

Objective questions on MET-05

Q1. What is the rate of flow of electric charges called?

- (a) Electric potential
- (b) Electric conductance
- (c) Electric current
- (d) None of these

Q2. Which of the following is the SI Unit of Electric Current?

- (a) ohm
- (b) Ampere
- (c) Volt
- (d) Faraday

Q3. Which instrument is used for measuring electric potential?

- (a) Ammeter
- (b) Galvanometer
- (c) Voltmeter
- (d) Potentiometer

Q4. When one unit electric charge moves from one point to another point in an electric circuit, then the amount of work done in joules is known as :

- (a) Electric current
- (b) Electric resistance
- (c) Electric conductance
- (d) Potential difference

Q5. The hindrance presented by material of conductor to the smooth passing of electric current is known as:

- (a) Resistance
- (b) Conductance
- (c) Inductance
- (d) None of these

Q6. The resistance of a conductor is directly proportional to:

- (a) Its area of cross-section
- (b) density
- (c) melting point
- (d) length

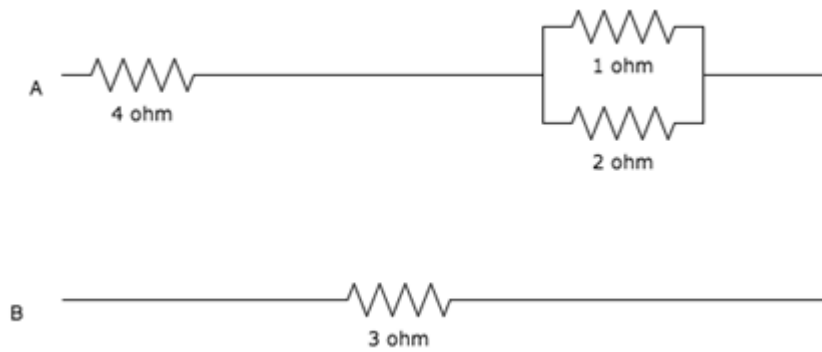
Q7. The purpose of a rheostat is:

- (a) Increase the magnitude of current only
- (b) Decrease the magnitude of current only
- (c) Increase or decrease the magnitude of current
- (d) None of these

Q8. Is it preferable to connect bulbs in series or in parallel?

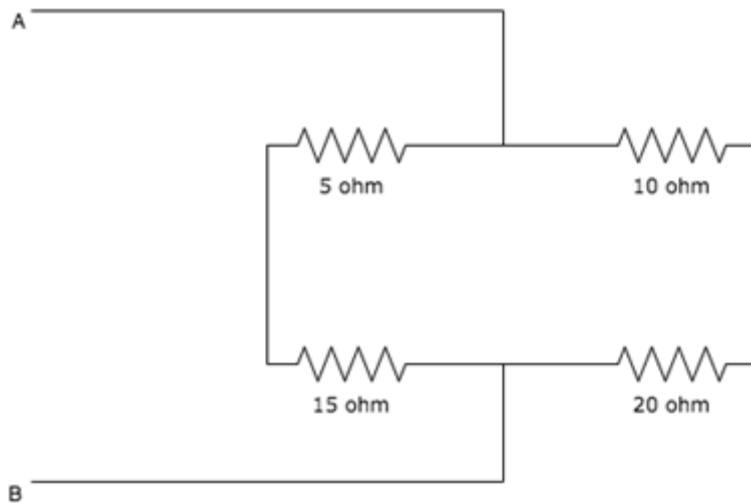
- (a) Series
- (b) Parallel
- (c) Both series and parallel
- (d) Neither series nor parallel

Q9. Calculate the equivalent resistance between the points A and B.



- (a) 7 ohm
- (b) 0 ohm
- (c) 7.67 ohm
- (d) 0.48 ohm

Q10. Calculate the equivalent resistance between A and B.



- (a) 60 ohm
- (b) 15 ohm
- (c) 12 ohm
- (d) 48 ohm

Q11. In a _____ circuit, the total resistance is greater than the largest resistance in the circuit.

- (a) Series
- (b) Parallel
- (c) Either series or parallel
- (d) Neither series nor parallel

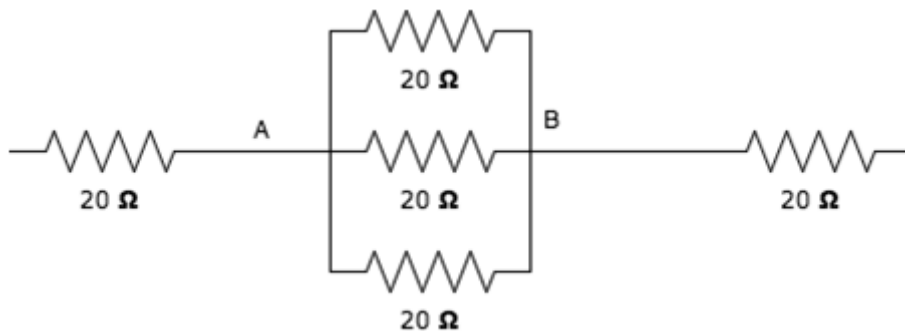
Q12. In a _____ circuit, the total resistance is smaller than the smallest resistance in the circuit.

- (a) Series
- (b) Parallel
- (c) Either series or parallel
- (d) Neither series nor parallel

Q13. Which is the most cost efficient connection?

- (a) Series
- (b) Parallel
- (c) Either series or parallel
- (d) Neither series nor parallel

Q14. Calculate the equivalent resistance between A and B.



- (a) 6.67 ohm
- (b) 46.67 ohm
- (c) 26.67 ohm
- (d) 10.67 ohm

Q15. Which of the following is a non conductor of electricity?

- (a).Silver
- (b).Copper
- (c).Plastic
- (d).Aluminium

Q16. Transferring a charge by touching is called charging by

- (a).Conduction
- (b).Induction
- (C).Convection
- (d).Radiation

Q17.The consequence of improper handling of electricity is

- (a).Electric shock
- (b).Fire
- (c).both a and b
- (d).none of these

Q18.The most non polluting and efficient lighting device is

- (a). CFL
- (b).LED
- (c).Fluorescent light
- (d).Electric bulb

Q19. The formula for current as per Ohm's Law is

- (a) Voltage / Resistance
- (b). Resistance * Voltage
- (c). Voltage + Resistance
- (d). Resistance / Voltage

Q20. The unit of electrical resistance is

- (a). volt
- (b). ampere
- (c). ohm
- (d). coulomb

Q21. Current in a circuit flows

- (a). In direction from high potential to low potential
- (b). In direction from lower potential to higher potential
- (c). In direction of flow of electrons
- (d). In any direction

Q22. The unit of potential difference is

- (a).ampere
- (b).volt
- (c).ohm
- (d).coulomb

Q23. On increasing the resistance in a circuit the current in the circuit ,

- (a).decreases
- (b).increases
- (c).remains unchanged
- (d).nothing can be said

Q24. The SI unit of power is

- (a) henry
- (b) coulomb
- (c) watt
- (d) watt-hour

Q25. Electric pressure is also called

- (a) Resistance
- (b) Power
- (c) Voltage
- (d) Energy

Q26. A current of 16 ampere divides between two branches in parallel of resistance 8 ohm and 12 ohm respectively the current in each branch is

- (a) 6.4 A, 6.9 A
- (b) 6.4 A, 9.6 A
- (c) 4.6 A, 6.9 A
- (d) 4.6 A, 9.6A

Q27. For which of the following quantities , ampere-second could be the unit :

- (a) Reluctance
- (b) Charge
- (c) Power
- (d) Energy

Q28. Copper wire of certain length and resistance is drawn out to three times its length without change in volume .The new resistance of wire becomes

- (a) 1 / 9 times
- (b) 3 times
- (c) 9 times
- (d) unchanged

Q29. Three identical resistors are first connected in parallel and then in series .The ratio of resultant resistance of the first combination to the second will be

- (a) 9 times
- (b) 1/9 times
- (c) 1/ 3 times.
- (d) 3 times

Q30. An electric bulb is rated 220 volt and 100 watt. When it is operated on 110 volt , power consumed will be

- (a) 100watt
- (b) 75 watt
- (c) 50 watt
- (d) 25 watt

Q31. Ohm's law is applicable to

- (a) semiconductors
- (b) vacuum tubes
- (c) carbon resistors
- (d) none of the above

Q32. The condition for validity under Ohm's law is that the
(a) temperature at positive end should more than the temperature at negative end
(b) current should be proportional to size of the resistance
(c) resistance must be wire wound type
(d) resistance must be uniform

Q33. Correct form of Ohm's law is
(a) $I = VR$
(b) $V \propto I$
(c) $V = IR$
(d) both b and c

Q34. The presence of magnetic field at a point can be detected by
(a) a strong magnet
(b) a solenoid
(c) a compass needle
(d) a current carrying wire

Q35. By reversing the direction of current in a wire, the magnetic field produced by it :
(a) gets reversed in direction
(b) increases in strength
(c) decrease in strength
(d) remains unchanged in strength and direction

Q36. In an electric motor, the energy transformation is :
(a) from electrical to chemical
(b) from chemical to light
(c) from mechanical to electrical
(d) from electrical to mechanical

Q37. The direction of current is obtained by
(a) Fleming left hand rule
(b) Clock rule
(c) Right hand thumb rule
(d) Fleming right hand rule

Q38. Electromagnets are made up of
(a) Steel
(b) Copper
(c) Soft iron
(d) Aluminium

Q39. The strength of an electromagnet can be increased by :
a) reversing the direction of current
b) using alternating current of high frequency
c) increasing the current in the coil
d) decreasing the number of turns

Q40. A capacitor acts as an infinite resistance for

- (a) DC
- (b) AC
- (c) DC as well as AC
- (d) neither AC nor DC

Q41. Transformer are used

- (a) In D.C circuits only
- (b) In A.C circuits only
- (c) In both A.C and D.C circuits
- (d) neither A.C nor in D.C

Q42. To convert mechanical energy into electrical energy, one can use:

- (a) Rectifier
- (b) AC dynamo
- (c) Motor
- (d) Transformer

Q43. Two like magnetic poles

- (a) repel each other
- (b) attract each other
- (c) first attract each other then repel
- (d) neither attract nor repel

Q44. In a uniform magnetic field the field lines are

- (a). curved
- (b). parallel and equidistant straight lines
- (c). parallel but non equispaced straight lines
- (d). nothing can be said

Q45. A freely suspended magnet rest in geographic-----direction

- (a). east-west
- (b). north-south
- (c). north-east
- (d). west-south

Q46. The secondary winding of which of the following transformer is kept closed

- (a) Current transformer
- (b) Voltage Transformer
- (c) Step Up Transformer
- (d) Power transformer

Q47. If supply frequency of a transformer increases the secondary output voltage of the transformer

- (a) increases
- (b) decrease
- (c) remains the same
- (d) all of the above

Q48. Lamination of Transformer core is made up of

- (a) Cast iron
- (b) Silicon Steel
- (c) Aluminium
- (d) Cast Steel

Q49. A transformer transforms

- (a) current
- (b) Voltage
- (c) Frequency
- (d) Voltage and current

Q50. Batteries are generally connected in_____

- (a) Series
- (b) Parallel
- (c) Either series or parallel
- (d) Neither series nor parallel

Q51. The capacity of a battery is expressed in terms of

- (a) Current rating
- (b) Voltage rating
- (c) Ampere hour rating
- (d) None of the above

Q52. Why lead acid cells are called as Secondary cells ?

- (a) Since it can't be recharged
- (b) Since it can be recharged
- (c) Since it can't charge initially
- (d) None

Q53. One (1) Ah=-----

- (a) 1 coulomb
- (b) 1200 coulomb
- (c) 3600 coulomb
- (d) 2400 coulomb

Q54. During charging of a lead acid cell

- (a) Its voltage increases
- (b) It gives out energy
- (c) Its cathode become dark chocolate brown in color
- (d) Specific gravity of sulphuric acid decreases

Q55. The capacity of lead acid cell does not depend on its

- (a) temperature
- (b) rate of charge
- (c) rate of discharge
- (d) The quantity of active material

Q56. During charging the specific gravity of the electrolyte of lead acid battery

- (a) increases
- (b) decreases
- (c) remain the same
- (d) becomes zero

Q57. The active material on the positive and negative plates of a fully charged lead acid battery are

- (a) lead and lead peroxide
- (b) lead sulphate and lead
- (c) lead peroxide and lead
- (d) none of the above

Q58. When a lead acid battery is fully charged , the colour of its positive plate is :

- (a) Dark Grey
- (b) Brown
- (c) Dark brown
- (d) None of the above

Q59. The best indication about the state of charge on a lead acid battery is given by

- (a) output voltage
- (b) temperature of of electrolyte
- (c) specific gravity of electrolyte
- (d) none of the above

Q60. Those substances of the cell which take active part in chemical combination and hence produce electricity during charging and discharging are known as

- (a) passive
- (b) active
- (c) redundant
- (d) inert

Q61. In a lead acid cell , the approximate composition of sulphuric acid and water is:

- (a) 1 part water, 3 part sulfuric acid
- (b) 2 part water ,2 part sulphuric acid
- (c) 3 part water ,1 part sulphuric acid
- (d) All sulphuric acid

Q62. Five 2 V cells are connected in parallel the output voltage is

- (a) 1 V
- (b) 1.5V
- (c) 1.75 volt
- (d) 2 volt

Q63. It is noticed that during discharging the following does not happen

- (a) both anode and cathode become lead sulphate
- (b) specific gravity of sulfuric acid decreases
- (c) voltage of cell decreases
- (d) the cell absorbs energy

Q64 .A Passive network is one which contains-

- (a) only variable resistance
- (b) only some sources of e.m.f in it
- (c) only two sources of emf in it
- (d) no sources of emf in it

Q65. The current out of an ideal current source is

- A. Zero
- B. Constant
- C. Load resistance dependent
- D. Internal resistance dependent

Q66. The path between two points along which an electrical current can be carried is called

- (a) A network
- (b) A relay
- (c) A circuit
- (d) A loop

Q67. In a parallel a.c circuit we consider----- instead of Impedance

- (a) Resistance
- (b) Capacitance
- (c) Inductance
- (d) Admittance

Q 68. Which of the following is a unit of impedance ?

- (a) ohm
- (b) mho
- (c) volt
- (d) henry

Q69 Which among the following is the correct expression for admittance

- (a) $Z=Y$
- (b) $Z=1/Y$
- (c) $Z=1/Y^2$
- (d) $Z=1/Y^3$

Q70. What is the unit of admittance ?

- (a) ohm
- (b) henry
- (c) farad
- (d) ohm^{-1}

Q71.As the impedance increases the admittance

- (a) increases
- (b) decreases
- (c) remains the same
- (d) first increases then decreases

Q72. If the impedance of a system is 40 ohm. Calculate its admittance

- (a) 0.025 ohm^{-1}
- (b) 25 ohm^{-1}
- (c) 40 ohm^{-1}
- (d) 0.4 ohm^{-1}

Q73. In a parallel circuit with any number of impedances the voltage across each impedance is

- (a) Equal
- (b) Divided equally
- (c) Divided Proportionally
- (d) Zero

Q74. In parallel circuit the current in each impedance is

- a) Equal
- b) Different
- c) Zero
- d) Infinite

Q75. If the admittance of a system is 10 ohm^{-1} . calculate its impedance

- (a) 10 ohm
- (b) 0.10 ohm
- (c) 11 ohm
- (d) 1 ohm

Q76. In case of Inductive circuit, inductance (L) is ----- proportional to frequency

- (a) Directly
- (b) Inversely
- (c) No relation
- (d) all of the above

Q77. In case of capacitive circuit, frequency is ----- proportional to capacitance

- (a) Directly
- (b) Inversely
- (c) no relation
- (d) all of the above

Q78. The frequency of an alternating current is

- (a) the speed with which the alternator runs
- (b) the number of cycles generated in one minute
- (c) the number of waves passing through a point in one second
- (d) the number of electrons passing through a point in one second

Q79. In a pure resistive circuit

- (a) current lags behind the voltage by 90 degree
- (b) the current leads the voltage by 90 degree
- (c) current can lead or lag the voltage by 90 degree
- (d) current is in phase with voltage

Q80. For a pure resistive circuit , the following statement is correct

- (a) work done is zero
- (b) power consumed is zero
- (c) heat produced is zero
- (d) power factor is unity

Q81. A 6 pole 500 RPM generator has a frequency of

- (a) 25 Hz
- (b) 50 Hz
- (c) 60Hz
- (d) 80Hz

Q82. Number of valence electrons in a silicon atom are

- (a) 1
- (b) 4
- (c) 8
- (d) 16

Q83. The most commonly used semiconductor element is

- (a) Silicon
- (b) Germanium
- (c) Gallium
- (d) Carbon

Q84. Copper is a

- (a) Insulator
- (b) Conductor
- (c) Semiconductor
- (d) Superconductor

Q85. Number of protons in the nucleus of a silicon atom are

- (a) 4
- (b) 14
- (c) 29
- (d) 32

Q86. The valence electrons of a conductor are also called as

- (a) Bound electrons
- (b) Free electrons
- (c) Nucleus
- (d) Proton

Q87. An intrinsic semiconductor at room temperature has

- (a) A few free electrons and holes
- (b) Many holes
- (c) Many free electrons
- (d) No holes

Q88. At room temperature, an intrinsic semiconductor has some holes in it due to

- (a) Doping
- (b) Free electrons
- (c) Thermal energy
- (d) Valence electrons

Q89. The number of holes in an intrinsic semiconductor is

- (a) Equal to number of free electrons
- (b) Greater than number of free electrons
- (c) Less than number of free electrons
- (d). None of the above

Q90. Holes acts as

- (a) Atoms
- (b) Crystals
- (c) Negative charges
- (d) Positive charges

Q91. Pick the odd one out in the group

- (a) Conductor
- (b) Semiconductor
- (c) Four valence electrons
- (d) Crystal structure

Q92. To produce p-type semiconductors, you need to add

- (a) Trivalent impurity
- (b) Carbon
- (c) Pentavalent impurity
- (d) Silicon

Q93. Electrons are the minority carriers in

- (a) Extrinsic Semiconductors
- (b) p-type Semiconductors
- (c) Intrinsic Semiconductors
- (d) n-type Semiconductors

Q94. A p-type semiconductor contains

- (a) Holes and Negative ions
- (b) Holes and Positive ions
- (c) Holes and Pentavalent atoms
- (d) Holes and Donor atoms

Q95. How many electrons does pentavalent atoms have?

- (a) 1
- (b) 3
- (c) 4
- (d) 5

Q96. Negative ions are
(a) Atoms that obtained a proton
(b) Atoms that lost a proton
(c) Atoms that obtained an electron
(d) Atoms that lost an electron

Q97. Depletion layer is caused by
(a) Doping
(b) Recombination
(c) Barrier potential
(d) Ions

Q98. The reverse current in a diode is usually
(a) Very small
(b) Very large
(c) Zero
(d) In the breakdown region

Q99. Avalanche in Diode occurs at
(a) Barrier potential
(b) Depletion layer
(c) Knee voltage
(d) Breakdown voltage

Q100. The potential barrier of a silicon diode is
(a) 0.3 V
(b) 0.7 V
(c) 1 V
(d) 1.1V

Q101. A Diode is a
(a) Bilateral Device
(b) Nonlinear Device
(c) Linear Device
(d) Unipolar Device

Q102. The diode current is large for which condition
(a) Forward Bias
(b) Inverse Bias
(c) Poor Bias
(d) Reverse Bias

Q103. The output voltage signal of a bridge rectifier is
(a) Half-wave
(b) Full-wave
(c) Bridge-rectified signal
(d) Sine wave

Q104. Zener diode can be described as

- (a) A rectifier diode.
- (b) A device with constant – voltage.
- (c) A device with constant – current.
- (d). A device that works in the forward region.

Q105. Number of p-n junctions in a Transistor are :

- (a) One
- (b) Two
- (c) Three
- (d) Four

Q106. The doping concentration of Base in n-p-n transistor is

- (a) Lightly Doped
- (b) Moderately Doped
- (c) Heavily Doped
- (d) Not Doped

Q107. The size comparison between Base, Emitter and Collector is

- (a) Base > Collector > Emitter
- (b) Emitter > Collector > Base
- (c) Collector > Emitter > Base
- (d) All are equal

Q108. The Base – Collector Diode (Base Collector Junction) is usually

- (a) Reverse Biased
- (b) Forward Biased
- (c) Breakdown Region
- (d) No Connection

Q109. The majority carriers in n-p-n and p-n-p transistors are

- (a) Holes and Electrons
- (b) Electrons and Holes
- (c) Acceptor Ions and Donor Ions
- (d) None

Q110. A Transistor acts as a

- (a) Voltage Source and a Current Source
- (b) Current Source and a Resistor
- (c) Diode and Current Source
- (d) Diode and Power Supply

Q111. Inverter converts

- (a) DC to AC
- (b) AC to AC
- (c) DC to DC
- (d) AC to DC

Q112. IGBT are used as
(a) High frequency switching device
(b) Illuminating device
(c) Low frequency switching device
(d) Amplifier

Q113. Terminals of IGBT are
(a) Base, emitter, collector
(b) Gate, source, drain
(c) Gate, emitter, collector
(d) None

Q114. The algebraic sum of voltages around any closed path in a network is equal to
(a) Zero
(b) Infinity
(c) 1
(d) Negative Polarity

Q115. An Electric fuse wire is always connected to the
(a) Live wire
(b) Neutral wire
(c) Earth wire
(d) Fuse wire

Q116. The rating of fuse connected in the lighting circuit is
(a) 15 A
(b) 5 A
(c) 10 A
(d) zero

Q117. A switch must be connected in
(a) live wire
(b) neutral wire
(c) earth wire
(d) either live or neutral

Q118. The armature of DC machine is made up of laminated sheet to
(a) reduce hysteresis loss
(b) reduced Eddy current loss
(c) reduce armature copper loss
(d) increases dissipation of heat from armature surface

Q119. The function of brush and commutator arrangement in DC motor is
(a) to produce unidirectional torque
(b) to produce unidirectional current
(c) to help changing the direction of rotation of the armature
(d) to reduce sparking

Q120. The EMF induced in coil rotating in a magnetic field is maximum when

- (a) the rate of change of flux linkage by the coil is maximum
- (b) the rate of change of flux linkage by the coil is minimum
- (c) the rate of change of cutting of flux by the coil sides is minimum
- (d) the flux linkage by the coil is maximum

Q121. The direction of DC motor can be reversed by

- (a) by reversing the connection of both armature and field with the supply
- (b) by reversing the connection of either armature or field with the supply
- (c) by reducing the field flux
- (d) by introducing an extra resistance in armature

Q122. A closed path made by the several branches of the network is known as

- (a) Branch
- (b) Loop
- (c) Circuit
- (d) Junction

Q123. The primary function of fuse is to

- (a) open the circuit
- (b) protect the appliance
- (c) protect the line
- (d) prevent excessive current from flow through the circuit

Q124. The fuse rating is expressed in

- (a) Voltage
- (b) Current
- (c) VAR
- (d) KVA

Q125. Universal motor can run on

- (a) AC only
- (b) DC only
- (c) AC and DC both
- (d) none of the above

Q126. the advantages of electric traction over other method is

- (a) no pollution control
- (b) faster acceleration
- (c) Better braking action
- (d) all of the above

Q127. The efficiency of diesel locomotive is

- (a) 20-25%
- (b) 35-40%
- (c) 50-60%
- (d) 70-75%

Q128. Long distance railways use

- (a) 200 V dc
- (b) 25kv single phase AC
- (c) 25kv two phase AC
- (d) 25kv three phase AC

Q129. Overload capacity of diesel engines is usually restricted to

- (A) 1 %
- (B) 10%
- (C) 25%
- (D) 50%.

Q130. The capacity of Battery is expressed in terms of

- (A) Current rating
- (B) Voltage rating
- (C) Ampere Hour rating
- (D) None of the above

Q131. B0 B0 locomotives have two bogies with

- (A) four driving axles each with individual driving motors
- (B) three driving axles with group drives
- (C) two driving axles with group drives
- (D) two driving axles with individual drive motors.

Q132. The type of energy possessed by the charged capacitor is

- (a) Kinetic energy
- (b) Electrostatic
- (c) Potential
- (d) Magnetic

Q133. The energy consumed by a 50 kW motor loaded at 40 kW over a period of 4 hours is

- (a) 50 kWh
- (b) 160 kWh
- (c) 40 kWh
- (d) 2000 kWh

Q134. Insulation resistance is measured by

- (a) Ammeter
- (b) Voltmeter
- (c) Megger
- (d) Watthour meter

Q135. Cells are connected in parallel to

- (a) Increase the efficiency
- (b) Increase the current capacity
- (c) Increase the voltage capacity
- (d) Increase the internal resistance