

**MASTER OF TECHNOLOGY (ELECTRONICS - VLSI) (CBCS - 2015 COURSE)**  
**M. Tech. (Electronics - VLSI) Sem-II :SUMMER- 2022**  
**SUBJECT : ADVANCED DIGITAL SIGNAL PROCESSING**

Day : Tuesday  
Date : 26-07-2022

**S-14104-2022**

Time : 10:00 AM-01:00 PM  
Max. Marks : 60

**N.B.:**

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Answer to both the sections should be written in **SEPARATE** answer book.

**SECTION – I**

**Q.1** Explain forward linear prediction in detail. **[10]**

**OR**

Explain the properties of linear prediction filters.

**Q.2** Explain **[10]**  
i) Echo cancellation  
ii) Noise cancellation methods in adaptive signal processing

**OR**

Explain the principle of Wiener filter and discuss clearly estimation procedure in Wiener filters.

**Q.3** Explain how DFT is useful in power spectral estimation. **[10]**

**OR**

What is the need for spectral estimation? How can the energy density spectrum be determined?

**SECTION – II**

**Q.4** Explain in detail the operations of the following: **[10]**  
i) ALU                      ii) MAC

**OR**

What is meant by pipeline technique? Explain in detail pipeline technique in TMS320C6X DSP processor.

**Q.5** What are the different addressing modes of TMS320C6X DSP processor. **[10]**  
Discuss the number of execution pipeline stages used in TMS320C6X DSP processor.

**OR**

Draw & explain the internal & external memory organization in TMS320C6X DSP processor.

**Q.6** a) Differentiate between wavelet transform and STFT. **[05]**  
b) What are limitations of Fourier transform and STFT over DWT? **[05]**

**OR**

Enumerate the design of the perfect reconstruction filter banks using wavelets. **[10]**

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