Roll no._____ **ID: 220914**

Semester: 1st

Branch: Electrical Engg.

Subject Name: Principles of Electrical Engineering

Time Allowed: 3 Hrs. **MM: 60**

Section –A

Note: Multiple Choice questions. All questions are compulsory. 6x1=6

Q.1 Electric energy is measured in: (CO1)
(a) Weber (b) Watt
(c) kWh (d) Ampere

Q.2 In a closed dc circuit the electric current is directly proportional to _____. (CO1)
(a) Voltage (b) Resistance
(c) Resistivity (d) Length of Wire

Q.3 _____ in magnetic circuit is equivalent to emf in electric circuit. (CO3)
(a) Flux (b) Reluctance
(c) mmf (d) Magnetic Field

Q.4 When a metal is heated, its resistance: (CO2)
(a) increases (b) decreases
(c) remains constant (d) None of the above

Q.5 A battery is used to convert _____ energy in electricity. (CO5)
(a) Mechanical (b) Chemical
(c) Thermal (d) None of the above

Q.6 _____ is used to make positive plate of a lead-acid battery. (CO5)
(a) H_2SO_4 (b) Pb
(c) PbO_2 (d) $CaSO_4$

Section-B

Note: Objective/Completion type questions. All questions are compulsory. 6x1=6

Q.7 Define electrical power? (CO1)

Q.8 Expand emf? (CO1)

Q.9 Define secondary cell? (CO5)

Q.10 Lenz's law states that an induced electric current flows in a direction such that the current opposes the change that induced it?(True/False) (CO3)

Q.11 Internal resistance of ideal current source is zero.(True/False) (CO2)

Q.12 The mathematical expression for equivalent resistance R_{eq} of two resistances R_1 and R_1 connected in series is given by $1/ R_{eq}= 1/ R_1+1/ R_1$.(True/False) (CO2)

Section –C

Note: Short answer type Questions. Attempt any eight questions out of ten questions. 8x4= 32

Q.13 What is Ohm's law? Explain with suitable diagram and mathematical expression? (CO2)

Q.14 Define resistance? State and derive equation for two resistances connected in series? (CO1)

Q.15 State and explain KCL and KVL with suitable diagram? (CO2)

Q.16 Derive an expression for the force between two parallel conductors carrying currents? (CO3)

Q.17 List various similarities and dissimilarities between electric and magnetic circuit? (CO3)

Q.18 Define: Permeability and solenoid. (CO4)

Q.19 Write a note on Coulomb's Law? (CO3)

Q.20 Differentiate betweenhard and soft magnetic materials? (CO3)

Q.21 Explain self and mutual inductance with mathematical expression with suitable diagram? (CO4)

Q.22 Compare grouping of cells in Series, Parallel and Series-Parallel arrangement? (CO5)

Section-D

Note: Long answer questions. Attempt any two questions out of three questions.

2x8=16

Q.23 Discuss important parts of lead acid battery with suitable diagram? Give function of each part? (CO5)

Q.24 List and explain various quantities associated with magnetic circuit with suitable diagram? (CO4)

Q.25 Derive mathematical expression for star to delta and delta to star conversion of a resistor network? (CO1)