S.Y.B.SC. SEM – IV (CBCS - 2016 Course) : WINTER - 2018

SUBJECT : PHYSICS : ELECTRONICS

Day : Friday
Date : 19/10/2018

W-2018-0728

Time : 03.00 P.M. To 06.00 P.M
Max. Marks : 60

N. B. :

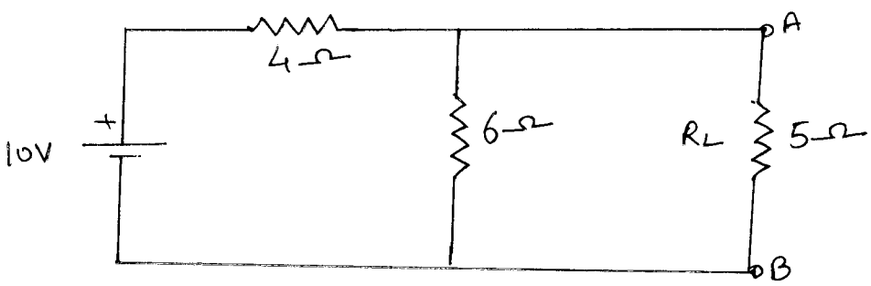
1) All questions are **COMPULSORY**.
2) Figures to the right indicate **FULL** marks.
3) Use of **SCIENTIFIC** calculator is allowed.

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

a) With necessary diagram explain the output characteristic of transistor in CE – mode.
b) State and explain De-Morgan's first and second theorem.
c) Explain the construction and working principle of UJT.

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

a) What is a flip-flop? Explain the working of RS-flip-flop with NAND gates and truth table.
b) Explain the potential divider bias method for transistors.
c) **i)** Give statement for Nortan's theorem. **ii)** Nortanize the following circuit.



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

a) Explain the following gates with respect to symbol and truth table:
i) EXOR **ii)** NOR **iii)** AND
b) With neat diagram explain the action of full wave rectifier.
c) Explain the block diagram of amplifier with feedback.

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

a) Convert the following:
i) $(11011110{:}101)_2 = (?)_{10}$ **ii)** $(3A9E.\,BOD)_{16} = (?)_2$
b) Explain the types of multivibrator.
c) Draw block diagram of SMPS and explain the function of each block.
d) Explain the input characteristic of transistor in CB mode.

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

a) Draw neat diagrams for the transistor in CB and CE configuration.
b) For a certain transistor in CE configuration, $\alpha = 0.98$. If $I_E = 25$ mA, determine I_B and I_C
c) **i)** Add using 2's complement -75 to +26
ii) Using 2's complement, subtract 101 from 111.
d) Explain the concept of ERPS.
e) State any three Boolean laws.
f) Explain the three pin regulator IC7805

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