P9101

[6179]-226

S.E. (Electronics/E & TC)
ELECTRONICS CIRCUITS
(2019 Pattern) (Semester - III) (204181)

Time : 2½ Hours]   *[Max. Marks : 70*

Instructions to the candidates:

1) *Attempt Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8.*
2) *Figures to the right indicate full marks.*
3) *Assume suitable data, if required.*
4) *Neat diagrams must be drawn wherever necessary.*

Q1) a) Explain the IC 317 voltage regulator with diagram and write its output voltage equation. **[6]**

b) IC Voltage Regulator using IC 317, Calculate the variable output voltages, assume R1 = 240 Ω, R2 = 5KΩ (pot) and Iadj = 100 uA. **[6]**

c) Explain concept of Switch Mode Power Supply (SMPS) and list type of SMPS. **[6]**

OR

Q2) a) Draw and explain the concept of Current boosting in Voltage regulator.**[6]**

b) IC Voltage Regulator using IC 317, Calculate values of R2 for the output voltage 5v to 10v, assume R1 = 240 Ω and Iadj = 100 μA. **[6]**

c) Write a short note on "Low drop out Voltage regulator". **[6]**

Q3) a) Draw block diagram of OP - AMP. And explain the function of each block. **[5]**

b) Define the following characteristics of OPAMP: **[6]**

     i) Input offset voltage

     ii) Slew Rate

     iii) PSRR (Power Supply Rejection Ratio)

c) Explain the concept of Current mirror circuit. **[6]**

OR

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Q4) a) List types of differential amplifiers. Draw dual input balanced output differential amplifier. **[5]**

b) State ideal and typical values of OP AMP parameters (IC 741). **[6]**

c) Explain with circuit diagram necessity of level shifting in OP AMP. **[6]**

Q5) a) Draw and explain Inverting amplifier. Draw its input and output waveforms.**[6]**

b) Design a practical differentiator circuit for the input signal having maximum frequency of operation 250 Hz. **[6]**

c) Draw Inverting Schmitt trigger circuit using OP AMP. Write the equation of V_{UTP} and $V_{LTP.}$ **[6]**

OR

Q6) a) Compare open loop and close loop comparator in OP AMP. **[6]**

b) Design a practical Integrator circuit to operate at $f = 4$ KHz and gain equal to 4. **[6]**

c) Draw and explain Instrumentation using three OP AMP. **[6]**

Q7) a) Draw and explain V to I Converter using grounded load using OP AMP.**[5]**

b) Draw and explain the circuit of R/2R DAC using OP AMP. **[6]**

c) With the help of neat block diagram explain operation of PLL. **[6]**

OR

Q8) a) Draw and explain I to V Converter using OP AMP. **[5]**

b) Draw and explain the circuit of binary weighted resistor DAC using OP AMP. **[6]**

c) Define the following specifications of ADC : **[6]**

i) Resolution

ii) Accuracy

iii) Conversion time

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