Total No. of Questions : 4]

SEAT No. :

PF4

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APR-26/FE/Insem-4
F.E. (All Branches) (Insem)
BASIC ELECTRICAL ENGINEERING
(2019 Pattern) (Semester-II) (103004) (Credit System)

Time : 1 Hour] *[Max. Marks : 30*

Instructions to the candidates:

1) ***Answer Q.1 or Q.2 and Q.3 or Q.4.***
2) ***Figures to the right indicate full marks.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Assume suitable additional data, if necessary.***
5) ***Use of non-programmble calculator is allowed.***

Q1) a) Compare magnetic & electric circuit for similar & dis similar points. **[7]**

b) A coil of N turns is uniformly wound on a cast iron ring having mean length of 50 cm and area of cross section 12.56 cm^2. A current of 2 A in the coil, produces flux of 6 mWb in the air gap of 2 mm length. The relative Permeability of the iron is 1000. Calculate: **[8]**

i) Reluctance of iron path

ii) Reluctance of air gap and

iii) The number of turns N.

OR

Q2) a) State and explain Faradays laws of Electromagnetic induction. **[7]**

b) Define the following terms. **[8]**

Magnetic flux density, permeability, relative permeability, reluctance, mmf, self & mutual inductance and coefficient of coupling.

Q3) a) Define the average value and obtain the expression for average value of sinusoidally varying alternating current in terms of its peak value. **[7]**

b) Three capacitors of 2 μF, 3 μF and 6 μF respectively are connected in series across a 500 V d.c. supply. Calculate: **[8]**

i) Total capacitance

ii) The charge on each capacitor

iii) The p.d. across each capacitor; and

iv) The energy stored in the 6 μF capacitor.

OR

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Q4) a) Derive an expression for Energy stored in Capacitor. **[7]**

b) A sinusoidally varying alternating voltage of 100V with 50 Hz frequency is applied to a circuit. find: **[8]**

i) The mathematical equation of the voltage

ii) Time Period

iii) The instantaneous voltage when t = 0.3 ms

iv) The time taken by voltage to reach 85V

v) Average value of the voltage

vi) Maximum value of the voltage.

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