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B.Tech I Year (R13) Supplementary Examinations December 2017 BASIC ELECTRICAL & ELECTRONICS ENGINEERING

(Common to CSE and IT)

Time: 3 hours

Max. Marks: 70

Answer all the questions (Use single answer booklet only)

 $\frac{PART - A}{UNIT - I}$

1 Find the equivalent resistance between the terminals AB using Delta-Star transformation for the circuit shown below:



2 Determine root mean square value, average value, peak factor and form factor for the following waveform.



3 Find the current I through 2Ω resistance using superposition theorem for the circuit shown below:



4 A two part network has the following z – parameters. Find the h – parameters and transmission parameters: $Z_{11} = 1\Omega$; $Z_{12} = Z_{21} = -02\Omega$; $Z_{22} = 0.6\Omega$.

5 Explain in detail the principle of operation and characteristics of DC motors.

6 With a neat diagram, explain the construction of 3 – phase induction motor.

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<u> PART – B</u>

UNIT – I

7 Explain the operation of forward bias and reverse bias PN junction Diode.

OR

8 Explain the operation of π section filter with bridge rectifier and also derive an expression for its stability factor.

UNIT – II

9 Draw and explain the input and output characteristics of a transistor in CC configuration.

OR

10 Describe the kind of operation that takes place in the enhancement mode MOSFET. How does this differ from depletion mode type?

UNIT – III

11 Explain the working of Colpitts oscillator and derive an expression for frequency of oscillation for Colpitts oscillator.

OR

12 Give the characteristics of an ideal Op-Amp.

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