30/1/21

Exam.Code:0928
Sub. Code: 33658

2055

B.E. (Electronics and Communication Engineering)
Fourth Semester
EC-409: Network Analysis

Time allowed: 3 Hours **Max. Marks: 50**

NOTE: Attempt five questions in all, including Question No. I which is compulsory and selecting two questions from each Unit. Missing data (If any) can be appropriately assumed.

x-x-x

Q1 Explain briefly

A) State the Maximum power theorem for AC and DC circuit. **(2)**

B) Obtain the lattice equivalent of a symmetric Π-network shown in Fig. 1 **(2)**

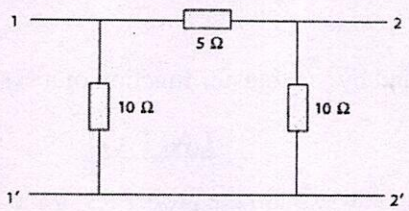

Fig.1

C) Explain in following terms (i) Reflection factor (ii) Reflection loss **(2)**

D) What are reciprocal and symmetrical networks? **(2)**

E) Draw T-section and -section of a band-stop filter. **(2)**

UNIT - I

Q2 A) Determine the current i_1 in the circuit of Fig. 2 using nodal analysis method and graph theory concepts. **(5)**

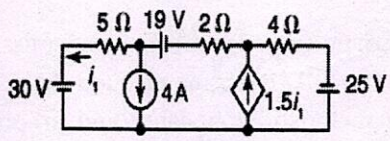

Fig.2

B) Derive the expression used for the delta equivalent resistance from star connection. **(5)**

Q3 A) Two identical sections of the circuit shown in fig. 3 are connected in series. Obtain the z-parameters of the combination and verify by direct calculation. **(5)**

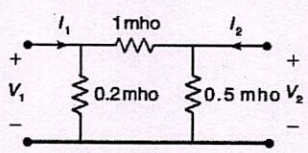

Fig. 3

Contd.....P/2

B) Find the h-parameters for the two-port network shown in Fig. 4. **(5)**

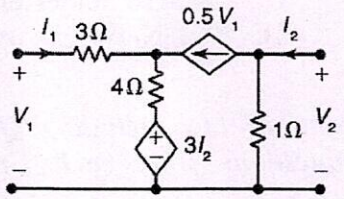

Fig.4

Q4 A) Draw poles and zeros for the transform voltage and evaluate V(t) either analytically or by making use of pole–zero diagram. **(5)**

$$V(s) = \frac{s^2 + 3s + 2}{s^2 + 7s + 12}$$

B) What do you understand by the transfer function of a system? State its properties. **(5)**

UNIT - II

Q5 A) What are filters? Write and explain the properties of the filters. **(5)**

B) Write short notes on **(5)**
(i)Butterworth filter
(ii) all pass filter.

Q6 A) Design a band-elimination filter having a design impedance of 600 Ω and cut-off frequencies f_1 = 2 kHz and f_2 = 6 kHz. **(5)**

B) Define notch frequency. Explain the operational characteristics of an active notch filter. Where are these filters used? **(5)**

Q7 A) At 8MHz the characteristic impedance of a transmission line as 40 - j2 Ω and the Propagation constant 0.01+ j 0.18 per meter. Find the primary constant. **(5)**

B) Explain in detail (i) Characteristic impedance and (ii) propagation constant **(5)**

x-x-x