

AE Electrical - Master Questions and Answer Keys

1)	Which of the following does not have a commutator?		
A)	Dynamo	B)	Induction motor
C)	Universal motor	D)	None of these
Correct Answer: B			
2)	Which of the following is true with a series circuit having resistors of different values?		
A)	The total resistance of the circuit is the sum of the individual resistances	B)	The current across each resistor is the same
C)	The voltage drop across each resistor depends on the value of the resistor	D)	All the above
Correct Answer: D			
3)	The electric field inside a hollow conducting sphere _____		
A)	Depends on the diameter of the sphere	B)	Varies according to the direction of earth's magnetic poles
C)	Is zero	D)	None of these
Correct Answer: C			
4)	Which of the following can be used to measure the capacitance of a capacitor?		
A)	Rheostat	B)	Schering bridge
C)	Wheatstone bridge	D)	None of these
Correct Answer: B			
5)	The iron alloy, ALNICO is mainly used to make _____		
A)	Temporary magnets	B)	Permanent magnets
C)	Transmission lines	D)	None of these
Correct Answer: B			
6)	The magnetic permeability of a diamagnet is _____		
A)	More than that of vacuum	B)	Same as that of vacuum
C)	Less than that of vacuum	D)	3.14 times that of vacuum
Correct Answer: C			
7)	Which of the following waveforms has the lowest form factor?		
A)	Sine wave	B)	Square wave
C)	Sawtooth wave	D)	Triangle wave
Correct Answer: B			
8)	Which of the following has the lowest electrical conductivity?		
A)	Mercury	B)	Silver
C)	Copper	D)	Gold
Correct Answer: A			
9)	What is the electrical charge of one proton?		
A)	$1.602 \times 10^{-19} \text{ C}$	B)	$1.602 \times 10^{-12} \text{ C}$
C)	$1.602 \times 10^{-10} \text{ C}$	D)	None of these
Correct Answer: A			

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10) Consider a circuit with four $10\ \Omega$ resistors connected in parallel and the current flowing through the circuit is 5 A. What will be the current if the above 4 resistors are connected in parallel?

- | | | | |
|----|-------|----|---------------|
| A) | 5 A | B) | 50 A |
| C) | 500 A | D) | None of these |

Correct Answer: C

11) Drift velocity depends on _____

- | | | | |
|----|-------------------|----|----------------|
| A) | Electron mobility | B) | Electric field |
| C) | Both A and B | D) | None of these |

Correct Answer: C

12) The process of removing the unwanted magnetism is called _____

- | | | | |
|----|------------------|----|------------|
| A) | Unmagnetization | B) | Degaussing |
| C) | Diamagnetization | D) | Depoling |

Correct Answer: B

13) Which of the following is the name given to the lines of electric force which move so that its beginning traces a closed curve on a positive surface and its end traces a corresponding closed curve on the negative surface?

- | | | | |
|----|-----------------|----|---------------------|
| A) | Tube of surface | B) | Tube of lines |
| C) | Tube of force | D) | Tube of electricity |

Correct Answer: C

14) Which of the following laws relates the magnetic field to the magnitude, direction, length, and proximity of the electric current?

- | | | | |
|----|-----------------|----|---------------|
| A) | Lenz's law | B) | Faraday's law |
| C) | Biot-Savart law | D) | None of these |

Correct Answer: C

15) What is the SI unit for magnetic reluctance?

- | | | | |
|----|--------|----|------------------------|
| A) | Ampere | B) | Ampere-turns per weber |
| C) | Henry | D) | None of these |

Correct Answer: B

16) A neodymium magnet is a permanent magnet made from an alloy of _____

- | | | | |
|----|---------------------|----|----------------------------|
| A) | Neodymium and iron | B) | Neodymium, iron and iodine |
| C) | Neodymium and boron | D) | Neodymium, iron and boron |

Correct Answer: D

17) Which of the following is a unit of magnetic flux?

- | | | | |
|----|--------------|----|---------------|
| A) | Weber | B) | Maxwell |
| C) | Both A and B | D) | None of these |

Correct Answer: C

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18)	What is the total resistance if 5 resistors of $20\ \Omega$ each are connected in series?		
A)	$100\ \Omega$	B)	$4\ \Omega$
C)	$20\ \Omega$	D)	None of these
Correct Answer: A			
19)	When three resistors with unequal values are connected in parallel, _____		
A)	The current across the resistors is the same	B)	The voltage drop across the resistors is the same
C)	The voltage drops across the resistors is proportional to the resistance of each resistor	D)	None of these
Correct Answer: B			
20)	What is the percentage error when 3 resistors with ratings $100\ \Omega$ at 5%, $150\ \Omega$ at 6% and $250\ \Omega$ at 8% respectively, are connected in series?		
A)	6.33%	B)	6.80%
C)	19%	D)	None of these
Correct Answer: B			
21)	Consider a circuit with three parallel branches connected across a DC supply. What is the ratio of the branch <u>currents</u> $I_1 : I_2 : I_3$ if the branch resistances are in the ratio of $2 : 3 : 4$ respectively?		
A)	$2 : 3 : 4$	B)	$6 : 4 : 3$
C)	$4 : 3 : 2$	D)	None of these
Correct Answer: B			
22)	What is the resistance of a 160 m wire with a uniform diameter of 0.28 mm, if the specific resistance is $12.32\ \mu\Omega\text{-cm}$?		
A)	$3.2\ \Omega$	B)	$3.2\ \mu\Omega$
C)	$0.8\ \Omega$	D)	None of these
Correct Answer: A			
23)	Consider a cube of material of sides 1 cm with a resistance of $0.003\ \Omega$ between its opposite faces. What is the resistance if the same volume of the material is drawn into a length of 50 cm with a uniform cross – section?		
A)	$0.003\ \Omega$	B)	$0.15\ \Omega$
C)	$7.5\ \Omega$	D)	None of these
Correct Answer: C			
24)	Which of the following has nearly zero temperature coefficient?		
A)	Constantan	B)	Manganin
C)	Both A and B	D)	None of these
Correct Answer: C			

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25)	What happens to the resistance of a wire when its length as well as the cross-sectional area are doubled?		
A)	It doubles	B)	It becomes 4 times
C)	It becomes 2π times	D)	It remains the same
Correct Answer: D			
26)	What is the capacitance when a capacitor passes a current of 31.43 mA when supplied with 40 V AC with a frequency of 1000 Hz?		
A)	0.125 F	B)	0.125 μ F
C)	1257.2 μ F	D)	None of these
Correct Answer: B			
27)	What is the stored energy when 200 V is applied across a 7 μ F capacitor?		
A)	1400 Joules	B)	0.7 Joules
C)	0.14 Joules	D)	None of these
Correct Answer: C			
28)	What is the charge on each capacitor when a 150 V is applied across two capacitors with values 5 μ F and 10 μ F, connected in series?		
A)	500 μ C	B)	0.5 μ C
C)	0.5 C	D)	None of these
Correct Answer: A			
29)	The ability of materials to become polarized under an applied electric field is called _____		
A)	Ferroelectricity	B)	Paraelectricity
C)	Polelectricity	D)	None of these
Correct Answer: B			
30)	What happens to the capacitance if mica is inserted between the plates of an air capacitor?		
A)	The capacitance increases	B)	The capacitance decreases
C)	The capacitance remains the same	D)	The capacitance becomes zero
Correct Answer: A			
31)	Which of the following batteries is rechargeable?		
A)	Leclanche cell	B)	Zinc-carbon cell
C)	Bunsen cell	D)	None of these
Correct Answer: D			
32)	In a battery, the difference between the no-load voltage and the measured voltage output is called _____		
A)	Internal voltage	B)	Internal resistance
C)	External resistance	D)	All the above
Correct Answer: B			

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33)	The mass of ions in grams which is liberated or deposited by chemical action by the passage of 1 C of electricity _____		
A)	electrochemical force	B)	electrochemical voltage
C)	electrochemical equivalent	D)	none of these
Correct Answer: C			
34)	The current flow in a battery is due to _____		
A)	movement of ions	B)	movement of protons
C)	movement of holes	D)	movement of neutrons
Correct Answer: A			
35)	When the phase difference between two sinusoidal quantities is 90° they are said to be _____		
A)	Phase right angle	B)	Phase quadrature
C)	Phase sinuright	D)	None of these
Correct Answer: B			
36)	What is crest factor (peak factor)?		
A)	It is the ratio of the maximum amplitude to average value	B)	It is the ratio of the average amplitude and RMS value
C)	It is the ratio of the maximum amplitude to RMS value	D)	None of these
Correct Answer: C			
37)	Which of the following is true at resonance in LC circuits?		
A)	The series impedance of the two elements is at a maximum and the parallel impedance is at minimum	B)	The series impedance of the two elements is at a maximum and the parallel impedance is also at maximum
C)	The series impedance of the two elements is at a minimum and the parallel impedance is also at minimum	D)	The series impedance of the two elements is at a minimum and the parallel impedance is at maximum
Correct Answer: D			
38)	A circuit that binds the upper or lower extreme of a waveform to a fixed DC voltage level is called _____		
A)	DC voltage restorer	B)	Clamping circuit
C)	Both A and B	D)	None of these
Correct Answer: C			
39)	What is the resistance of a coil which draws 10 A and dissipates 1520 W?		
A)	152 Ω	B)	15.2 Ω
C)	1.52 Ω	D)	None of these
Correct Answer: B			

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40) What is the RMS voltage in a series RL circuit, if the voltage across R and L is 256 V and 192 V respectively?

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|----|-------|----|---------------|
| A) | 320 V | B) | 448 V |
| C) | 64 V | D) | None of these |

Correct Answer: A

41) Consider a circuit with four resistors in series connected to a voltage source. What happens to the voltage across each resistor, if the value of each of the resistors is doubled?

- | | | | |
|----|-------------------|----|-------------------------|
| A) | It will double | B) | It will remain the same |
| C) | It will be halved | D) | It will become zero |

Correct Answer: B

42) A network that consists of at least a voltage source or current source is called

- | | | | |
|----|-----------------|----|--------------------|
| A) | Active network | B) | Ideal network |
| C) | Sourced network | D) | Outsourced network |

Correct Answer: A

43) What is the power factor when a single phase watt meter operating on 200 V and 5 A for 5 hours makes 2016 revolutions and the meter constant in revolution is 420?

- | | | | |
|----|------|----|---------------|
| A) | 0.04 | B) | 1.04 |
| C) | 0.96 | D) | None of these |

Correct Answer: C

44) Which of the following is true with respect to Wien Bridge?

- | | | | |
|----|---|----|---|
| A) | It does not require equal values of R or C | B) | It requires that R and C values of all components must be equal |
| C) | It requires that all resistors should have equal values | D) | None of these |

Correct Answer: A

45) Which of the following converts linear displacement from a mechanical reference into a proportional electrical signal containing phase and amplitude information?

- | | | | |
|----|------|----|---------------|
| A) | CRO | B) | LVDT |
| C) | RVDT | D) | None of these |

Correct Answer: B

46) The largest change of input quantity for which there is no output of instrument is called _____

- | | | | |
|----|-------------|----|------------|
| A) | Dead time | B) | Dead input |
| C) | Dead output | D) | Dead zone |

Correct Answer: D

47) Hysteresis is commonly found in _____

- | | | | |
|----|-------------------------|----|-------------------------|
| A) | ferromagnetic materials | B) | ferroelectric materials |
| C) | both A and B | D) | none of these |

Correct Answer: C

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48)	Which of the following is an example of SI derived unit?		
A)	Capacitance (Farad)	B)	Time (second)
C)	Luminous intensity (Candela)	D)	All the above
Correct Answer: A			
49)	Which of the following cells produces a highly stable voltage?		
A)	Weston cell	B)	Leclanche cell
C)	Both A and B	D)	None of these
Correct Answer: A			
50)	Which of the following is the name given to resistance of thin films that are uniform in thickness?		
A)	Area resistance	B)	Sheet resistance
C)	Filmy resistance	D)	None of these
Correct Answer: B			
51)	Which of the following is true with an auto transformer?		
A)	It has only one winding	B)	It has two separate windings namely primary winding and secondary winding
C)	It has two primary windings and one single secondary winding	D)	None of these
Correct Answer: A			
52)	Which of the following is the advantage of using CRGO steel in transformers?		
A)	High magnetic flux density	B)	Low permeability
C)	Both A and B	D)	None of these
Correct Answer: A			
53)	Which of the following can reduce the Eddy current losses?		
A)	By making the core of a stack of plates electrically insulated from each other	B)	By making the core of solid block
C)	By increasing the applied voltage	D)	None of these
Correct Answer: A			
54)	Magnetostrictive materials can convert _____		
A)	Magnetic energy into kinetic energy	B)	Kinetic energy into magnetic energy
C)	Both A and B	D)	None of these
Correct Answer: C			
55)	What happens to the voltage in the secondary when the frequency of the supply in the primary is decreased?		
A)	It increases	B)	It decreases
C)	It remains the same	D)	Cannot say unless the actual percentage increase in the frequency is known
Correct Answer: C			

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56)	What is the slip (as a percentage) when a 6 pole single phase induction motor operating on 220 V and 60 Hz is rotating at speed of 1140 rpm?		
A)	60%	B)	5%
C)	10%	D)	None of these
Correct Answer: B			
57)	In a single-phase induction motor, the operating direction is determined by the _____		
A)	Rotor	B)	Stator
C)	Starting circuit	D)	None of these
Correct Answer: C			
58)	Which of the following motors can run on both AC and DC?		
A)	Universal motor	B)	Dual wattage motor
C)	Flexible motor	D)	All the above
Correct Answer: A			
59)	What is the frequency of an alternator which has 2 poles and makes 3600 revolutions per minute?		
A)	3600 HZ	B)	60 Hz
C)	120 Hz	D)	None of these
Correct Answer: B			
60)	What is the effect of armature reaction?		
A)	Demagnetization of the main field	B)	Demagnetization of the brushes
C)	Cross-magnetization of the brushes	D)	None of these
Correct Answer: A			
61)	What is a capacitor voltage transformer?		
A)	It is a transformer used in power systems to step up low voltage signals and provide extra high voltage	B)	It is a transformer used in power systems to step up high voltage signals and provide extra high voltage
C)	It is a transformer used in power systems to step down extra high voltage signals and provide low voltage	D)	None of these
Correct Answer: C			
62)	Which of the following is the SI unit for admittance?		
A)	Ohm	B)	Henry
C)	Farad	D)	Siemens
Correct Answer: D			
63)	In which of the following waveforms is RMS voltage equal to the average voltage?		
A)	Triangle wave	B)	Square wave
C)	Sine wave	D)	None of these
Correct Answer: B			

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64)	Which type of corona generates much less ozone?		
A)	A positive corona	B)	A negative corona
C)	Both positive corona and negative corona generate same amount of ozone	D)	No ozone is generated by either type of corona
Correct Answer: A			
65)	In a DC motor, it is important to place the brushes along _____		
A)	Magnetic Neutral Axis	B)	Normal Geometric Axis
C)	Nominal Geometric Axis	D)	None of these
Correct Answer: A			
66)	Skin effect is absent in which of the following transmission systems?		
A)	Extra High Voltage (EHV) AC	B)	High Voltage Direct Current (HVDC)
C)	Both A and B	D)	None of these
Correct Answer: B			
67)	The transfer of energy for reaction turbines is based on _____		
A)	Newton's first law	B)	Newton's second law
C)	Newton's third law	D)	All the above
Correct Answer: C			
68)	Which of the following is true with respect to a breeder reactor?		
A)	Its conversion ratio is greater than 1	B)	It is capable of generating more fissile material than it consumes
C)	Both A and B	D)	None of these
Correct Answer: C			
69)	Ferranti Effect is more pronounced when _____		
A)	the line is longer and the voltage applied is higher	B)	the line is shorter and the voltage applied is lower
C)	the line is shorter and the voltage applied is higher	D)	none of these
Correct Answer: A			
70)	A Peterson coil is _____		
A)	An arc generating coil	B)	An arc suppressing coil
C)	An arc inducing coil	D)	None of these
Correct Answer: B			
71)	Magnetic circuit breakers use _____		
A)	Permanent magnets	B)	Earth magnets
C)	Solenoid	D)	All the above
Correct Answer: C			
72)	Which of the following is used in a circuit breaker as the medium in which the arc forms?		
A)	Insulating gas	B)	Insulating oil
C)	Vacuum	D)	All the above
Correct Answer: D			

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73)	Buchholz relay is used as a safety device with respect to which of the following?		
A)	Audio transformers	B)	Oil filled power transformers
C)	Air core transformer	D)	None of these
Correct Answer: B			
74)	Which of the following elements are used as dopants in silicon or germanium semiconductors?		
A)	Antimony	B)	Phosphorus
C)	Arsenic	D)	All the above
Correct Answer: D			
75)	Which of the following is used for thermoelectric cooling?		
A)	Peltier effect	B)	Seebeck effect
C)	Both A and B	D)	None of these
Correct Answer: A			
76)	During a "Sale Period", Bata announces a 20% discount on the price of all of its products. This results in an increase of the sales volume by 30%. What is the net effect on the revenue because of the discount?		
A)	Revenue increases	B)	Revenue decreases
C)	Revenue remains constant	D)	Cannot be said based on the given information
Correct Answer: A			
77)	What is a ROM in a computer?		
A)	Random Open Memory	B)	Read Only Memory
C)	Random Only Memory	D)	None of these
Correct Answer: B			
78)	Classes in a college start every day at 10 a.m. and have four classes a day. Each class is of 48 minutes duration and the classes get over at 1:27 P.M. What is the gap between two consecutive classes?		
A)	5 minutes	B)	10 minutes
C)	7 minutes	D)	Cannot be determined with the given data
Correct Answer: A			
79)	Three-eighth of four-fifth of a number is equal to 36. What is 135% of that number?		
A)	120	B)	210
C)	310	D)	None of these
Correct Answer: D			
80)	Identify the odd one out?		
A)	Kalpakkam	B)	Kundakulam
C)	Dabhol	D)	Trombay
Correct Answer: C			

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81)	Kohima is the capital of		
A)	Sikkim	B)	Meghalaya
C)	Tripura	D)	Nagaland
Correct Answer: D			
82)	The term “Cultural Revolution” is used in the context of which country?		
A)	India	B)	China
C)	Japan	D)	Russia
Correct Answer: B			
83)	If $a = 27$ and $b = 22$, then $a^3 - 3a^2b + 3ab^2 - b^3$ equals to		
A)	147	B)	125
C)	98	D)	117
Correct Answer: B			
84)	With which sport would you associate FIFA?		
A)	Cricket	B)	Hockey
C)	Football	D)	Formula 1 racing
Correct Answer: C			
85)	ATF is used in		
A)	Airlines	B)	Automobiles
C)	Ships	D)	None of the above
Correct Answer: A			
86)	Who was the last Mughal emperor of India?		
A)	Bahadur Shah Zafar	B)	Aurangzeb
C)	Dara Shikoh	D)	Siraj ud Daullah
Correct Answer: A			
87)	The first time India won the cricket world cup was in		
A)	2011	B)	2007
C)	1983	D)	1975
Correct Answer: C			
88)	In the context of Income Tax, the acronym ITR stands for		
A)	Income Tax Received	B)	Income Tax Revenue
C)	Income Tax Returns	D)	Income Tax Receipt
Correct Answer: C			
89)	A local club decides to collect as many rupees from each member of club towards a program as is the number of members of the club. If the total collection amounts to Rs. 5625/-, the number of the member of the club is		
A)	55	B)	65
C)	75	D)	85
Correct Answer: C			

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90)	The second highest civilian honour in India is		
A)	Bharat Ratna	B)	Padma Bhushan
C)	Padma Vibhushan	D)	None of the above
Correct Answer: C			
91)	A bag contains 6 red and 8 green balls. One ball is drawn at random – it is found to be red; after noting the colour of the ball, it is put back in to the bag. Another ball is now drawn at random. What is the probability that the second ball drawn is green?		
A)	(3/4)	B)	(4/7)
C)	(1/8)	D)	(3/7)
Correct Answer: B			
92)	Telengana became the _____ state of India.		
A)	29 th	B)	25 th
C)	27 th	D)	30 th
Correct Answer: A			
93)	Which of the following is a correct statement?		
A)	54 km / hr = 15 m/s	B)	54 km / hr = 1.5 m/s
C)	54 km / hr = 5.4 m/s	D)	None of these
Correct Answer: A			
94)	The sum of the length and breadth of a rectangle is 60 cm and the difference is 16 cm. What is the area of the rectangle?		
A)	836 sq. cm	B)	484 sq. cm
C)	1444 sq. cm	D)	None of the above
Correct Answer: A			
95)	Consider the following equation: $((29 * 3) + (45 \div 5)) = X^2 - 100$. Given this, X =		
A)	196	B)	14
C)	13	D)	12
Correct Answer: B			
96)	Find the missing number in the series: 5, 11, 18, 26,, 45.		
A)	34	B)	35
C)	36	D)	37
Correct Answer: B			
97)	Consider a right angled triangle. The areas of the three squares drawn on each of its sides are 25 sq. m., 16 sq. m. and 9 sq. m. respectively. What is the area of the triangle?		
A)	6 sq. m	B)	12 sq. m
C)	25 sq. m	D)	None of these
Correct Answer: A			
98)	The term “Reverse sweep” refers to which sport?		
A)	Basketball	B)	Cricket
C)	Baseball	D)	Swimming
Correct Answer: B			

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99)	The smallest country of the world by geographical area is		
A)	Russia	B)	Vatican City
C)	Australia	D)	USA
Correct Answer: B			
100)	A survey of 100 users of a swimming pool in an apartment complex threw up the following data with regard to the usage: November only, 18; November but not October, 23; November and September, 8; November, 26; September 48; September and October, 8; and none of the three months, 24. Given this, how many users surveyed had used the pool for exactly 2 months?		
A)	3	B)	8
C)	10	D)	13
Correct Answer: C			