Total No. of Questions : 8]

SEAT No. :

PA-1190

[Total No. of Pages : 2

[5925]-212
S.E. (E & TC/Electronics)
ELECTRONIC & CIRCUITS
(2019 Pattern) (Semester-III) (204181)

Time : 2½ Hours] *[Max. Marks : 70*

Instructions to the candidates:

1) ***Attempt Q.No.1 or Q.No.2, Q.No.3 or Q.No.4, Q.No.5 or Q.No.6, Q.No.7 or Q.No.8.***
2) ***Figures to the right indicate full marks.***
3) ***Assume suitable data, if necessary.***
4) ***Neat diagrams must be drawn wherever necessary.***

Q1) a) Explain with diagram the operation of an adjustable voltage regulater using IC LM 317. **[7]**

b) Design the adjustable voltage regulator for the following specification output voltage = 5V – 10V I_0 = 1.2 A, I_{adj} = 100μA, R_1 = 240Ω. **[7]**

c) What is SMPS? Explain working principle of it. **[4]**

OR

Q2) a) Draw and explain the block diagram of LM 337 and list the specification of it? **[7]**

b) Determine the range of output voltage for adjustable voltage regulator LM317 for R_1 = 240Ω, R_2 = 4.7 kΩ Assume I_{adj} = 100 μA. **[7]**

c) Which are the factor that affect on the output of the voltage regulator? **[4]**

Q3) a) List different configuration of differential amplifier and explain dual input dual output in details? **[7]**

b) Define the characteristics of op-amp **[6]**

i) Input bias current

ii) Slew rate

iii) CMRR

c) Find the 'Q' point for a dual input balanced output differential amplifier with RC = RE = 65 kΩ. supply voltage used is ± 1s V. **[4]**

OR

P.T.O.

Q4) a) Explain the need of level shifting stage in op-amp. Explain any one circuit for the same. **[7]**

b) Draw and explain voltage series feedback amplifier and list their advantages. **[6]**

c) Explain the concept of current mirror circuit? **[4]**

Q5) a) Draw an inverting summing amplifier with three inputs and derive expression for its output voltage Vo? **[8]**

b) Design a practical integrator with input signal of 2VPP and cutoff frequency of 2.5 kHz. for DC voltage gain to 10. **[6]**

c) Explain with diagram the concept of voltage follower circuit using op-amp. **[4]**

OR

Q6) a) Draw and explain an Instrumentation amplifier interface with RTD bridge for temperature measurement. **[8]**

b) Using IC 741 op-amp with supply voltage of ±15V design an inverting schmitt trigger circuit to have V_{UTP} = +3V, V_{LTP} = –3V. **[6]**

c) What is the difference between inverting and non-inverting amplifier. **[4]**

Q7) a) Classify different types of ADC and explain iwth diagram dual scope ADC. **[6]**

b) Calculate the O/P voltage for a DAC whose output range is 0 to 10 V and input binary number 1001. **[6]**

c) Explain various specification of ADC. **[5]**

OR

Q8) a) Explain with neat diagram the register weighted and R-2R DAC? **[6]**

b) For on 10 bit successive approximation type A/D converter driven by a 2MHz clock, find the conversion time? **[6]**

c) Draw and explain V to I convertor. **[5]**

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