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W-3313

M.A/M.Sc. (Fourth Semester) Examination, June-2020

MATHEMATICS

Paper - 403

Wavelets

Time : Three Hours

Maximum Marks : 85 (For Regular Students)

Minimum Pass Marks : 29

Maximum Marks : 100 (For Private Students)

Minimum Pass Marks : 34

Note : Attempt **All** Questions.

Q.1. Define the ordered fast Haar Wavelet. Transform and apply it to the sample.

$\bar{S}^{(3)} = (3,1,9,7,7,9,5,7)$

Also write the approximating *f* and the significance of each coefficient.

Q.2. Compress the data

$$\bar{f} = \begin{pmatrix} 4 & 0 & 8 & 2 \\ 2 & 2 & 6 & 0 \\ 6 & 2 & 9 & 7 \\ 4 & 4 & 5 & 3 \end{pmatrix}$$

Q.3. Let W be subspace of inner product space V, prove that of $\bar{W}$ is the member of W closet to $\bar{V} \in V$ then.

$(\bar{V} - \bar{W}) + W$

Q.4. State and prove fourier convergence theorem.

Q.5. Define fourier transform, prove that

$(FK_B)(w) = A_B(w)$

Where A_B is the Abets kernel and $K_B(x) = e^{-1x1/B}$