - B. RAM\$
 - C. Hard disk
 - D. Pen drive
18. Which of the following, usually, will not allow modification data?
- A. ROM\$
 - B. RAM
 - C. Hard disk
 - D. Floppy disk
19. Which of the following send data as a serial stream?
- A. USB
 - B. Ethernet
 - C. Fire wire
 - D. All the above\$
20. Which of the following can be used as a software for financial accounting?
- A. Microsoft Word
 - B. Microsoft Excel\$
 - C. Photoshop
 - D. Microsoft Project
21. Frequency multiplexing can be used for which of the following? This allows a single transmission medium such as the, a cable or to be shared by multiple separate signals
- A. radio spectrum
 - B. optical fiber
 - C. both A and B\$
 - D. none of these
22. which of the following bands in the electromagnetic spectrum are used by communication satellites?
- A. Ku band
 - B. Ka band
 - C. VHF
 - D. Both A and B\$
23. Which of the following statements describes Shannon–Hartley theorem?
- A. It tells the maximum rate at which information can be transmitted over a communications channel of a specified bandwidth in the presence of noise\$
 - B. It tells the minimum rate at which information can be transmitted over a communications channel of a specified bandwidth in the presence of noise
 - C. It tells the maximum rate at which information can be transmitted over a communications channel of a specified bandwidth in the absence of noise
 - D. It tells the minimum rate at which information can be transmitted over a communications channel of a specified bandwidth in the absence of noise
24. What should be the distance of the satellite from the surface of the earth in order to be geosynchronous?
- A. About 36,000 km\$
 - B. About 10,000 km
 - C. About 36,000 miles
 - D. About 56,000 km
25. What is a chopper?
- A. It is an electronic instrument used to the signal strength
 - B. It is an electronic resistance that is used to eliminate signals emanating from another switch

- C. It is an electronic switch that is used to interrupt one signal under the control of another
 - D. None of these
26. What is the value of β of a particular bipolar junction transistor with $\alpha = 0.95$?
- A. 20
 - B. 0.05
 - C. 19
 - D. None of these
27. Which of the following is true with respect to a reverse conducting thyristor?
- A. It has an integrated reverse diode
 - B. It is not capable of reverse blocking
 - C. It is often used in frequency changer and inverter
 - D. All the above
28. What is the unit of electrical charge?
- A. Coulomb
 - B. Henry
 - C. Faraday
 - D. None of these
29. What are valances?
- A. Electrons in the inner orbits
 - B. Electrons in the outer orbit
 - C. Neutrons in the nucleus
 - D. None of these
30. Which of the following are the majority carriers in a p-type?
- A. Holes
 - B. Electrons
 - C. Both holes and electrons
 - D. None of these