ST.JOSEPH'S COLLEGE (AUTONOMOUS), BANGALORE-27
B.Sc. ELECTRONICS – I SEMESTER
SEMESTER EXAMINATION- OCTOBER 2019
EL 118- BASIC ELECTRONICS

Time: 2 ½ hrs   **Maximum marks: 70**

This question paper has **THREE** printed pages and **THREE** parts.

PART – A

ANSWER ANY FIVE OF THE FOLLOWING   **5X8=40 Marks**

1. a) Obtain an expression for the growth of current in a circuit containing an inductance and resistance and also define its time constant.
    b) Draw the phase angle diagram for series RC network.   (6+2)

2. a) State maximum power transfer theorem and derive its efficiency.
    b) State and explain voltage divider rule.   (6+2)

3. a) Write the procedure for Nortonizing a network.
    b) Explain the working of PN junction diode.   (4+4)

4. a) Explain the working of center tap full wave rectifier. Draw input and output waveforms.
    b) Explain V-I characteristics of zener diode.   (4+4)

5. a) Explain the construction and working of PNP transistor.
    b) Draw input and output characteristics of transistor in CB mode.   (5+3)

6. a) Explain the working of fixed bias circuit with emitter resistor and derive the expression for I_c.
    b) Explain the construction and working of n-channel JFET.   (4+4)

7. a) Derive the voltage gain expression of CE amplifier using r_e' model.
   b) Explain FET common source amplifier circuit and its frequency response.   (4+4)

## PART – B

ANSWER ANY FIVE OF THE FOLLOWING   **5x4=20 Marks**

8. A voltage v = 100sin314t is applied to a circuit consisting of a 25Ω resistor and an 80μF capacitor in series. Write down an expression for the value of the current flowing at any instant. Also calculate the power consumed by the circuit.

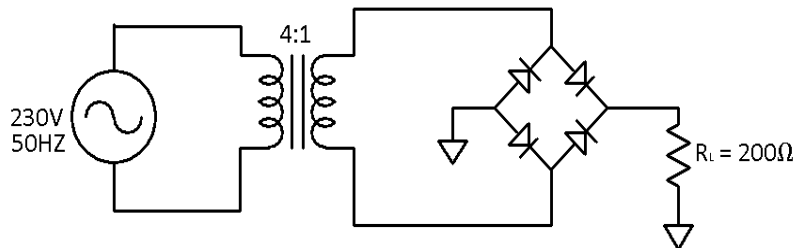9. Determine a) Thevenin's equivalent circuit b) current through resistance R_L if its value is 250Ω.
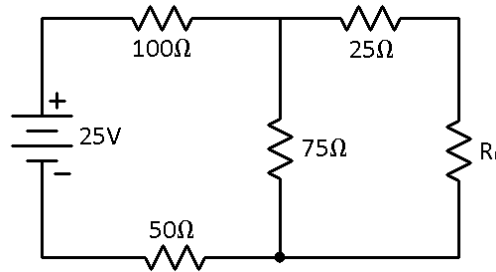
10. Find the branch currents of the given network by mesh analysis
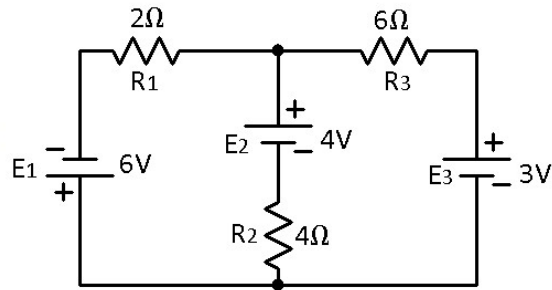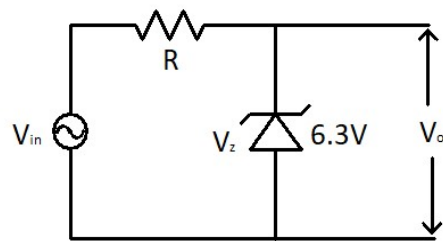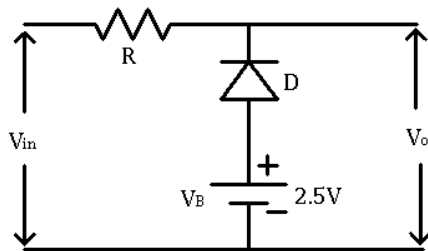

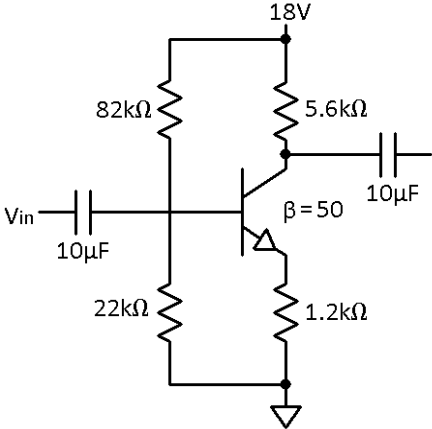11. Determine the following for the given network.
    a) d.c output voltage b) rms output voltage c) output frequency   d) ripple factor.
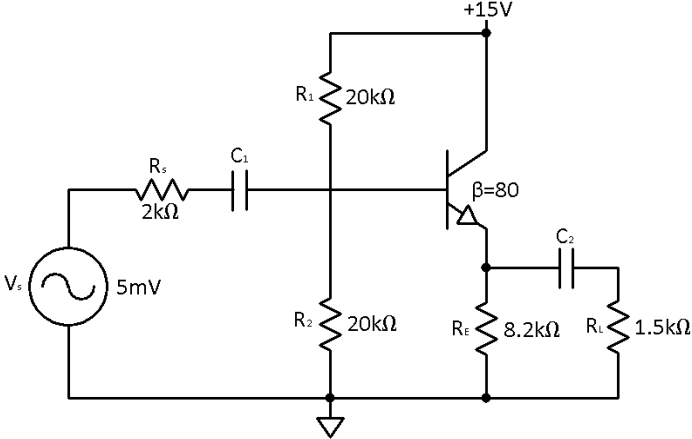

12. Draw the output wave forms for the given circuits.

13. Determine Q point for given circuit.

14. Determine the value of input resistance for the given circuit.

PART – C

ANSWER ANY FIVE OF THE FOLLOWING   **5x2=10 Marks**

15. Determine the resistance value for the given color code.

    Green Blue Gold Silver

16. Draw the impedance curve for R, L and C with respect to a.c. frequency.

17. Why π section filters are not preferred in rectifiers.

18. Draw a seven segment display to show 3.

19. Why heat sinks are used in a transistor?

20. Which MOSFETs are called as Normally ON and Normally OFF.

21. CMOS need to be handled carefully, why?

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