F.Y.B.SC. (Computer Science) SEM –II (2014 COURSE) : WINTER - 2018

SUBJECT : LINEAR ELECTRONICS – II

Day : Saturday
Date : 20/10/2018

W-2018-0950

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.**

Q.1 Answer **ANY TWO** of the following: **[10]**

a) With neat diagram explain the working of OP-AMP as integrator with square wave as input waveform.

b) Draw and explain diagram for double ended input double ended output differential amplifier.

c) Explain the working of phase shift oscillator with neat diagram.

Q.2 Answer **ANY TWO** of the following: **[10]**

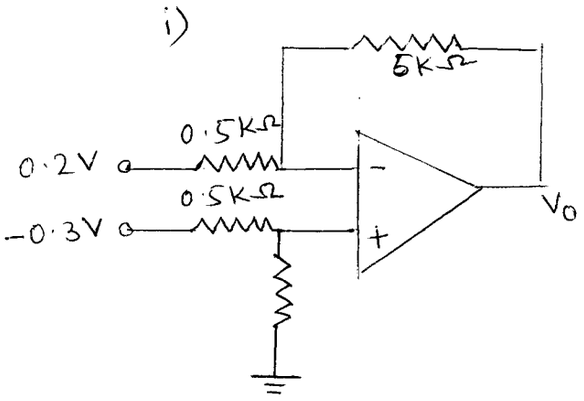
a) Draw block diagram of SMPS. Explain the function of each block.

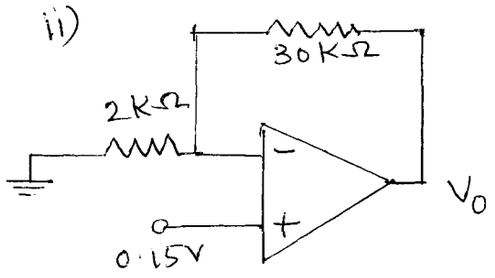
b) In a transistor Colpitts oscillator, if $C_1 = 0.001\mu F$, $C_2 = 0.01\ \mu F$ and $L = 15\ \mu H$. Find the frequency of oscillation, feedback fraction and minimum gain to sustain oscillations.

c) Draw circuit diagram for inverting amplifier using OP-AMP. Derive the equation for output voltage.

Q.3 Answer **ANY TWO** of the following: **[10]**

a) What will be the output for the following circuits? Also mention the configuration of the circuits.





b) With neat diagram explain the working of on-line UPS.

c) Draw circuit diagram for Hartley oscillator. Give its formula for gain and frequency of oscillations.

Q.4 Answer **ANY FIVE** of the following: **[10]**

a) Define the following parameters of OP-AMP:
i) CMRR **ii)** Input offset voltage

b) State two points of difference between RC and LC oscillators.

c) What is feedback? State its type.

d) Define any two parameters of differential amplifier.

e) State Barkhausen criteria for sustained oscillations.

f) Explain the following terms for power supply:
i) Load regulation **ii)** Line regulation

g) For an OP-AMP adder, the input voltages are 0.39V, 0.46V. If feedback resistance is 47kΩ and input resistance is 47kΩ, calculate the output voltage.

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