[6002]-112

S.E. (Electronics/ E&T.C)
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) *Figure to the right indicate full marks.*
3) *Neat diagrams must be drawn wherever necessary.*
4) *Assume suitable additional data, if necessory.*
5) *Use of non-programmable calculator is allowed.*

Q1) a) Draw block diagram of regulated power supply and explain the function of each block? **[6]**

b) With the help of neat diagram explain buck-boost converter? **[6]**

c) Draw and explain low dropout regulator? **[6]**

OR

Q2) a) Design a regulated power supply using LM 317 for output voltage gv and 15v IAdj=100 uA. **[6]**

b) Explain the working of SMPS with neat diagram? **[6]**

c) Compare regulated and unregulated power supply? **[6]**

Q3) a) List all parameter's of op-amp. Explain any four in brief ? **[6]**

b) Explain significance of negative feed back, in op-amp amplifier? **[5]**

c) A dualt input balanced output differential amplifier has following specification Rc=2.7KΩ, RE=4.5kΩ, $\pm$ VCC=$\pm$ 10v, β=100; VBE=0.7V; re=26.34Ω calculate. **[6]**

   i) Voltage gain (Ad)

   ii) Rin

   iii) Ro

OR

Q4) a) Draw block diagram of op-amp and explain each block? **[6]**

b) Compare inverting and non-inverting configuration of op-amp with following parameters:

   i) Feedbock Type

   ii) Ri

   iii) Gain

   iv) Bandwith **[5]**

c) Determine the Q point for dual input and balanced output differential amplifier with RC=RE=65KΩ and supply voltage ± 15V assume suitable data. **[6]**

Q5) a) Draw an inverting summing amplifier with three input and derive expression for the output voltage Vo= – (Va+Vb+Vc) **[6]**

b) Design a practical Integrator with input Signal of 1.5 vpp and cut off frequency of 3KHz for DC voltage gain of 10. **[6]**

c) Draw circuit diagram of 30p-amp Intrumentation amplifier and write its o/p equation? **[6]**

OR

Q6) a) With the help of neat diagram explain working of symmetrical schmitt trigger? **[6]**

b) Design a square wave generater using op-amp for frequency 1KHz to 10 KHz with 50 % duty cycle. draw diagram with component value. **[6]**

c) Explain practical differentiator circuit with neat diagram? list limitations of ideal differentiator? **[6]**

Q7) a) Explain voltage to current converter with floating load? **[6]**

b) Determine the output voltage produced by 4 bit R-2R ladder DAC with Vret=5v for bit sequence i) 0110 ii) 1101 **[5]**

c) Explain working of flash ADC in details. **[6]**

OR

Q8) a) Define terms. **[6]**
   i) Lock range
   ii) Capture range.
   iii) Pull in time
   iv) Free running frequency.

b) With the neat diagram explain working of weighted resistor DAC? **[6]**

c) Find the digital output of an ADC having t1=83.33 Msec and VR=100 mv for an input voltage. of +100mV. The clock frequency is kHz **[5]**

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