

## ECAT Pre General Science Physics Chapter 16 Alternating Current Online Test

Sr	Questions	Answers Choice
1	Which one of the following Electro-magnetic wave have the highest frequency and shortest wave-length	A. X-rays B. Ultraviolet rays C. <b>y-rays</b> D. Cosmic rays
2	A signal is amplified at the output without any change of phase, if it is applied at the	A. inverting input B. <b>non-inverting input</b> C. at any of the input D. none of these
3	The Instantaneous value of alternative current maybe:	A. The same as its RMS value B. Greater than its Rms value C. <b>The same as its peak value</b> D. Any of these E. None of these
4	The input resistance of the OP-AMP is the resistance between the	A. (-) input and output B. (+) input and output C. <b>(-) and (+) inputs</b> D. between any inputs
5	When electrons in the transmitting antenna vibrate 94000 time per second, they produce radiowaves having frequency	A. 9.4 kHz B. 940 kHz C. <b>94 kHz</b> D. None of these
6	Alternating current can induce voltage because it has a	A. High peak value B. <b>Varying magnetic field</b> C. Stronger field than direct current D. Constant magnetic field
7	The basic circuit elements of A.C circuit are	A. Resistor B. Inductor C. Capacitor D. <b>All the three</b>
8	If 250V is the RMS value of alternative voltage, then its peak value $V_0$ will be:	A. <b>353.5V</b> B. 250V C. 175V D. zero E. 400V
9	The power factor of resonant series circuit is	A. <b>1</b> B. 0 C. -1 D. 0.5
10	In which of the following diodes when an electron combines with a hole during the forward biasing, photon of visible light is emitted.	A. photo diode B. light emitting diode C. photo voltaic cell D. <b>all of them</b>
11	At higher frequency of the alternating current, the capacitive reactance $X_C$	A. Increases B. <b>Decreases</b> C. Remains the same D. Increases only when the voltage increases
12	The value of the potential difference across the depletion region for the case of germanium is	A. 0.3 V B. 0.5 V C. <b>0.7 V</b> D. 0.9 V
13	A digital system deals with quantities or variables which have	A. only one state B. <b>only two discrete states</b> C. three discrete states D. four discrete states
14	The length of rotating vector (on a certain scale) represents the:	A. Peak value of alternating quantity B. RMS value of alternating quantity C. Instantaneous value of alternating quantity D. Either (B) or (C) E. <b>Either (A) or (B)</b>

15	During the negative half-cycle of the half-wave rectification, the diode	A. does not conduct B. conducts C. either of these D. none of these
16	Most OP-AMP operates with	A. <u>+</u> 6 V supply B. <u>+</u> 10 V supply C. <u>+</u> 12 V supply D. <u>+</u> 24 V supply
17	An A.C varies as a function of	A. Current B. Voltage C. Time D. Charge
18	In half wave rectification	A. both halves of the input voltage is used B. only one half of the input voltage is used C. either of these D. none of these
19	In RLC series circuit, resonance occurs when	A. $X_L > X_C$ B. $X_L < X_C$ C. $X_L = X_C$ D. None of these
20	The amplifier which is used to perform mathematical operations electronically is known as	A. calculator B. OP-AMP C. computer D. any one of them
21	When the pn-junction is connected reversed biased, its resistance is of the order of	A. few ohms B. few kilo-ohms C. few mega-ohms D. few mili-ohms
22	A signal appears after amplification, at the output terminal with a phase shift of $180^\circ$ , if it is applied at	A. inverting input B. non-inverting input C. any one of the input terminal D. none of them
23	The total reactance of a series RLC circuit at resonance is	A. zero B. Equal to the resistance C. Infinity D. Capacitive
24	The bridge circuit of full wave rectification uses	A. one diode B. two diode C. three diode D. four diode
25	The device which allows only the flow of an A.C. through a circuit is	A. Capacitor B. Inductor C. D.C. motor D. Battery
26	A p-n junction is formed when a crystal of silicon is grown in such a way that its one half is doped with trivalent impurity and the other half with a impurity from	A. 2nd group B. fourth group C. fifth group D. sixth group
27	In an A.C circuit with resistor only, the current and voltage have a phase angle of	A. $90^\circ$ B. $0^\circ$ C. $180^\circ$ D. none of these
28	The most common source of alternating voltage is:	A. Motor B. Transformer C. AC generator D. Both (A) and (C) E. Both (A) and (B)
29	The sum of positive and negative peak values is called:	A. Instantaneous value B. Peak value C. Rms value D. Peak-to peak-value E. None of these
30	An A.C. voltmeter read 250 volts. The frequency of alternating is 50 Hz, the peak value of voltage is	A. 3525.0 volts B. 35.35 volts C. 353.5 volts D. 3525 volts

31	When the pn-junction is in reversed biased, current flows through the junction due to the	A. majority carriers B. minority carriers C. either of them D. none of them
32	In a transistor, if the central region is n-type, then this type of transistor is known as	A. n-p-n transistor B. p-n-p transistor C. either of these D. none of these
33	The basic circuit element in D.C. circuit is:	A. A capacitor B. A resistor C. An inductor D. Both (A) and (C) E. Both (A) and (B)
34	The value of output resistance of OP-AMOP is of the order of	A. few ohms B. few hundred ohms C. several kilo ohms D. several mega ohms
35	The average of A.C. current and voltage over a complete cycle is	A. Maximum B. zero C. Neither zero nor maximum D. None of these
36	The closed loop gain of the inverting amplifier is written as	A. $G = R_2/R_1$ B. $G = 1 + R_2/R_1$ C. $G = -R_2/R_1$ D. $G = 1 - R_2/R_1$
37	When either L or C is increased, the resonant frequency of the RLC series circuit	A. Increases B. Decreases C. Remains the same D. Becomes zero
38	Chock consumes externally small	A. Charge B. Current C. Power D. Potential
39	When the emitter-base junction of a transistor is reverse biased, collector current	A. Reverses B. Increases C. Decreases D. Stops
40	A diode characteristic curve is a plot between	A. current and time B. voltage and time C. voltage and current D. forward voltage and reversed voltage
41	Which of the following diodes can operate in the reverse biased condition	A. photo diode B. light emitting diode C. photo voltaic cell D. none of these
42	A changing magnetic flux creates around itself	A. An electromotive force B. An electric field (changing electric flux) C. Magnetic field D. None of the above
43	For normal operation of transistor, the batteries	A. $V_{CC}$ is of much lower value than $V_{BB}$ B. $V_{CC}$ is of much higher value than $V_{BB}$ C. $V_{CC}$ is equal to $V_{BB}$ D. none of these
44	Electromagnetic waves transmit energy equal to	A. $\frac{1}{2} m v^2$ B. $m \omega^2 c^2$ C. $hf$ D. $hf$
45	The emitter-base junction of a transistor is forward-biased and collector-base junction is reverse-biased. If the base current is increased, its	A. $I_C$ will decrease B. $V_{CE}$ will increase C. $I_C$ will increase D. $V_{CC}$ will increase

46	At resonance, the phase angle for RLC series resonance circuit equals	B. $90^\circ$ C. $180^\circ$ D. $270^\circ$
47	In frequency modulation (FM), the carrier waves amplitude	A. Remains constant B. Increase C. Decreases D. None of these
48	During the positive half-cycle in the half-wave rectification, the diode	A. does not conduct B. conducts C. either of these D. neither of these
49	The alternative voltage of current is actually measured by:	A. Its RMS value B. Square root of its mean square value C. Instantaneous value D. Peak value E. Both (A) and (B)
50	Transmitting antenna emits	A. Magnetic waves B. Electric waves C. Electromagnetic waves D. Sound waves
51	In n-p-n transistor, emitter base junction is kept	A. reversed B. forward biased C. may be reversed or may be forward biased D. none of these
52	The value of current gain of n-p-n transistor is of the order of	A. tens B. hundreds C. thousands D. ten thousands
53	The magnitude of alternative voltage V:	A. Always increase B. Always decrease C. Remains constant D. Does not remain constant E. None of these
54	At resonance frequency the impedance of parallel resonance circuit is	A. Maximum B. Minimum C. Zero D. None of the above
55	In which of the following components, pn-junction is used	A. light emitting diode B. photo diode C. photo voltaic cell D. all of these
56	In a transistor, the central region is called	A. collector B. emitter C. base D. none of them
57	When the pn-junction is forward biased. the current flows through it is of the order of	A. milli-amperes B. amperes C. nano-amperes D. micro-amperes
58	If we connect a A.C. volt meter to read A.C. voltage, It would read its:	A. RMS value B. Instantaneous value C. Valued average over a cycle D. Zero E. Both (B) and (C)
59	Unless stated otherwise, when we speak of A.C. meter reading, we usually mean:	A. Peak value B. RMS value C. Instantaneous value D. Peak-to-peak value E. Both (A) and (C)
60	The basic circuit element in A.C. circuits are:	A. Resistor and capacitor B. Resistor and Inductor C. Capacitor only D. Both (B) and (C) E. None of these
61	In describing functions of digital systems, a closed switch will be shown as	A. 0 B. 1 C. low

		D. any one of these
62	The time interval during which the Voltage source changes its polarity once is known as:	<p>A. Time period T</p> <p>B. Half the time period</p> <p>C. Quarter the time period</p> <p>D. Two third of the time period</p> <p>E. None of these</p>
63	Which one of the following is correct?	<p>A. <math>V_{rms} = 1.414 V_o</math></p> <p>B. <math>I_{rms} = 1.414 I_o</math></p> <p>C. <math>V_o = 10.70 V_{rms}</math></p> <p>D. Both a and b</p>
64	Alternating current can be transmitted:	<p>A. To long distance</p> <p>B. At very high cost</p> <p>C. At very low cost</p> <p>D. Both (A) and (C)</p> <p>E. Both (A) and (B)</p>
65	Average value of A.C voltage during one cycle is	<p>A. 1</p> <p>B. Zero</p> <p>C. Maximum</p> <p>D. Variable</p>
66	The RMS value of alternating current is:	<p>A. 0.7 times at the peak value</p> <p>B. 0.5 times the peak value</p> <p>C. 0.7 times the Instantaneous value</p> <p>D. Equal to maximum voltage</p> <p>E. None of these</p>
67	SI unit of impedance is	<p>A. hertz</p> <p>B. henry</p> <p>C. ampere</p> <p>D. ohms</p>
68	A P-N junction or semiconductor diode cannot be used as	<p>A. A rectifier</p> <p>B. Detector</p> <p>C. Oscillator</p> <p>D. An amplifier</p>
69	At resonance, the impedance of RLC series circuit is	<p>A. Maximum</p> <p>B. Zero</p> <p>C. Minimum</p> <p>D. Determinate</p>
70	For a n-p-n transistor, the conventional current equation can be written as	<p>A. <math>I_E = I_C + I_B</math></p> <p>B. <math>I_C = I_B - I_E</math></p> <p>C. <math>I_C = I_B + I_E</math></p> <p>D. <math>I_B = I_C + I_E</math></p>
71	The highest value reached by the voltage or current:	<p>A. In quarter cycle is called Instantaneous value</p> <p>B. In half cycle is called peak-to-peak value</p> <p>C. In one cycle is called peak value</p> <p>D. In half cycle is called Instantaneous value</p> <p>E. None of these</p>
72	Mathematical manipulation of the two quantized states can be best carried if they are represented by	<p>A. high - low</p> <p>B. yes - no</p> <p>C. on - off</p> <p>D. 0 - 1</p>
73	Which of the following diode is used to derive the current in external circuit when light is incident in the circuit	<p>A. photo diode</p> <p>B. light emitting diode</p> <p>C. photo voltaic cell</p> <p>D. none of these</p>
74	Which one of the following waves belongs to electromagnetic spectrum	<p>A. Radio and TV waves</p> <p>B. Radar waves</p> <p>C. Micro waves</p> <p>D. All of them</p>
75	Conversion of alternating current into direct current is called	<p>A. amplification</p> <p>B. rectification</p> <p>C. conduction</p> <p>D. polarization</p>
76	Due to the high value of the input resistance, practically, the value of the current which flows between the input terminals is	<p>A. zero</p> <p>B. small</p> <p>C. large</p> <p>D. very large</p>

77	If we connected the ordinary DC ammeter to measure alternating current, it would measure its:	A. Instantaneous value B. RMS value C. Value averaged over a cycle D. Either (B) or (C) E. Either (A) or (C)
78	In free space, the speed of electromagnetic waves is	A. $3 \times 10^{18} \text{ ms}^{-1}$ B. $3 \times 10^{16} \text{ ms}^{-1}$ C. $4 \times 10^{17} \text{ ms}^{-1}$ D. $3 \times 10^{19} \text{ ms}^{-1}$
79	The value of the input resistance of OP-AMP is of the order of	A. few ohms B. few hundred ohms C. several kilo ohms D. several mega ohms
80	If the value of C in a series RLC circuit is increased, the resonant frequency	A. Is not affected B. Increase C. Remains the same D. Decreases
81	The impedance of RLC series resonance circuit at resonant frequency is	A. Greater than R B. Equal to R C. Less than R D. None of these
82	Nowadays, Most of the electric energy is produced by the A.C. generators using:	A. Hydal water B. Geothermal energy C. Solar energy D. Biomass E. Both (B) and (D)
83	A sinusoidally alternating voltage or current can be graphically represented by a:	A. Vector B. Rotating vector C. Clockwise vector D. Anticlockwise voltage vector E. None of these
84	When a transistor is used as a switch the circuit in which the current is to be switched OFF and ON, is connected between the	A. base and emitter B. collector and emitter C. base and collector D. any one of these
85	During each cycle, alternating voltage reaches a peak value	A. One time B. Two times C. Four times D. A number of times depending on the frequency
86	The output voltage of half wave rectification is in the form of	A. a smooth curve B. a smooth wave C. pulses D. all of the above
87	The open loop gain of OP-AMP is of the order of	A. $10^2$ B. $10^3$ C. $10^4$ D. $10^5$
88	The wave form of alternating voltage is the graph between:	A. Voltage across X-axis and time across y-axis B. Current and time C. Voltage along y-axis and time along x-axis D. Voltage and current E. Either (B) or (D)
89	In a normally biased n-p-n transistor, an electron c current $I_E$ flows from the	A. emitter into the base B. collector into the base C. base into collector D. none of these
90	The waveform of alternating voltage is a:	A. Square B. Rectangular C. Saw-tooth D. Sinusoidal E. None of these
91	In series RC circuit when $R = X_C$ then the phase angle is	A. $0^\circ$ B. $90^\circ$

91	In series RC circuit when $R = X_C$ , then the phase angle is	<p>C. <math>70^\circ</math></p> <p>D. <math>45^\circ</math></p>
92	An A.C. voltage is applied across the inductor. When the frequency of the voltage is increased, the current	<p>A. Decreases</p> <p>B. Increases</p> <p>C. Does not change</p> <p>D. Momentarily goes to zero</p>
93	Which of the following diode is used for the detection of light	<p>A. photo diode</p> <p>B. light emitting diode</p> <p>C. photo voltaic cell</p> <p>D. all of them</p>
94	The entire wave form of sinusoidal voltage is actually a set of all the:	<p>A. Positive maximum value + <math>V_m</math> and negative maximum value - <math>V_m</math></p> <p>B. Positive maximum value + <math>V_m</math> and zero</p> <p>C. Zero and negative maximum value - <math>V_m</math></p> <p>D. Any of these</p> <p>E. None of these</p>
95	The phase angle of a series RLC circuit at resonance is	<p>A. <math>180^\circ</math></p> <p>B. <math>90^\circ</math></p> <p>C. <math>0^\circ</math></p> <p>D. None of these</p>
96	A resonance curve for RLC series circuit is a plot of frequency versus	<p>A. Voltage</p> <p>B. Current</p> <p>C. Impedance</p> <p>D. Reactance</p>
97	For the normal operation of the transistor, its	<p>A. emitter-base and collector base junctions are forward biased</p> <p>B. emitter-base junction is reversed biased and collector base junction is forward biased</p> <p>C. emitter-base junction is forward biased and collector-base junction is reverse biased</p> <p>D. any one of these</p>
98	The $R_1 = \infty$ and $R_2 = 0$ , then the gain of non-inverting amplifier is	<p>A. zero</p> <p>B. infinity</p> <p>C. one</p> <p>D. any one of these</p>
99	Peak value of alternative current is:	<p>A. one of its instantaneous value</p> <p>B. Equal to its RMS value</p> <p>C. The same as its peak-to-peak value</p> <p>D. Both (B) and (C)</p> <p>E. None of these</p>
100	Alternating current is produced by a voltage source which polarity:	<p>A. Remains the same</p> <p>B. Reverse after period T</p> <p>C. Keeps on reversing with time</p> <p>D. Reverse after every time interval T/2</p> <p>E. Both (C) and (D)</p>
101	To design a resonant circuit of frequency 100 KHz with an inductor of inductance 5 mH, we need a capacitor of capacitance	<p>A. 5.07 pF</p> <p>B. 50 pF</p> <p>C. 0.507 pF</p> <p>D. 507 pF</p>
102	Which of the following has a great concentration of impurity	<p>A. base</p> <p>B. emitter</p> <p>C. collector</p> <p>D. none of these</p>
103	In a transistor, if the central region is p-type then this type of transistor is known as	<p>A. p-n-p transistor</p> <p>B. n-p-n transistor</p> <p>C. either of these</p> <p>D. none of these</p>
104	The closed loop gain of the non-inverting amplifier is given by	<p>A. <math>G = \frac{R_2}{R_1}</math></p> <p>B. <math>G = -\frac{R_2}{R_1}</math></p> <p>C. <math>G = 1 + \frac{R_2}{R_1}</math></p>

		<p><math>\frac{R}{R + j\omega L} \times \frac{1}{R}</math></p> <p>D. <math>G = 1 + \frac{T}{R}</math></p>
105	The phase at the positive peak of an A.C. cycle is:	<p>A. 0°</p> <p>B. 90°</p> <p>C. 180°</p> <p>D. 0 and 180°</p> <p>E. 0 and 90°</p>
106	The circuit which is used to smooth the output voltage of the full-wave rectification is known as	<p>A. transformer</p> <p>B. rectifier</p> <p>C. filter</p> <p>D. none of these</p>
107	OP-AMP has the following input terminals	<p>A. one</p> <p>B. two</p> <p>C. three</p> <p>D. four</p>
108	When the p-n junction is forward biased its resistance is of the order of	<p>A. few mega ohms</p> <p>B. few kilo ohms</p> <p>C. few ohms</p> <p>D. few milli ohms</p>
109	The r.m.s. value of alternating current is equal to its maximum value at angle of	<p>A. 60°</p> <p>B. 45°</p> <p>C. 30°</p> <p>D. 15°</p>



100 The r.m.s. value of alternating current is equal to its maximum value at angle  $\phi$ .

- C.  $30^\circ$   
D.  $90^\circ$