Total No. of Questions – [4] Total No. of Printed Pages: 2

G.R. No.	

Paper Code - U127-104B (T2)

MARCH 2018 / IN - SEM (T2)

F. Y. B.TECH. (COMMON) (SEMESTER - II)

COURSE NAME : BASIC ELECTRICAL ENGINEERING

(2017 PATTERN)

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

(*) Instructions to candidates:

1) **Answer Q.1 OR Q.2, Q.3 OR Q.4**
2) **Figures to the right indicate full marks.**
3) **Use of scientific calculator is allowed**
4) **Use suitable data where ever required**

Q 1) a) Three equal star-connected inductors take 8 kW at a power factor 0.8 when connected across a 460 V, 3-phase, 3-wire supply. Find the R_{ph} and X_{Lph} of the load. [6]

b) Draw a neat connection and phasor diagram for a three phase balanced delta connected resistive load of resistance R in each phase across a symmetrical three phase a.c. supply. Mark the line currents, line voltages, phase voltages and phase currents on the connection as well as phasor diagram. [6]

c) Define balanced load and unbalanced load. [4]

OR

Q2) a) The input power to a three-phase load was measured by two wattmeter method. The readings of W1 and W2 were 10.4 kW and – 3.4 kW respectively and the line voltage was 400 V. Calculate (i) the power factor (ii) total active power (iii) the line current. [6]

b) Derive with the help of a neat phasor diagram an expression showing the relationship between line voltage and phase voltage for a three phase balanced star connected load which has a lagging power factor and connected across a symmetrical three phase a.c. supply. [6]

c) For three phase balanced load state the equations along with unit for three phase real power, three phase reactive power and three phase apparent power. Draw power triangle for lagging power factor. [4]

Q3) a) A 100 KVA single phase transformer has iron losses of 1.5 KW and full load copper losses of 1 KW. Calculate: i) Efficiency at full load, unity p.f. ii) Efficiency at half load 0.8 p.f. lag. [6]

b) Differentiate core type and shell type transformer. [4]

c) Draw diagram and state applications of current transformer and potential transformer. [4]

OR

Q4) a) A 100KVA, 3300 V/200 V, 50Hz, single phase transformer has 80 turns on secondary calculate i) No of turns on primary ii) primary full load current iii) secondary full load current iv) maximum value of flux [6]

b) For a single phase transformer, Define and state formula: i) Voltage Regulation ii) Efficiency of transformer [4]

c) State: i) types of losses occurring in the transformer ii) their location, iii) whether constant or variable loss iv) how to minimize it [4]