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# D11

## B. Tech. EXAMINATION, 2020

(Fourth Semester)

(B Scheme)

(Re-appear Only)

EE, EEE

EE202B

NETWORK ANALYSIS–II

*Time :* 3 *Hours*] [*Maximum Marks :* 75

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Before answering the question-paper candidates should ensure that they have been supplied to correct and complete question-paper. No complaint, in this regard, will be entertained after the examination.

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**Note** : Attempt *Five* questions in all, selecting at least *one* question from each Unit. All questions carry equal marks.

### Unit I

**1.** Explain transmission parameters. Draw the equivalent model for transmission parameter representation of two port networks. Derive the expressions for *z*-parameters in terms of transmission parameters and also transmission parameters in terms of *z*-parameters. **15**

**2.** (a) Obtain the condition of symmetry and reciprocity in terms of *z*-parameters. **7**

(b) Explain cascade connection of two port networks. Derive the suitable parameters for this type of interconnection. **8**

## Unit II

**3.** What are network functions for one port network ? Discuss the procedure for finding network functions for one port network. Explain with the help of suitable example. **15**

**4.** (a) What are poles and zeros of a network function ? How the poles and zeros of a network function can be calculated ? **7**

(b) What are restrictions of location of poles and zeros for transfer functions ? **8**

## Unit III

**5.** Differentiate between active and passive filters. Explain various types of active filters. **15**

**6.** (a) What are m-derived filters ? What are their advantages ? Derive various parameters for m-derived high pass filter. **7**

(b) Design a prototype section of band pass filter having cut off frequencies of 1000 Hz and 5000 Hz with a design impedance of 600 ohms. **8**

## Unit IV

**7.** (a) What do you understand by network synthesis ? What are steps for synthesis of one port network ? **7**

(b) Given :

$$F(s) = \frac{4s^2 + 16s + 12}{s^2 + 8s + 12}$$

Find the continued fraction expansion and hence synthesise the network for the case when :

(i) $F(s)$ is an impedance $Z(s)$

(ii) $F(s)$ is an admittance $Y(s)$. **8**

**8.** Discuss Cauer's I and II forms of network synthesis for lossy and lossless networks. **15**