BACHELOR OF ENGINEERING IN COMPUTER SCIENCE AND ENGINEERING EXAMINATION, 2019

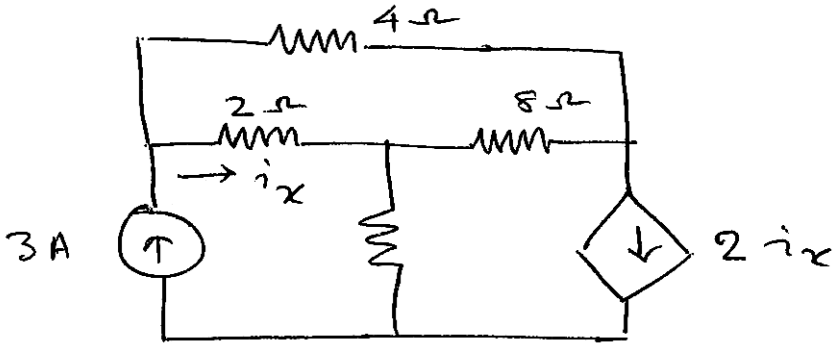
(1st Year, 1st Semester, Old)

CIRCUIT THEORY

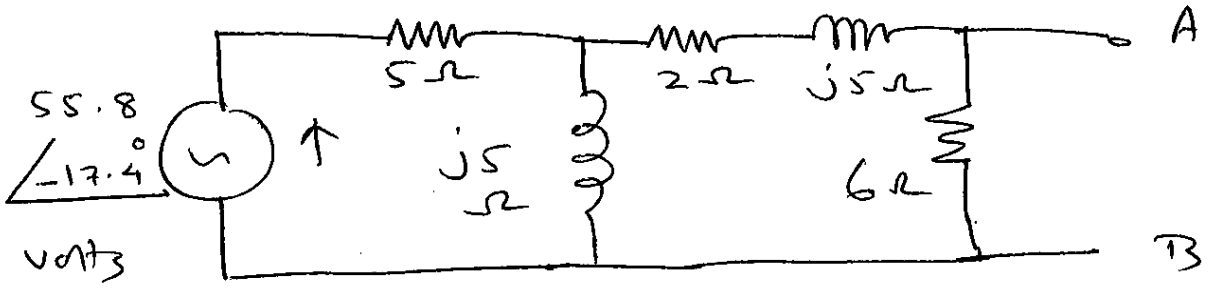
Time : Three hours | Full Marks : 100

Answer ***any five*** questions.

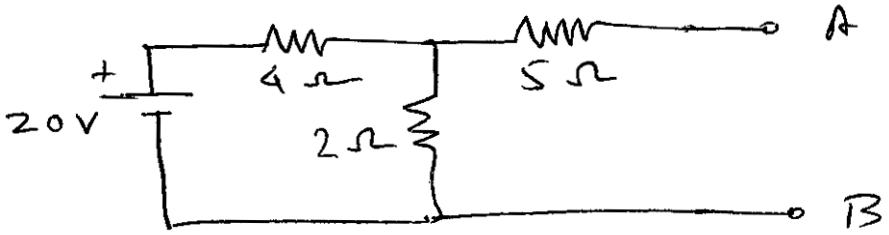
1. a) Determine the voltages at all the nodes in the given circuit. 10



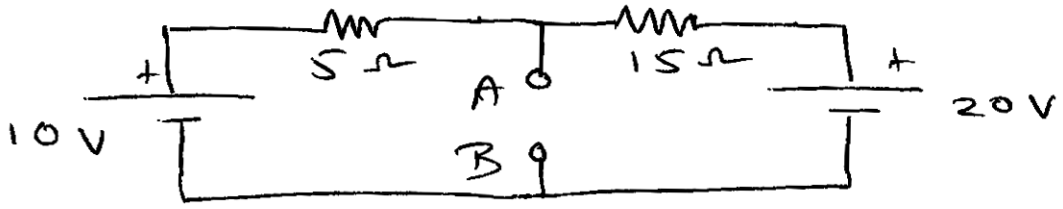
b) Find the Thevenin equivalent of the circuit across AB. 10



2. a) Find the Norton's equivalent circuit across AB 10



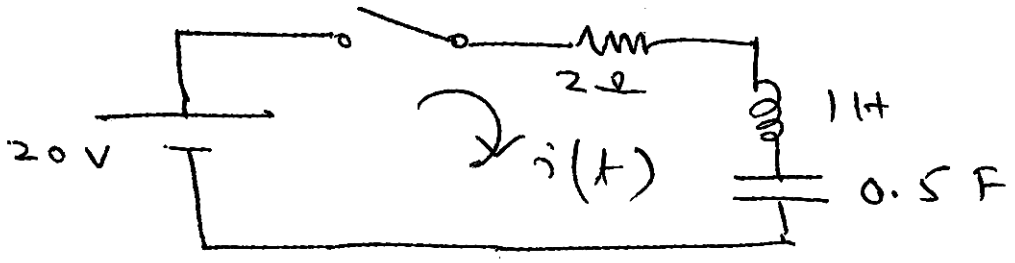
b) In the given circuit, 2 resistors R_1=1 Ω and R_2=5 Ω are connected, in turn to AB. Determine the power delivered to each resistor. 10



3. a) Draw the practical curves for (i) Low Pass Filter (ii) High pass filter and (iii) Band pass filter. Mark the Conner frequencies on the graph with 3-dB points. 10

   b) Select a Suitable value of R for an RC filter circuit such that it will filter out any noise above 20Hz and pass the electric signals at about 10Hz. For an input voltage of 1V, find the out put voltages at 10 Hz and 20 Hz. 10

4. a) Find i(t) by Laplace Tranoform if the switch is closed at t = 0 capacitor is uncharged. 10

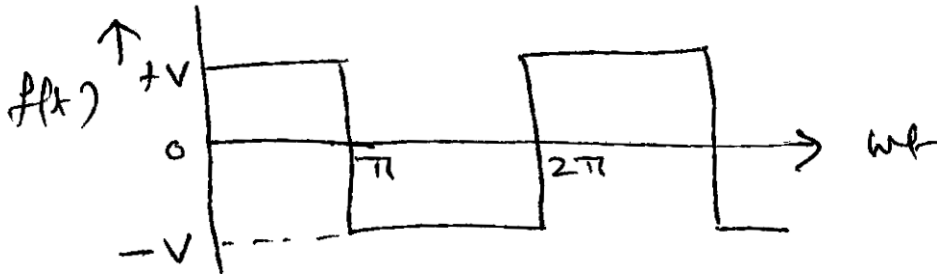


   b) Find the Laplace Transforms of : 10

   (i) $\frac{df}{dt}$

   (ii) $\int f(t)dt$

5. a) Find The Trigonometric Fourier Series for the waveform. 10



   b) Define even and odd functions . 10

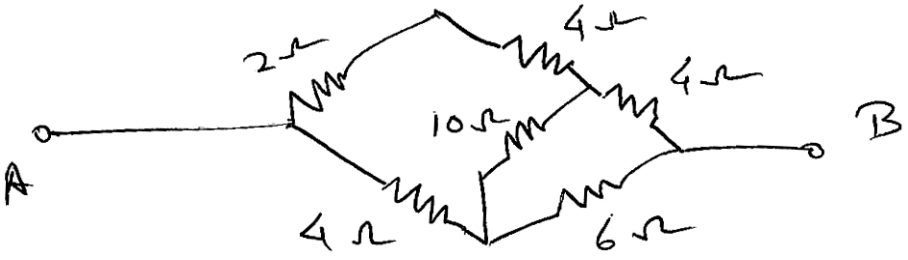
   Determine which are odd and which are even :

   (i) $f(x) = \sin x$

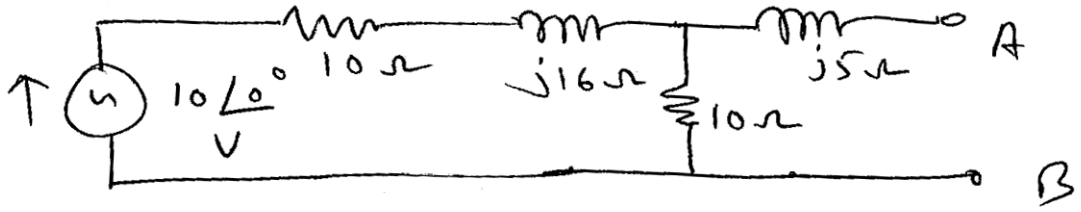
   (ii) $f(x) = 2+x^2+x^4$

   (iii) $f(x) = \tan x$

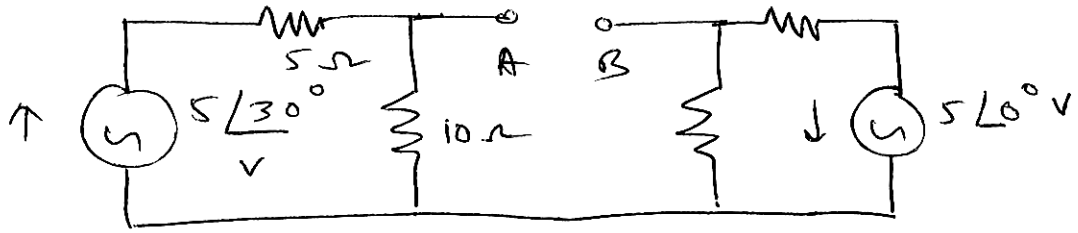
6. a) Find the equivalent resistance between A and B : 10



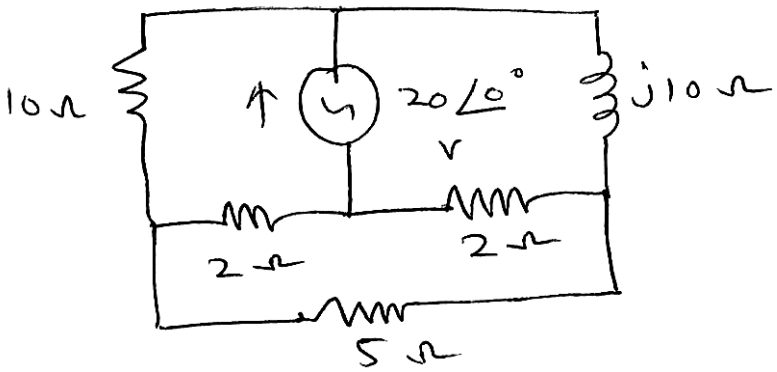
b) Find the Norton equivalent circuit at AB. 10



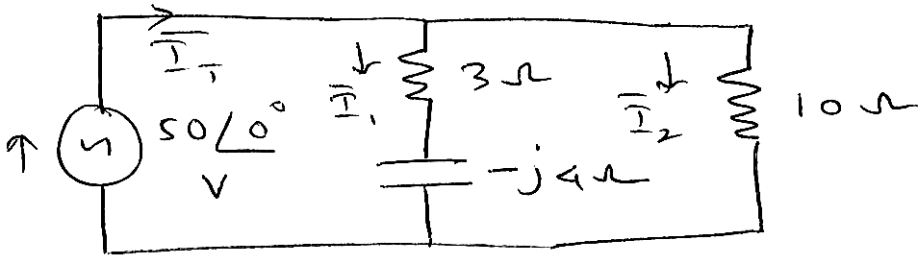
7. a) Find the Thevenin equipment at AB : 10



b) Find the current flowing through the 5 Ω resistance. 10



8. a) Find $\bar{I}_1$, $\bar{I}_2$ and $\bar{I}_T$ and draw the phasor diagram, 10



b) Find the current drawn from the 2 volt battery in the given circuit. 10