

**JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT**  
**Test-1 Examination-September 2016**  
**M.Tech. 1<sup>st</sup> Semester**

**Course Code: 13M1WEC132**

**Max. Marks: 15**

**Course Name: Mathematical Technique for Engineers**

**Course Credit: 3**

**Max. Time: 1 Hr**

Attempt all questions. Carrying of mobile phones will be treated as the case of unfair means.

Q.1	Describe the overlap save and overlap add methods in detail for linear filtering and also solve one example using overlap add method.	4
Q.2	Find the linear convolution using circular convolution of the sequences $x(n) = \{1, 2, 2, 1\}$ and $h(n) = \{1, 2, 3, 4\}$	2
Q.3	Derive the discrete Fourier transform (DFT) from z-transform and discrete Fourier series.	2
Q.4	Write the difference among the Laplace transform, Fourier transform and z-transform.	2
Q.5	Prove the shifting, and convolution property of z-transform	2
Q.6	Find the discrete cosine transform of the sequence $x(n) = \{20, 12, 18, 56, 83, 10, 104, 114\}$	3