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Total No. of Printed Pages - 2

G.R. No.	
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SEPTEMBER 2017 / IN - SEM (T1)

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

COURSE NAME : BASIC ELECTRICAL ENGINEERING

(2017 PATTERN)

Solution and scheme of marking

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.

Q 1) a) $V_{Th} = 4.8V$	02M
$R_{eq} = 1.2\Omega$	02M
Thevenin's Equivalent Network	01M
$I_L = 0.428A$	01M
b) delta to star formulas	02M
derivation correct steps	01M
final three correct formulas	03M

- c) Linear network - Definition 01M, Example - 01M
 Non-linear network - Definition 01M, Example - 01M

OR

Q2) a) KCL- statement 01M,	Explanation with simple circuit	02M
KVL- statement 01M,	Explanation with simple circuit	02M
b) $I_{6V} = 1A$ (downward)		02M
$4 \parallel 1 = 4/5 = 0.8\Omega$	$4 + 0.8 = 4.8\Omega$	$24/4.8 = 5A$ (Upward)
$I_{4\Omega} = 5 - 1 = 4A$ (Upward)		02M

c) Unilateral network - Definition 01M, Example - 01M
 Bilateral network - Definition 01M, Example - 01M

Q3) a) $X_L = 62.83 \Omega$, $Z = 63.62 \Omega$ 02M
 $I = 3.46A$ 01M
 $\Phi = 80.96^\circ$ 01M
 p.f. = 0.16 lagging 01M
 $P = 121.79 W$ 01M

b) Circuit diagram 01M
 Derivation 02M
 Phasor diagram 01M

c) Impedance triangle 01M
 $Z = R + j X_L \Omega$ 01M
 $\Phi = \tan^{-1}(X_L / R)$ Positive 01M
 Nature of p.f. - lagging 01M

OR

Q4) a) $X_C = 63.66 \Omega$ 01M
 Impedance, $Z = 8 - j63.66 \Omega = 64.16 \angle -82.84^\circ$ 01M
 Current = 3.12 A 02M
 $V_R = 24.96$ 01M
 $V_C = 198.62$ 01M

b) Active Power - Definition 01M, Formula and Unit - 01M
 Reactive Power - Definition 01M, Formula and Unit - 01M

c) Circuit diagram 02M
 Phasor diagram 02M