Q.P. Code: 25155

(3 hours)   **Total Marks: 80**

N.B: (1) Question No. 1 is compulsory.
          (2) Solve any three questions from remaining five questions.
          (3) Draw neat diagrams and assume suitable data wherever necessary. Justify your assumptions.

Q 1 (a)	Explain the characteristics of an ideal operational amplifier.	**(5 marks)**
(b)	State difference between inverting and non-inverting amplifiers.	**(5 marks)**
(c)	What are the different methods for A-D and D-A conversion? Explain any one for each.	**(5 marks)**
(d)	What is Schmitt trigger?	**(5 marks)**
Q-2 (a)	Write a short note on i) Wave generator XR 2206 ii) Power amplifier LM380	**(10 marks)**
(b)	Explain Binary Weighted register DAC.	**(10 marks)**
Q-3 (a)	Write a short note on the following Square wave generator	**(5 marks)**
(b)	Logarithmic and antilog converters	**(5 marks)**
(c)	Window and level detector	**(5 marks)**
(d)	LM337 voltage regulator	**(5 marks)**
Q 4 (a)	Compare Successive Approximation ADC with Dual slope ADC	**(10 marks)**
(b)	i) Describe the working of Wein bridge Oscillator ii) Explain the application of op-amp as a subtractor and integrator.	**(10 marks)**
Q-5 (a)	How are filters classified? Explain a second order infinite gain band pass filter and derive the relation of its cut off frequency.	**(10 marks)**
(b)	Design a Second order KRC low pass filter with cut off frequency $f_0 = 1KHz$ & $Q = 5$	**(10 marks)**
Q 6 (a)	Explain 3 op-amp instrumentation amplifier in detail	**(10 marks)**
(b)	Design a 15KHz generator with IC555 using $47\mu F$ capacitor for a 60% duty cycle. Draw the waveforms.	**(10 marks)**