

Answer the following questions:

Group one: Questions from (1 - 9)

1) Answer (A) or (B):

(A) Write down the scientific term for the following:

The work done to transfer a charge of one Coulomb between two points

B) Write down the scientific term for the following:

"The electric potential difference between the terminals of the source when no current passes through the circuit"

2) Answer (A) or (B):

(A) Write down the name of:

"A device used to measure the potential difference between two points"

(B) Write down the name of:

"A device used to measure the intensity of direct current"

3) Answer (A) or (B):

(A) Choose the correct answer:

The average induced current in the dynamos coil during one complete cycle equals _____

1) $I_{max.} \sqrt{2}$

2) Zero

3) $\frac{I_{max.}}{\sqrt{2}}$

(بقية الأسئلة في الصفحة الثانية)

B) Choose the correct answer:

The current that is used in the induction furnaces is _____

- 1) unidirectional current. 2) alternating current. 3) direct current.

4) Choose the correct answer:

The wave length of the continuous radiation of X-Rays can be changed by _____

- 1) changing the potential difference between the filament and the target material.
 2) changing the potential difference applied on the filament.
 3) changing the target material.

5) Choose the correct answer:

The induced current in the dynamo's coil has maximum value when the plane of the coil is _____

- 1) perpendicular to the direction of the magnetic field
 2) parallel to the direction of the magnetic field
 3) makes an angle 45° with the direction of the magnetic field

6) Define :

The surface potential barrier

7) Choose the correct answer:

The torque acting on a coil carrying a current and placed in a uniform magnetic field decreases during its motion due to _____

- 1) the decrease in the intensity of magnetic field
 2) the decrease on the force acting on the sides of the coil
 3) the decrease in the perpendicular distance between the two forces acting on the two sides of the coil.

(بقية الأسئلة في الصفحة الثالثة)

8) Choose the correct answer:

If the ratio between the number of turns of the secondary coil to the number of turns of primary coil in a step down transformer $1/50$ and the efficiency of the transformer is 90%, so that the magnitude of the induced e.m.f. in the secondary coil when the primary coil is connected to alternating current source of 220 Volts is _____

1) 4.4 Volts

2) 4 Volts

3) 3.96 Volts

9) How can you explain ?

Electronic components such as diode and transistors can be used to measure the environmental changes.

Group two: Questions from (10 – 18)**10) Answer (A) or (B):****(A) What is meant by ?**

The magnetic flux density at a point equals 0.3 N/A.m .

(B) What is meant by ?

The sensitivity of galvanometer $15^\circ / \mu\text{A}$.

11) Answer (A) or (B):**(A) Write the scientific term of the following :**

The spectrum resulting from the transfer of excited atoms from a high level to lower level.

(بقية الأسئلة في الصفحة الرابعة)

(B) Write the scientific term of the following:

The spectrum occurring at specified frequencies and not continuously distributed.

12) Answer (A) or (B):**(A) Choose the correct answer :**

The high DC. voltage difference applied on the mixture of Helium and Neon is used to excite _____

- 1) helium atoms 2) neon atoms 3) both of Helium and Neon atoms

(B) Choose the correct answer:

The Light phenomenon that causes the formation of hologram is _____

- 1) scattering of light rays.
2) refraction of light rays.
3) interference of light rays.

13) Give reason for :

The wave length associated to the electron beam in the electron microscope decreases by increasing the electric potential difference.

14) Choose the correct answer:

On connecting an alternating current source in series with a diode, the produced current is _____

- 1) unidirectional current
2) half wave rectified current
3) direct current

(بقية الأسئلة في الصفحة الخامسة)

15) Choose the correct answer:

On increasing the rate of change in the current intensity in an induction coil to double, so that the self-induction coefficient of the coil _____

- 1) decrease to the half 2) remains constant 3) increases to the double

16) Give reason for :

The exist of a fixed ohmic resistance connected in series to the coil of galvanometer in the ohmmeter

17) Choose the correct answer :

An electric cell of e.m.f. 12 Volts has an internal resistance 2Ω connected in series to a resistors of 8Ω and a rheostat . when the slider was at the start of the rheostat, the current intensity passes through the circuit was 1.2 A. and when the slider is moved to the end of the rheostat a current of intensity 0.12 A. passes so that the resistance or the rheostat is _____

- 1) 80Ω 2) 90Ω 3) 100Ω

18) A dynamo's coil consists of 400 turns the area of each 25 cm^2 revolves in a uniform magnetic field of density 0.4 T to produce a maximum induced e.m.f. of 220 Volts.

Calculate the angular velocity of the coil and the frequency of the current produced from the coil

(بقية الأسئلة في الصفحة السادسة)

The third group questions from (19 - 27)**19) Answer (A) or (B):****(A) Choose the correct answer:**

In Coolidge tube, on increasing the potential difference applied on the filament

- 1) the intensity of the produced radiation increases
- 2) the wave length of the continuous radiation decreases
- 3) the wave length of the characteristic radiation decreases

(B) Choose the correct answer:

In Coolidge tube, on increasing the atomic number of the target material _____

- 1) the intensity of the produced radiation increases
- 2) the wave length of the characteristic radiation decreases
- 3) the wave length of the continuous radiation increases

20) Answer (A) or (B):**(A) Choose the correct answer :**

The magnetic dipole moment of a coil carrying current and revolves in a uniform magnetic field decreases on _____

- 1) decreasing the angle included between the coil and the magnetic field lines
- 2) increasing the intensity of the magnetic flux where the coil revolves
- 3) decreasing the current intensity passing in the coil

(B) Choose the correct answer:

The ratio between the resistance of the current divider in direct current ammeter to the total resistance of that ammeter is _____ one.

- 1) greater than
- 2) smaller than
- 3) equal to

(بقية الأسئلة في الصفحة السابعة)

21) Answer (A) or (B):**(A) What is meant by ?**

The effective value of the alternating current equals 5A.

(B) What is meant by ?

The efficiency of the electric transformer is 80%.

22) Give reason for :

The intensity of the current passes through the base in the transistor that is used as an amplifier is very small

23) Write one function to the spiral springs in the moving coil galvanometer.**24) Choose the correct answer:**

The photons that are produced due to the spontaneous emission and the photons that are produced due to the stimulated emission from the same energy level have the same _____

1) phase

2) direction

3) frequency

(بقية الأسئلة في الصفحة الثامنة)

25) Choose the correct answer:

A copper rod of length 80 cm moves with a velocity 15 m/s. in a uniform magnetic field of intensity 0.2 T so that the angle between the direction of motion and the magnetic field lines equals 30° , then the induced electric potential difference between the terminals of the rod equals _____

1) 1.5 Volt

2) 1.2 Volt

3) $1.2\sqrt{3}$ Volt**26) Choose the correct answer :**

A thick copper rod is connected in series to direct current source of electromotive force 24 Volts its internal resistance is $1\ \Omega$ and an ammeter, the reading of the ammeter was 0.24 A. when the rod is divided into 3 equal sections and connecting the terminals of these sections to the source of the current, so that the current passes in this case equals _____

1) 0.2A.

2) 2 A.

3) 0.24 A.

27) Choose the correct answer :

Two concentric rings carrying a current in opposite directions, so that the common center of the two rings represents a neutral point . if the ratio between the intensity of the current passes through the inner ring to the intensity of the current passes in the outer ring equals $1/3$, so that the ratio between the diameter of the outer ring to the diameter of the inner ring is _____

1) $1/3$ 2) $3/1$ 3) $1/1$

(بقية الأسئلة في الصفحة التاسعة)

Fourth group (28 -36)**28) Answer (A) or (B):****(A) what is meant by?**

The current gain in the transistor equals 80.

(B) what is meant by?

$$\alpha_e = 0.98.$$

29) Answer (A) or (B)**A) Explain:**

The increase in the temperature of the metallic core of spiral spring connected to alternating current source.

(B) Explain:

The discontinuity of revolving the coil of alternating current dynamo and do not acting as an electric motor on connecting it with a direct current source.

30) Answer (A) or (B):**(A) Choose the correct answer:**

If the self-induction coefficient of a coil equals 0.25 H., so that the rate of change in the intensity of the current passes through the coil and causes an electromotive force of 7.5 volts to be induced in the same coil is _____

1) 30 A/s.

2) 40 A/s.

3) 50 A/s.

(بقية الأسئلة في الصفحة العاشرة)

36) Two neighboring spiral coils one of them is connected in series to a direct current source, rheostat and a switch, the second coil is connected to a sensitive galvanometer, when the circuit of the first coil is switched on and taking it near to the second coil or inserting the first coil in the second one, it is observed that the pointer of the galvanometer deflects in a certain direction, **Explain the reason**

Fifth group (37 – 45)

37) Answer (A) or (B):

(A) Write down the measuring unit that equivalent to the Henry.

(B) Write down the measuring unit that equivalent to the unit Volt X Second.

38) Answer (A) or (B):

A) Choose the correct answer:

The coil of the electric motor continues rotation on reaching a position perpendicular to the magnetic field lines due to _____

- 1) the self-induction 2) the inertia 3) the torque

(B) Choose the correct answer:

Two wires carrying current in the same directions, the two wires hang freely parallel to each other, so that the type of the force between the two wires can be changed by changing _____

- 1) the intensity of the current in the two wires.
2) the direction of the current in one of the two wires.
3) the distance between the two wires.

(بقية الأسئلة في الصفحة الثانية عشر)

39) Answer (A) or (B):**(A) Give reason for :**

The efficiency of the transformer doesn't reach to 100%.

(B) What are the results based on?

Replacing the two slip rings connected to the coil of the dynamo by a hollow cylinder Split into two isolated halves.

40) define:

The population inversion.

41) If the dimensions of an object needed to be examined by electron microscope is 1nm. Calculate the velocity of the electron beam needed to that, knowing that: ($m_e = 9.1 \times 10^{-31} \text{Kg.}$, $h = 6.625 \times 10^{-34} \text{J.s}$)

(بقية الأسئلة في الصفحة الثالثة عشر)

42) Choose the correct answer:

The code $(10101)_2$ in the binary system corresponding to the digit _____ in decimal system.

1) 42

2) 21

3) 17

43) Choose the correct answer:

If the measured resistance that makes the pointer of the ohmmeter deflects to three quarter the scale equals 2000Ω , so that the internal resistance of the device is _____

1) 6000Ω 2) 4000Ω 3) 1500Ω **44) How can you explain?**

A straight wire moves in a uniform magnetic field but no electromotive force is induced in it

45) Step up ideal transformer its primary coil is connected to alternating current source of 200 volt, the transformer is used to operate a radio device of power 80 watt and a lamp of power 20 watt. Calculate the intensity of the current passing through the primary coil when the radio and the lamp work together.

(انتهت الأسئلة)