

B. Tech. Sem -VI (E & TC Engg.) (2014 COURSE) (CBCS) :
WINTER - 2018

SUBJECT-DIGITAL SIGNAL PROCESSING

Day: Tuesday
Date: 13/11/2018

W-2018-2512

Time: 10.00 AM TO 01.00 PM
Max. Marks: 60

N.B.:

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 4) Draw neat and labeled diagram **WHEREVER** necessary.
- 3) Assume suitable data if necessary.

- Q.1 Explain frequency selective filter using LTI systems? (10)
OR
- Q.1 Relation between DFT and Z- Transform? (10)
- Q.2 Cal. 8-point DFT of sequence (10)
 $X(n) = \{1, 1, 2, 2\}$ Cal. magnitude & phase
OR
- Q.2 Compute DIT-FFT algorithm of the sequence (10)
 $X(n) = (-1, 0, 2, 0, -4, 0, 2, 0)$
- Q.3 Realize the discrete time system described by difference equation (10)
 $Y(n) - \frac{3}{4}y(n-1) + \frac{1}{8}y(n-2) = x(n) + \frac{1}{2}x(n-1)$ using direct form-II
OR
- Q.3 Design FIR HPF using hanning window for $N=11$ nd (10)
 $H(w) = 1$ for $\frac{\pi}{4} \leq |w| \leq \pi$
 $= 0$ for $|w| \leq \frac{\pi}{4}$
- Q.4 Design a the byshev filter with $\alpha_p=2.5$ db at $\Omega_p=20$ rad/u $\alpha_s=30$ db at $\Omega_s=50$ rad /sec. (10)
OR
- Q.4 Obtain the system function of the IIR digital filler by approximation of (10)
derivatives of the system function of the analog filter is
 $H_a(s) = \frac{1}{(s+0.1)^2 + 9}$
- Q.5 What are limit in cycle oscillations and where do we find. (10)
OR
- Q.5 Explain quantization noise with errors. (10)
- Q.6 How single cycle execution active in DSP processors? (10)
OR
- Q.6 Why of special purpose DSP processors needed and explain Harvard (10)
architectures.