Total No. of Questions : 8]

SEAT No. :

PC2802

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S.E. (Electronics/E & TC)/ (Electronics Engg. (VLSI Design and Technology))/ (Electronics & Communication-Advanced Communication Technolgoy)

ELECTRONIC CIRCUITS

(2019 Pattern) (Semester- III) (204181)

Time : 2½ Hours] *[Max. Marks : 70*

Instructions to the candidates:

1) ***Answer 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 indicates full marks.***
3) ***Draw a neat diagram wherever necessary.***
4) ***Assume suitable data, if necessary.***

Q1) a) Define voltage regulator, line regulation and load regulation in case of voltage regulator. **[6]**

b) Calculate min and max range of variable resistance R_2 for an adjustable voltage regulator using LM 317 to get output voltage of +5 V to +24 V, assume R_1=240 Ω, I_{adj}=100 uA. **[6]**

c) Compare Linear and switch mode power supply. **[6]**

OR

Q2) a) Draw and explain the Block diagram of DC Voltage regulated Power Supply. **[6]**

b) Determine the range over which voltage range can vary in LM317 voltage regulator if the values of R_1 is 240Ω and R_2 taken as 4.7 KΩ potentiometer. Assume I_{adj}=100uA. Draw the typical connection diagram. **[6]**

c) Explain the concept of Low Drop Out (LDO) in detail. **[6]**

Q3) a) Draw the block diagram of OPAMP and explain each block in detail. **[6]**

b) Explain the following op-amp parameters: **[6]**

i) Input offset voltage
ii) Input Bias current
iii) Slew Rate.

c) Compare Ideal and Practical Parameters of an OP–AMP. **[5]**

OR

P.T.O

Q4) a) Explain the following parameters of Op-Amp **[6]**

i) Slew rate

ii) CMRR

iii) Gain bandwidth product

b) Explain from the block diagram the Output stage of Op Amp. **[5]**

c) Draw and explain an Inverting summing amplifier with three inputs with expression for its output voltage. **[6]**

Q5) a) Draw and explain working of Inverting Symmetrical Schmitt trigger circuit using op-amp., also give the equation for triggering points. **[6]**

b) Draw and write the output equation of. **[6]**

i) Voltage follower

ii) Non-Inverting amplifier

c) Draw and explain Practical integrator circuit with equation of output voltage. What are the limitations of an ideal integrator? **[6]**

OR

Q6) a) Draw a circuit diagram of three op-amp instrumentation amplifiers and write its output equation. **[6]**

b) Draw and explain Practical differentiator circuit with equation of output Voltage. Draw the frequency response of the differentiator . **[6]**

c) Draw and explain the triangular wave generator using an op-amp with waveforms. **[6]**

Q7) a) Define the following terms w.r.t PLL. **[6]**

i) Free running Frequency

ii) Lock range

iii) Capture range

b) Draw the block schematic of PLL and explain each block in detail. **[5]**

c) With the neat circuit diagram explain Current to Voltage Converter. **[6]**

OR

Q8) a) With the neat circuit diagram explain Voltage to Current Converter. **[6]**

b) Write short notes on Frequency Multiplier using PLL. **[6]**

c) Compare the various methods of A/D Conversion. **[5]**