

25. Transform an analog filter with the transfer function into a digital filter using impulse - invariant technique. $H(S) = \frac{0.5(S+4)}{(S+1)(S+2)}$ CO3 [K₂]
26. Explain the various modes of operation of dynamic power management unit for reducing power dissipation. CO3 [K₂]

Answer any FOUR Questions

PART D (4 x 10 = 40 Marks)

27. Check for following systems are linear, causal, time invariant, and static CO1 [K₃]
- i) $y(n) = x(2n)+3$
- ii) $y(n) = \delta(n) + \sin \pi n$
- iii) $y(n) = x(n) \cos (x(n))$
- iv) $y(n) = nx(-n+2)$
28. A discrete time system is defined by the differential equation. CO2 [K₂]
- $y(n) - 0.6 y(n-1) + 0.5 y(n-2) = x(n) - 0.7 x(n-2).$
- a) Determine the system function $H(Z)$ and plot the pole zero pattern
- b) Determine the impulse response $h(n)$
29. Compute the 8-point DFT of the given sequence using radix-2 DIT algorithm. CO2 [K₂]
- Solve using butterfly diagram.
- $x[n] = \{ x(n)=\{ 1, 1, 1, 1, 2, 2, 0, 0\}$
30. Design an ideal high pass filter using Hamming window with $N=11$. CO3 [K₂]
- $H_d(e^{j\omega}) = \begin{cases} 1 & \text{for } -0.25\pi \leq \omega \leq 0.25\pi \\ 0 & \text{for } 0.25\pi \leq |\omega| \leq \pi \end{cases}$
31. Explain the architecture of Blackfin processor along with its peripheral interfacing devices. CO3 [K₂]
