

1E2005

Roll No. _____

Total No of Pages: **3**

1E2005

B. Tech. I Sem. (Back) Exam., Dec. - 2017
105 (O) Basic Electrical and Electronics Engineering

Time: 3 Hours

Maximum Marks: 80
Min. Passing Marks: 26

Instructions to Candidates:

Attempt any five questions, selecting one question from each unit. All questions carry equal marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly.

Units of quantities used/calculated must be stated clearly.

*Use of following supporting material is permitted during examination.
(Mentioned in form No. 205)*

1. NIL

2. NIL

UNIT-I

Q.1 (a) State and explain Norton's theorem. Illustrate the application of this theorem with reference to an appropriate electric circuit. [8]

(b) Using Norton's theorem determine the current in 12-ohm resistor in the network shown in figure - (1) [8]

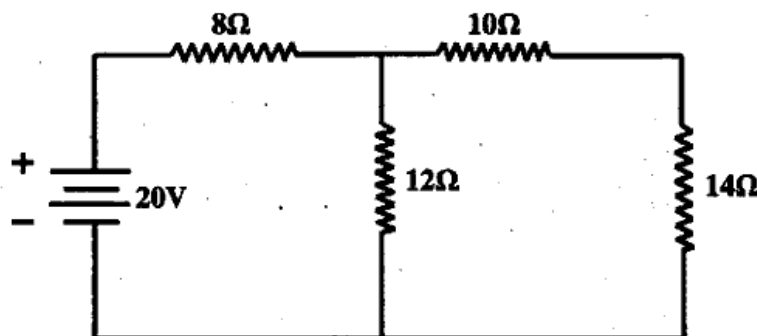


Figure - 1

OR

- Q.1 (a) State and explain Thevenin's theorem. Illustrate the application of this theorem, with reference to an appropriate electric circuit. [8]
- (b) Calculate current in 2-ohm resistor in the network shown in figure – (2). [8]

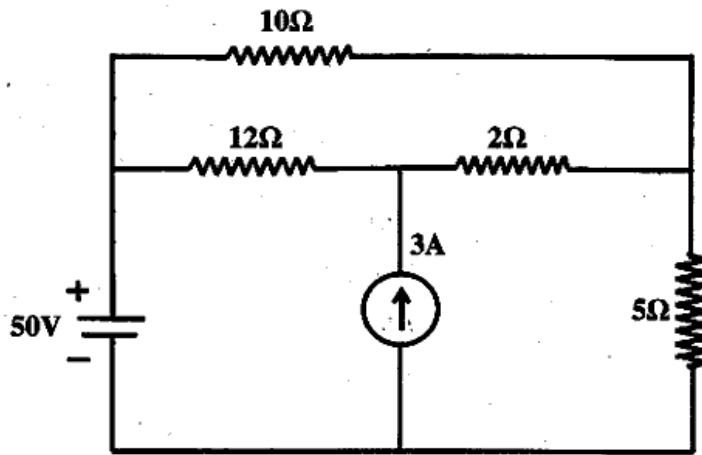


Figure – 2

UNIT-II

- Q.2 (a) State and explain Form Factor and Peak Factor with required formulas. [8]
- (b) A supply voltage of 230V, 50Hz is fed to a residential building. Write down its equation for instantaneous value. <http://www.rtuonline.com> [8]

OR

- Q.2 (a) What do you mean by Peak, average & R.M.S. values of sinusoidal current. [8]
- (b) Find the average value of the Periodic function shown in figure – (3). [8]

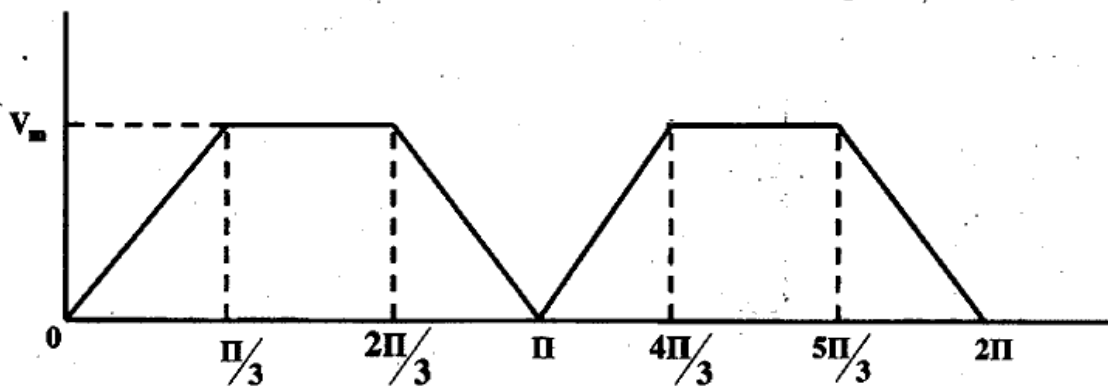


Figure-2

UNIT-III

- Q.3 (a) Explain the principle of D.C. machines and construction of D.C. machines. [8]
(b) A 8 Pole DC machine has a wave winding containing 600 conductors. Calculate the generated emf. when flux per pole is 0.08 wb and speed is 215 rpm. If the flux per pole is mode 0.05 wb. At what speed should the armature be driven to generate 500V. [8]

OR

- Q.3 (a) Explain the principle and working of 3-Phase induction motor and explain type of 3-Phase induction motor. [8]
(b) Describe the principle of operation of 3-Phase synchronous generator. [8]

UNIT-IV

- Q.4 (a) Realize the Ex-OR and Ex-NoR gates by using only NAND gates and only NoR gates. [8]
(b) Discuss the behavior of P-n junction both when Forward bias and Reverse bias. Give suitable diagram wherever necessary. [8]

OR

- Q.4 (a) Sketch and explain the input and output characteristics curve for common collector configuration. <http://www.rtuonline.com> [8]
(b) Explain how Temperature effects the Properties of a semiconductor. [8]

UNIT-V

- Q.5 (a) What is the need of modulation? Compare the different types of modulation technique. [8]
(b) Explain Load cell and bimetallic strip. [8]

OR

- Q.5 (a) Explain in detail the classification of ICS. [8]
(b) Write a short note on - [8]
(i) STRAIN GAUGES
(ii) RTD