

JUNIOR LAB ASSISTANT (ELECTRICAL)

PART - A

1. Identify the error (if any) in the sentence given below:
The call of the seas have always found an echo in me.
A. The call of the seas
B. have always found
C. an echo in me
D. No error
2. Ramesh has a meeting with Rohit at the same date.
A. Ramesh has
B. a meeting with Rohit
C. at the same date
D. No error
3. In the following question, pick out the most effective word from the given choices to fill in the blank to make the sentence meaningfully correct.
Irregular supply of electricity can in wastage of electricity.
A. cause B. affect C. effect D. result
4. In the following question, a sentence has been given in Active/Passive voice. Out of the four alternatives given, choose the one which best expresses the same sentence in Passive/Active voice.
I saw him leaving the house.
A. He had been seen leaving the house.
B. He was seen to be leaving the house.
C. Leaving the house he was seen by me.
D. He was seen leaving the house by me.
5. In the following question, a sentence has been given in Direct/Indirect Speech. Out of the four alternatives given, choose the one which best expresses the same sentence in Indirect/Direct Speech.
He said to her, "Don't read so fast."
A. He told her not to read so fast.
B. He advised her don't read so fast.
C. He requested her not to read so fast.
D. He ordered her not to read so fast.
6. Who was the founder of Nanda dynasty in Magadha?
A. Mahapadma Nanda B. Dhana Nanda C. Nandi Vardhan D. Mahanandin
7. The layer which is found below the crust of the earth is?
A. Trench B. Mantle C. Core D. Ridge
8. What does GNP stand for?
A. Gramin Nigam Limited B. Gramin Nisak Product
C. Gross National Product D. Grocery National Production
9. Where is the National Institute of Hydrology (NIH) located?
A. Roorkee B. Shimla C. Guwahati D. Chennai

10. Who is the first Asian man to be nominated for International Tennis Hall of Fame?

A. Leander Paes B. Mahesh Bhupathi C. Rohan Bopanna D. Yuki Bhambri

11. How many 3-digit numbers are there in between 100 and 300, having first and the last digit as 2?

A. 9 B. 10 C. 11 D. 12

12. A man's basis pay for a 40 hours' week is Rs. 200. Overtime is paid at 25% above the basic rate. In a certain week, he worked overtime and his total was Rs. 300. He, therefore, worked for a total of (in hours)?

A. 52 B. 56 C. 58 D. 62

13. Four years ago, the average age of A and B was 18 years. At present the average age of A, B and C is 24 years. What would be the age of C after 8 years.

A. 25 years B. 28 years C. 32 years D. 36 years

14. Raghav spends 80% of his income. If his income increases by 12% and the savings decrease by 10%, then what will be the percentage increase in his expenditure?

A. 20.5 B. 16 C. 17.5 D. 22

15. A carpenter is designing a table. The table will be in the form of a rectangle whose length is 4 feet more than its width. How long should the table be if the carpenter wants the area of the table to be 45 sq ft?

A. 6 ft B. 9 ft C. 11 ft D. 13 ft

16. In the following question, there is a certain relationship between two given words on one side of :: and one word is given on another side of : while another word is to be found from the given alternatives.

Milk : Emulsion :: Butter : ?

A. Aerosol B. Suspension C. Sol D. Gel

17. Select the number that can replace the question mark (?) in the following series.

87, 89, 92, 97, 104, 115, ?, 145

A. 125 B. 128 C. 133 D. 132

18. In the following question consist of two words each that have a certain relationship to each other, followed by four lettered pairs of words. Select the lettered pair that has the same relationship as the original pair of words printed in bold.

Termite : Wood

A. Neem : Cotton B. Fibre : Jute C. Thread : Cloth D. Moth : Wool

19. Unscramble the letters in the words given in this question and find the odd one out?

A. ULME B. RIGTE C. KYDEN O D. LCEAM

20. Study the following alphabetical sequence and answer the question following it.

ABBCDEFEIBCAFECBBACA OBNUVW

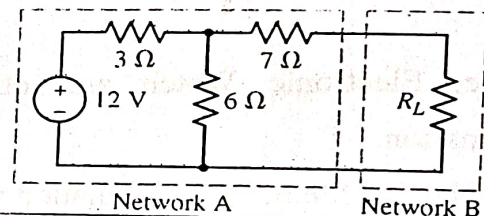
Question: If all the vowels are dropped from the series, then which alphabet will be eighth from the left end?

A. C B. B C. N D. F

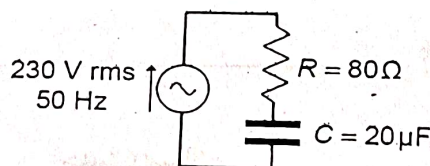
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- 1 Resistance of a wire is r ohms. The wire is stretched to triple its length, then its resistance in ohm is
 (A) $r/3$ (B) $9r$
 (C) $3r$ (D) $r/9$
- 2 A $10\ \Omega$ resistor is connected in shunt to a parallel combination of two voltage sources each one of 100 V . What would be the current drawn by the resistor?
 (A) 0 A (B) 10 A
 (C) 20 A (D) 100 A
- 3 While calculating R_{th} , constant current sources in the circuit are
 (A) replaced by 'opens'
 (B) replaced by 'shorts'
 (C) treated in parallel with other voltage sources
 (D) converted to equivalent voltage sources
- 4 The time constant of an R-C circuit is defined as the time during which capacitor charging current becomes _____ percent of its _____ value
 (A) 37, final (B) 63, final
 (C) 63, initial (D) 37, initial
- 5 What will be the the force in free space between two like point charges of 1 C each placed 1 mt and 2 mt apart?
 (A) 10^9 N and $0.5 \times 10^9\text{ N}$ (B) $4.5 \times 10^9\text{ N}$ and $2.25 \times 10^9\text{ N}$
 (C) $9 \times 10^9\text{ N}$ and $4.5 \times 10^9\text{ N}$ (D) $9 \times 10^9\text{ N}$ and $2.25 \times 10^9\text{ N}$

- 6 Thevenin's equivalent of the circuit shown below to the left of R_L is
 (A) 9.75V , $9\ \Omega$ (B) 8V , $9\ \Omega$
 (C) 6.22V , $9\ \Omega$ (D) 8V , $2\ \Omega$



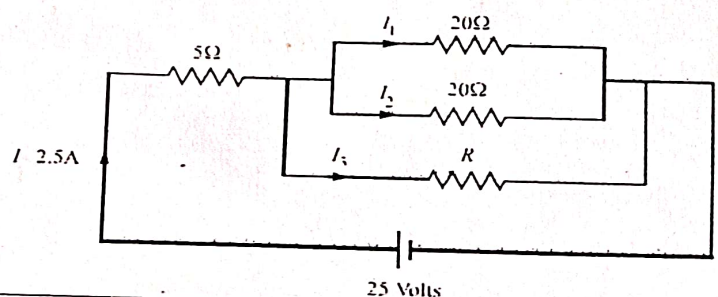
- 7 The average power dissipated (Watt) in the circuit shown below is



- (A) 133.4 (B) 265.4 (C) 1.154 (D) 0.58

- 8 Find the value of R_{in} the circuit shown below.

- (A) $25\ \Omega$
 (B) $20\ \Omega$
 (C) $10\ \Omega$
 (D) $5\ \Omega$



9	Which of the following truly represents the Thevenin's equivalent circuit when a voltage source of 24 V undergoes a voltage drop of 0.6 V due to a load current of 1 A ? (A) $V_{th} = 24 \text{ V}$, $R_{th} = 0.6 \Omega$ (B) $V_{th} = 24 \text{ V}$, $R_{th} = 24 \Omega$ (C) $V_{th} = 23.4 \text{ V}$, $R_{th} = 0.6 \Omega$ (D) $V_{th} = 23.4 \text{ V}$, $R_{th} = 23.4 \Omega$
10	A ramp voltage $V(t) = 100t \text{ V}$, is applied to an RC differencing circuit with $R = 5 \text{ k}\Omega$ and $C = 4 \mu\text{F}$. The maximum power output voltage is (A) 0.2 V (B) 2.0 V (C) 10.0 V (D) 50.0 V
11	The power factor of a resonance circuit at resonance frequency is (A) 1 (B) 0.5 (C) 0.85 (D) 0
12	The resonance frequency of an L-C-R circuit is 120 Hz. The value of resistance is changed from 50 ohm to 100 ohm. What will be new resonance frequency? (A) 50 Hz (B) 240 Hz (C) 60 Hz (D) 120 Hz
13	In an R-L-C circuit, $v(t) = 20 \sin(314t + 5\pi/6)$ and $i(t) = 10 \sin(314t + 2\pi/3)$. The p.f. of the circuit is (A) 0.5 lead (B) 0.866 lag (C) 0.866 lead (D) 0.5 lag
14	The input of an a.c. circuit having p.f. of 0.8 lagging is 20 kVA. The power drawn by the circuit is _____ kW. (A) 12 (B) 20 (C) 16 (D) 8
15	The impedances of two parallel branches of a circuit are $(10 + j10)$ and $(10 - j10)$ respectively. The impedance of the parallel combination is _____ (A) $10 + j0$ (B) $100 - j100$ (C) $10 - j10$ (D) $100 + j100$
16	In inductive circuit, when Inductance (L) or inductive reactance (X_L) increases, the circuit current decreases, but the circuit power factor _____? (A) Increases (B) Also Decreases (C) Remain Same (D) None of the above
17	The relationship between Impedance (Z) and Admittance (Y) is _____ ? (A) $Z = 1/Y$ (B) $Z = 1 + Y$ (C) $Z = 1 - Y$ (D) $Z = Y^2$
18	Average value of a sinusoidal alternating signal is _____ for a full cycle. (A) Maximum (B) Zero (C) Finite Value (D) Infinite
19	In the pure capacitive circuit, the current always _____ behind the voltage. (A) 180° leads

	(B) 90° leads (C) 90° lags (D) 180° lags
20	The ratio between resistance and impedance of an AC circuit is called _____ (A) power factor (B) admittance (C) conductance (D) none is correct
21	In the 2-wattmeter method of measuring 3-phase power, the two wattmeter indicate equal and opposite readings when load power factor angle is _____ degree lagging. (A) 60 (B) 0 (C) 30 (D) 90
22	A balanced three-phase Y-connected load has one phase voltage $V_c = 277 \angle -45^\circ$ V. The phase sequence is <i>abc</i> . The line to line voltage V_{AB} is (A) $480 \angle 45^\circ$ V (B) $480 \angle -45^\circ$ V (C) $339 \angle 45^\circ$ V (D) $339 \angle -45^\circ$ V
23	The neutral to phase voltage of a 3-ph star connected power supply is 220 V. What would be the line to line voltage? (A) 220 V (B) 381 V (C) 127 V (D) 440 V
24	Power in a Three Phase Circuit = _____. (A) $P = 3 V_{Ph} I_{Ph} \cos \phi$ (B) $P = \sqrt{3} V_L I_L \cos \phi$ (C) Both 1 & 2. (D) None of The Above
25	In a three phase AC circuit, the sum of all three generated voltages is _____ ? (A) Infinite (∞) (B) Zero (0) (C) One (1) (D) None of the above
26	Laminated cores are used to reduce (A) I^2R Loss (B) Hysteresis Loss (C) Eddy Current Loss (D) All of the above
27	A single-phase transformer has turns ratio of 4:1. If the secondary winding has a resistance of 1 ohm, this resistance as referred to the primary will be (A) 16 ohm (B) 4 ohm (C) 0.25 ohm (D) 0.0625 ohm
28	A single-phase transformer is supplying power to a load at a terminal voltage of 11 kV. When the load is disconnected, the terminal voltage becomes 11.5 kV. The voltage regulation of this transformer for this load is (A) 55% (B) 11.55% (C) 5% (D) 2.5%
29	In a dc series motor, the torque developed is 20 Nm at a current of 20 A. If the current is doubled, the torque developed becomes (A) 20 Nm (B) 40 Nm (C) 80 Nm (D) 160 Nm
30	In dc generators, an interpole field coils are connected (A) in parallel with load

	(B) in series with load (C) in parallel with armature winding (D) in series with armature winding
31	The reverse current in a diode is of the order of (A) kA (B) mA (C) μ A (D) A
32	The forward voltage drop across a silicon diode is about (A) 2.5 V (B) 3 V (C) 10 V (D) 0.7 V
33	The base of a transistor is doped (A) heavily (B) moderately (C) lightly (D) none of the above
34	In a PNP transistor, the current carriers are (A) acceptor ions (B) donor ions (C) free electrons (D) holes
35	When a differential amplifier is operated single-ended, (A) the output is grounded (B) one input is grounded and signal is applied to the other (C) both inputs are connected together (D) the output is not inverted
36	The given hexadecimal number $(1E.53)_{16}$ is equivalent to (A) $(35.684)_8$ (B) $(36.246)_8$ (C) $(34.340)_8$ (D) $(35.599)_8$
37	The expression for Absorption law is given by (A) $A + AB = A$ (B) $A + AB = B$ (C) $AB + AA' = A$ (D) $A + B = B + A$
38	The boolean function $A + BC$ is a reduced form of (A) $AB + BC$ (B) $(A + B)(A + C)$ (C) $A'B + AB'C$ (D) $(A + C)B$
39	DeMorgan's theorem states that (A) $(AB)' = A' + B'$ (B) $(A + B)' = A' * B$ (C) $A' + B' = A'B'$ (D) $(AB)' = A' + B$

40	<p>What is a multiplexer?</p> <p>(A) It is a type of decoder which decodes several inputs and gives one output</p> <p>(B) A multiplexer is a device which converts many signals into one</p> <p>(C) It takes one input and results into many output</p> <p>(D) It is a type of encoder which decodes several inputs and gives one output</p>
41	<p>A system which is linear is said to obey the rules of</p> <p>(A) scaling</p> <p>(B) Additivity</p> <p>(C) both scaling and additivity</p> <p>(D) homogeneity</p>
42	<p>What is the time period of the function $x[n] = \exp(jwn)$?</p> <p>(A) $\pi/2w$</p> <p>(B) π/w</p> <p>(C) $2\pi/w$</p> <p>(D) $4\pi/w$</p>
43	<p>State whether the integrator system is stable or not.</p> <p>(A) Unstable</p> <p>(B) Stable</p> <p>(C) Partially Stable</p> <p>(D) All of the mentioned</p>
44	<p>What are the conditions called which are required for a signal to fulfil to be represented as Fourier series?</p> <p>(A) Dirichlet's conditions</p> <p>(B) Gibbs phenomenon</p> <p>(C) Fourier conditions</p> <p>(D) Fourier phenomenon</p>
45	<p>What are the two types of Fourier series?</p> <p>(A) Trigonometric and exponential</p> <p>(B) Trigonometric and logarithmic</p> <p>(C) Exponential and logarithmic</p> <p>(D) Trigonometric only</p>
46	<p>What is Amplitude Modulation?</p> <p>(A) Change in amplitude of carrier according to modulating signal amplitude</p> <p>(B) Change in frequency of carrier according to modulating signal amplitude</p> <p>(C) Change in amplitude of carrier according to modulating signal frequency</p> <p>(D) Change in amplitude of modulating signal according to carrier signal amplitude</p>
47	<p>If the value of resistor becomes 16 times than its previous value then its noise voltage will become _____</p> <p>(A) 16 times</p> <p>(B) 8 times</p> <p>(C) 4 times</p> <p>(D) 2 times</p>
48	<p>Maximum Amplitude of an amplitude modulated 10V and minimum amplitude is 5V. Find its modulation index?</p> <p>(A) 0.65</p> <p>(B) 0.9</p> <p>(C) 0.33</p>

	(D) 1
49	<p>If peak voltage of a carrier wave is 10V, what is the peak voltage of modulating signal if modulation index is 50%?</p> <p>(A) 10V (B) 20V (C) 8V (D) 5V</p>
50	<p>Aspect ratio is the ratio of _____</p> <p>(A) width to height (B) height to width (C) power to width (D) width to power</p>
