Total No. of Questions : 7] *[Total No. of Printed Pages : 2*

Roll No .....

EI/IC-7104 (GS)

B.E. VII Semester

Examination, December 2017

Grading System (GS)

Advanced DSP

Time : Three Hours

Maximum Marks : 70

Note: i) Attempt any five questions.
ii) All questions carry equal marks.

1. a) Explain the process of decimation with their advantages and disadvantages.
   b) Prove that the desired input-output relation in the transfer-domain for a factor of m down sample is given by

$$y(z) = \frac{1}{m}\sum_{k=0}^{m-1} \times (Z^{1/m} W_m^{-k})$$

2. a) Explain different issues related to filter bank design.
   b) Derive for amplitude distortion transfer function for two-channel filter bank.

3. a) Explain few advanced methods for improving the computational efficiency of FIR decimator and interpolators.
   b) Explain different factors that degrade the performance of filter bank in detail.

4. a) Make comparison between near perfect and perfect reconstruction filter bank.
   b) Enlist different advantages of cosine modulated filter bank.

5. a) Draw and explain advantages polyphase structure for filter bank.
   b) How do we obtain sub filters of analysis and synthesis section explain and derive expression.

6. a) Make comparison between cosine modulated filter bank and paraunitary filter banks.
   b) Derive expression for aliasing transfer function for CMFB.

7. Write short notes on any two of the following:
   a) Sub band coding scheme
   b) Quantization effects
   c) Noise in filter bank

******

373