



RAN - 1803000201030091



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F. Y. B. Sc. (Sem. - I) Examination

March - 2023

Electronics : Paper - I

Basic Electrical Circuits

[Total Marks: 50

સૂચના : / Instructions

(1)

નીચે દર્શાવેલ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fill up strictly the details of signs on your answer book

Name of the Examination:

F. Y. B. Sc. (Sem. - I)

Name of the Subject :

Electronics : Paper - I Basic Electrical Circuits

Subject Code No.: **1803000201030091**

Seat No.:

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Student's Signature

- (2) Figure on right indicate full marks.
- (3) Non programmable Calculator is allowed.
- (4) All symbols and abbreviation have their usual meanings.
- (5) Assume Data if necessary.

***O.M.R. Sheet ભરવા અંગેની અગત્યની સૂચનાઓ આપેલ
O.M.R. Sheetની પાછળ છાપેલ છે.***

***Important instructions to fillup O.M.R. Sheet
are given on back side of the provided O.M.R. Sheet.***

Section - I

Each question carries 1 marks

(20)

Q. 1. According to Norton's theorem, any network with two open terminals can be replaced by - _____ source in _____ with a single Resistance R_N .

- a) Current, parallel
- b) Current, series
- c) Voltage, series
- d) Voltage, parallel

Q. 2. Potentiometer is _____ terminal component and used to change.

- a) 3, Voltage
- b) 4, Current
- c) 2, Current
- d) 2, Voltage

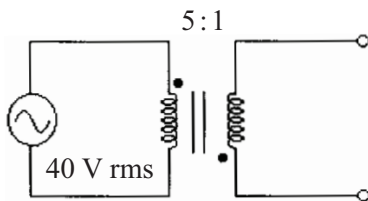
Q. 3. A Capacitor stores 0.20 μ Coulomb of charge at 5 Volts. Its Capacitance is

- a) 0.04 F
- b) 0.4 μ F
- c) 0.04 μ F
- d) 4 μ F

Q. 4. A voltage is induced in a transformer secondary winding by the action of the:

- a) Secondary magnetic field
- b) Primary turns ratio
- c) Primary magnetic field
- d) Secondary counter emf

Q. 5. What is the secondary voltage in the given circuit?



- a) 8 v rms out of phase
- b) 200 v out of phase
- c) 200 v in phase
- d) 8 v rms in phase

Q. 6. The Energy band of Valance band and Conduction band in Conductor, semiconductor and Insulator is _____ respectively.

- a) Little apart, Overlap, Far apart
- b) Far apart, Overlap, Little apart
- c) Overlap, Little apart, Far apart
- d) Little apart, Far apart, Overlap

- Q. 14.** For $P = V^2/R$, a increase in resistance should produce.
- a) A decrease in power b) An increase in power
c) An increase in Voltage d) A decrease in current
- Q. 15.** When a 1 μF capacitor is connected to a 2 kHz source, what is its capacitive reactance?
- a) 0.796 Ω b) 796.10 Ω
c) 79.61 Ω d) 7.96 Ω
- Q. 16.** To make a N-type Extrinsic semiconductor _____ impurities are dopped.
- a) Trivalent b) Tetravalent
c) Pentavalent d) None
- Q. 17.** As a capacitor is being charged, current flowing into the capacitor will _____ and voltage will _____.
- a) Increase, increase b) Decrease, decrease
c) Increase, decrease d) Decrease, increase
- Q. 18.** A color code of orange, orange, orange, silver is for what Ohmic value and Tolerance?
- a) 33K Ω , +/- 5% b) 33K Ω , +/- 10%
c) 22K Ω , +/- 10% d) 22K Ω , +/- 5%
- Q. 19.** The value of which component depends on Dielectric material, Spacing between the plates and area of plates overlapping.
- a) Capacitor b) Resistor
c) Inductor d) Transformer
- Q. 20.** With Ohm's law:
- a) Resistance is directly α to voltage
b) Current is directly α to resistance
c) Voltage is indirectly α to power
d) Current is inversely α to resistance

Section - II

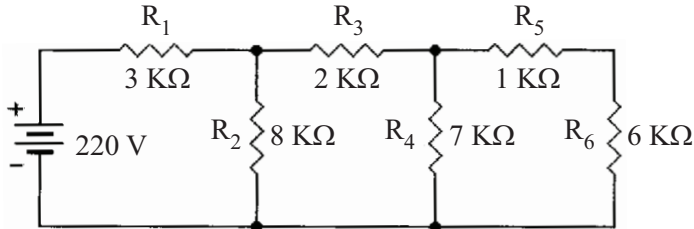
Each question carries 2 marks

- Q. 21.** Semiconductor are _____ and _____ and have _____ valence electron:-
- a) Copper, Iron, Five b) Germanium, Silicon, Four
c) Silicon, Germanium, Five d) Iron, Copper, Four
- Q. 22.** Movement of holes is due to
- a) Movement of Conduction band electron
b) Movement of holes in conduction band
c) Movement of valance band electron
d) None
- Q. 23.** What is the equivalent resistance if 4 resistances of $1k \Omega$ each are connected in parallel.
- a) 250Ω b) $4k \Omega$
c) $2k \Omega$ d) $1k \Omega$
- Q. 24.** The resistance of wire
- a) Proportional to length of wire b) $1/\alpha$ area of Cross section
c) Depends on resistivity d) ALL
- Q. 25.** If in a circuit $R_1 = 40 \Omega$, $R_2 = 60 \Omega$ and $R_3 = 100 \Omega$ and are connected in series with current $I = 0.5 \text{ A}$ then the value of $E = ?\text{V}$.
- a) 198 V b) 100 V
c) -200 V d) 200 V
- Q. 26.** What is the total inductance if 10 mH and 100 mH is connected in Parallel
- a) 99 mH b) 0.99 mH
c) 110 mH d) 9.09 mH

Q. 27. How many amperes used by 60 watt, 120 V light bulb?

- a) 500 mA
- b) 0.5 mA
- c) 200 mA
- d) 2 mA

Q. 28. What is the power dissipated by R2, R4, and R6?



- a) 1640mW, 758.57mW, 650.20mW
- b) 1640kW, 758.57kW, 650.20kW
- c) 1.640mW, 7.5857mW, 6.5020mW
- d) 16.40mW, 75.857mW, 65.020mW

Q. 29. With 42 voltage applied, If R1 is 10 Ω, R2 = 70 Ω and R3 = 30Ω, What is current of R2, If R1 is in series connected with parallel connection of R2 and R3.

- a) 406.45 mA
- b) 800 mA
- c) 600 mA
- d) 4.06mA

Q. 30. What are the values of resistors with colour codes: Brown, Black, Red and Brown, Black, Orange

- a) 1 K Ω, 10 K Ω
- b) 1 K Ω, 20 K Ω
- c) 10 K Ω, 1 K Ω
- d) 100 Ω, 10 Ω

Q. 31. In a series circuit with E = 40 V, R1 = 8Ω and the voltage drop across R2 is 15V. Find the Voltage drop across R1 and the resistance value of R2.

- a) 25 V, 4.8 Ω
- b) 10.5 V, 2.4 Ω
- c) 12.5 V, 2.4 Ω
- d) 11.5 V, 2.4 Ω

Q. 32. Which one of them is not active component?

- a) Diode
- b) Transistor
- c) Capacitor
- d) Zener Diode

Q. 33. The electric energy consumed by Capacitor is stored in the form of a

- a) Magnetic field
- b) Force field
- c) Electromagnetic field
- d) electric field

Q. 34. The parallel connection of three resistor R1, R2 and R3 is given by

- a) $\frac{1}{R_T} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}$
- b) $R_T = R_1 + R_2 + R_3$
- c) $R_T = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}$
- d) None of the above

Q. 35. The Transformer rating is

- a) KW
- b) KVA
- c) KIA
- d) KWHA

SPACE FOR ROUGH WORK