Code No.: EC403PC | R20 | H.T.No. | | | 8 | R | | | | | |

CMR ENGINEERING COLLEGE: : HYDERABAD
UGC AUTONOMOUS
II–B.TECH–II–Semester End Examinations (Regular) - June- 2022
LINEAR IC APPLICATIONS
(ECE)

[Time: 3 Hours] **[Max. Marks: 70]**

Note: 1. Answer *any FIVE questions. Each question carries 14 marks.*
2. *All questions carry equal marks.*
3. *Illustrate your answers with NEAT sketches wherever necessary.*

5X14=70

1. a) For Op-amp, CMRR = 10^5 and differential mode gain $A_{DM} = 10^5$. Calculate the common mode gain A_{CM} of the Op-amp. [7M]

   b) With block diagram, explain the general stages of an Op -Amp IC. [7M]

2. a) Draw a sample and hold circuit. Explain its operation and indicate its uses. [7M]
   b) Explain the difference between the integrator and differentiator and give one application of each. [7M]

3. a) Design a HPF at a cut-off frequency of 1 kHz and pass band gain of 2. [7M]
   b) With circuit diagram, describe the working of a Wien bridge oscillator circuit using op -amp. [7M]

4. a) The free running frequency of a 565 PLL is 100 kHz, the filter capacitor is 2μF and supply voltage is ± 6V. Compute the lock in range, capture range frequency and value of external components R_T and C_T. [7M]
   b) A 555 timer Astable multivibrator uses $R_A = 6.8\ k\Omega$, $R_B = 3.3k\Omega$ and $C = 0.1\ \mu F$. Calculate the free running frequency of oscillation. [7M]

5. a) Determine the output voltages caused by each bit in a 6-bit ladder if the input levels are 0=0V and 1=+16V. Determine the resolution and full-scale output of this circuit. Find out the voltage from the above ladder for a digital input of 101011. [7M]
   b) Draw the circuit and explain the working of dual slope A/D converter. [7M]

6. a) Define Slew rate. How it effect the op-amp performance? Explain. [7M]
   b) Sketch the equivalent circuit of an Op-amp & Define common mode rejection ratio. [7M]

7. a) Draw the circuit of (i) voltage to current (V to I) converter with grounded load (ii) current to voltage (I to V) converter with grounded load. [7M]
   b) Sketch an adder circuit using op -amp to obtain the sum of three inputs. [7M]

8. a) What is the relationship between order of a filter and roll off rate? [7M]
   b) Why do we use higher order filters and List the applications of VCO. [7M]

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