

S.Y.B.SC. SEM – IV (2014 COURSE) : SUMMER - 2018

SUBJECT : PHYSICS : ELECTRONICS (P – 42)

Day : Tuesday
Date : 17/04/2018

S-2018-0722

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

N. B. :

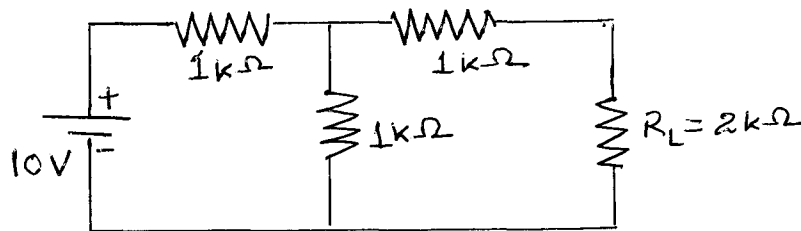
- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Use of scientific calculator is **ALLOWED**.
- 4) Draw neat and labelled diagrams **WHEREVER** necessary.

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

- a) With the help of neat diagram explain the output characteristic curve for transistor as an amplifier in CE mode.
- b) Draw well labeled block diagram of SMPS. Explain the function of each block.
 - i) What is feedback? State its types.
 - ii) State the conditions required for sustained oscillations.

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

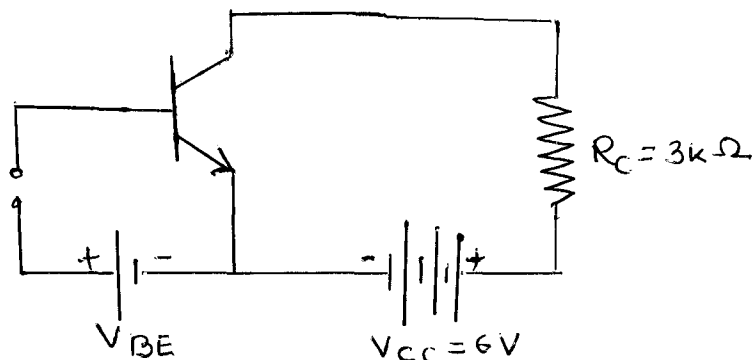
- a) Explain the working principle of UJT with necessary diagram.
- b) Draw Thevenin's equivalent circuit for the circuit given below. Also find I_L .



- c) Explain the RS-FF using NAND gates. Also draw truth table for it.

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

- a) Explain the working of NPN transistor with necessary diagram.
- b) State and prove De-Morgan's theorems.
- c) In the following circuit diagram if $V_{cc} = 6V$ and $R_c = 3\text{k}\Omega$, draw the dc load line. What will be the co-ordinates of Q-Point if zero signal base current is $20\mu A$ and $\beta = 50$?



P. T. O.

Q. 4 Answer **ANY FIVE** of the following:

(10)

- a) Subtract the following using 2's complement : 16 from 46.
- b) Define α and β for transistor.
- c) Define multivibrator. State its types.
- d) Give full form of ERPS. Where is it used?
- e) Perform the following conversions:
 - i) $(145)_{10} = (?)_2$
 - ii) $(4A)_{16} = (?)_2$
- f) Define the following terms for rectifier :
 - i) Efficiency
 - ii) Ripple factor
- g) Draw logic symbols for two universal gates.

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