

Day : Saturday
Date : 21/04/2018

S-2018-0667

Time : 11.00 A.M. TO 02.00 PM
Max. Marks : 60

N. B. :

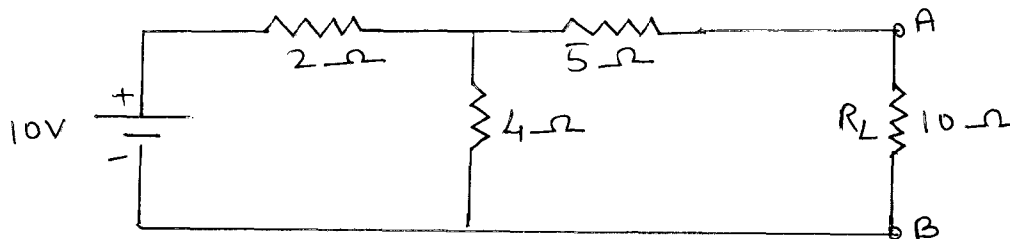
- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Use of **SCIENTIFIC** calculator is allowed.

Q.1 Answer **ANY TWO** of the following: (12)

- a) Explain the output characteristic of transistor in CE – mode with necessary diagram.
- b) With neat block diagram explain the working of SMPS.
- c) Explain the working of UJT as relaxation oscillator with necessary diagram.

Q.2 Answer **ANY TWO** of the following: (12)

- a) With necessary diagram explain the action of transistor as a switch.
- b) i) Give the statement for Thevenin's theorem.
ii) Thevenize the following circuit and also find I_L .



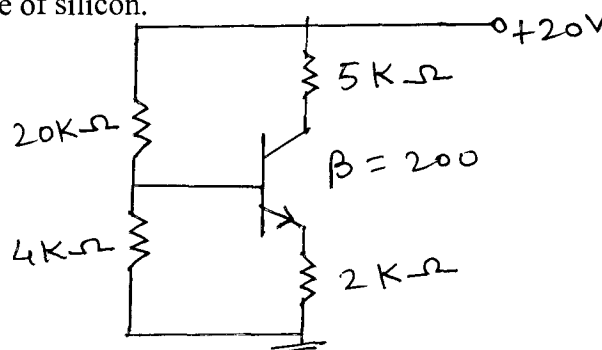
- c) Explain RS flip-flop using NAND gates with truth table.

Q.3 Answer **ANY TWO** of the following: (12)

- a) Draw circuit symbols and write truth tables for the following gates: AND, OR, NAND, NOR, NOT, EXOR.
- b) With necessary diagram explain the working principle of UJT.
- c) Explain the working of npn transistor with necessary diagram.

Q.4 Answer **ANY THREE** of the following: (12)

- a) Draw the d.c. load line for the following circuit and locate the Q-point. Assume the transistor to be of silicon.



- b) Perform $(11010)_2 - (1100)_2$ using rules of binary subtraction and 2's complement method.
- c) Explain the types of multivibrators in brief.
- d) Give the statements for the following:
 - i) Maximum power transfer theorem
 - ii) Superposition theorem

Q.5 Answer **ANY FOUR** of the following: (12)

- a) State and prove De -Morgan's first theorem.
- b) Perform the following conversions i) $(48)_{16} = (?)_8$ ii) $(523)_8 = (?)_{16}$
- c) Draw well – labeled block diagram of regulated power supply.
- d) What is feedback? Explain its types.
- e) Give the Barkhausen criterion for sustained oscillations.
- f) Define α and β for transistor. Obtain relationship between them.