

S.Y.B.SC. SEM – IV (2014 COURSE) : WINTER - 2017

SUBJECT : PHYSICS : ELECTRONICS (P – 42)

Day : Saturday  
Date : 28/10/2017

Time : 03.00 PM TO 05.00 PM  
Max. Marks : 40

W-2017-0630

N. B. :

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Use of scientific calculator is **ALLOWED**.
- 4) Draw neat and labelled diagrams **WHEREVER** necessary.

Q. 1 Answer ANY TWO of the following: (10)

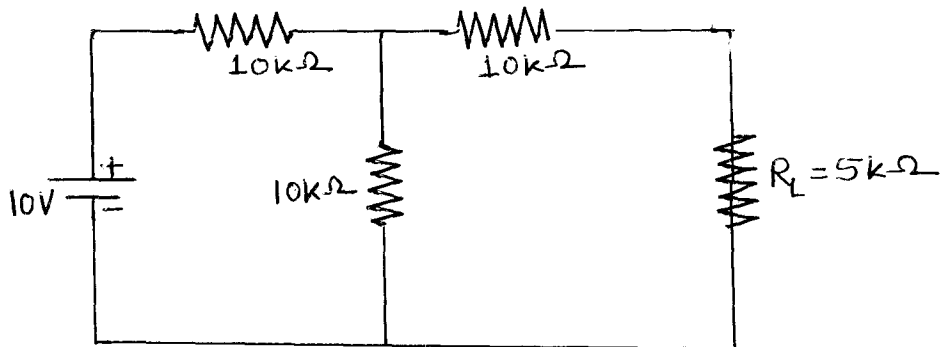
- a) Explain the working of SMPS with necessary diagram.
- b) Explain the output characteristics for transistor as an amplifier in CE-mode.
- c) State and explain Barkhausen criteria for sustained oscillations.

Q. 2 Answer ANY TWO of the following: (10)

- a) Explain the working of RS-Flip Flop with the help of NAND gates. Also give the truth table for it.
- b) With the help of neat diagram explain the working of npn transistor.
- c) Statements for the following:
  - i) Norton's theorem
  - ii) Superposition theorem

Q. 3 Answer ANY TWO of the following: (10)

- a) Subtract the following using 2's complement.
  - i) Subtract  $(14)_{10}$  from  $(46)_{10}$
  - ii)  $(101)_2$  from  $(111)_2$
- b) Explain the working principle of UJT with necessary diagram.
- c) Thevenise the following circuit and also find  $I_L$ .



Q. 4 Answer ANY FIVE of the following: (10)

- a) Define  $\alpha$  and  $\beta$  for BJT.
- b) What is feedback? State its types.
- c) Define the following terms for rectifier:
  - i) Load regulation
  - ii) Ripple factor

P. T. O.

- d)** What is ERPS? Where is it used?
- e)** Define multivibrator. State its types.
- f)** Perform the following conversions:
  - i)**  $(76)_{10} = (?)_2$
  - ii)**  $(16)_{16} = (?)_2$
- g)** State any two Boolean laws.

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