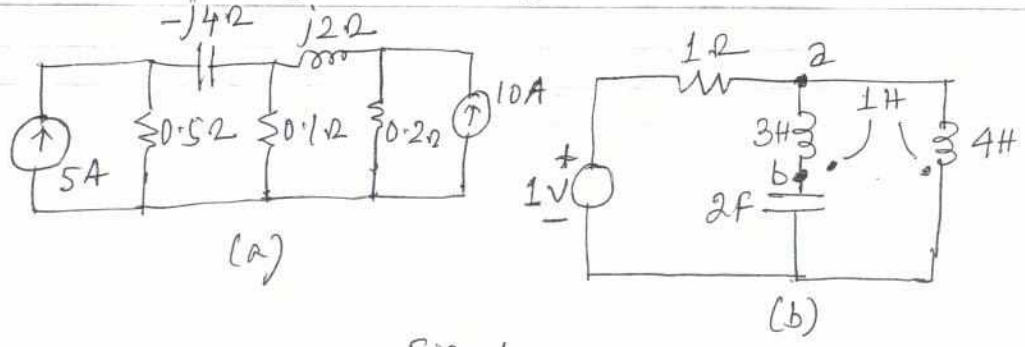
Roll Number:_____

Thapar University, Patiala

Department of Electrical & Instrumentation Engineering

B. E. (Second Year): Semester-IV (EIC)	Course Code:UEE503 Course Name: Network Analysis and Synthesis
May 21, 2016	Saturday, 9.00 – 12.00 Hrs
Time: 3 Hours, M. Marks: 100 (40%)	Name of Faculty: Smarajit Ghosh Shailesh Kumar

Note: Attempt all questions

Q1.	(a) For the network shown in Fig. 1(a), determine the node incidence matrix, the node admittance matrix and the matrix node equation. (b) For the network shown in Fig. 1(b) find the f-cut matrix taking the branches having 3H and 2F as twigs.	(10) (10)
	 Fig. 1	
Q2.	Describe the Superposition theorem. Also state the limitations of Superposition theorem. Derive the overall parameters when the two two-port networks are connected in series, parallel, cascade, series-parallel connections.	(20)
Q3.	Define mutual inductance and derive the expression for co-efficient of coupling. Describe the Dot Convention. Derive the equivalent inductance when two different coils are connected in parallel with parallel aiding and parallel opposing.	(20)
Q4.	Describe the following and derive the suitable equations: (a) Low pass passive filter (b) High pass passive filter (c) Symmetrical T-type attenuator	(20)
Q5.	(a) Check whether the given polynomial is Hurwitz or not. $P(s) = s^4 + s^3 + 2s^2 + 4s + 1$ (b) Write the conditions for the function $F(s) = \frac{N(s)}{D(s)}$ is positive real.	(20)

Notice: Evaluated Answer Scripts will be shown in **D205** on **27.05.2016** from **17:00 Hrs to 17:20 Hrs.**