

Code: ECMC2T6A

**I M.Tech - II Semester – Regular / Supplementary Examinations –
AUGUST 2016**

**TRANSFORM TECHNIQUES
(MICROWAVE & COMMUNICATION ENGINEERING)**

Duration: 3 hours

Max. Marks: 70

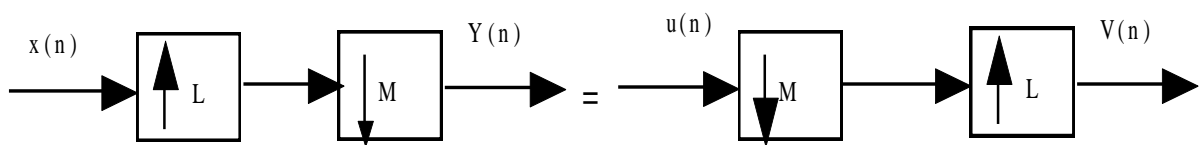
Answer any FIVE questions. All questions carry equal marks

1. a) Write and prove any two properties of 2D DFT. 7 M
- b) For a given Matrix
- $$A = \begin{bmatrix} 1 & 2 & 3 \\ 1 & 2 & 4 \\ 1 & 2 & 5 \end{bmatrix}, \text{ Find the covariance matrix.} \quad 7 \text{ M}$$
2. a) What is the spectrum? Determine the spectra of $x(n) = \cos(n\pi/3)$. 7 M
- b) Explain the limitations of FT and STFT. 7 M
3. a) What is mean by Bi orthogonality? How it is used in wavelets? 7 M
- b) Explain Two scale relations. 7 M

4. Explain the construction of semi orthogonal spline wavelets. 14 M

5. a) Explain Decimation and Interpolation in time and frequency domains. 7 M

b) Show that the following two transformations are equal when L and M are relatively prime. 7 M



6. Explain how wavelet transforms are used in image compression. 14 M

7. Write the lifting scheme algorithm for wavelet generation. 14 M

8. Explain the importance of Ridgelets and Curvelets. 14 M