Regulation R20 *Subject code: 3P3BB*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

(Autonomous, Accredited by NAAC with 'A' Grade)

B.Tech III Semester Supplementary Examinations, July 2022

ELECTRICAL CIRCUIT ANALYSIS

(EEE)

Maximum Marks: 70 Date:21.07.2022 Duration: 3 hours

Note: **1.This question paper contains two parts A and B.**
2. Part A is compulsory which carries 20 marks. Answer all questions in Part A.
3. Part B consists of 5 Units. Answer any one full question from each unit.
4. Each question carries 10 marks and may have a, b, c, d as sub questions.

Part-A

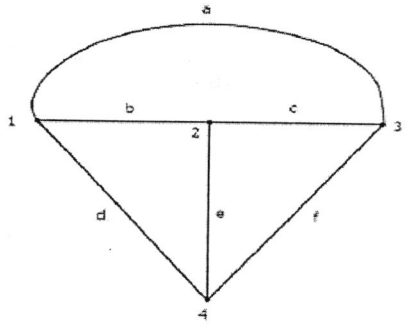
All the following questions carry equal marks (10x2M=20 Marks)

1	Define planar and Non-planar graphs?	2 M
2	Define connected and unconnected graph?	2 M
3	Define Resonance?	2 M
4	State Reciprocity theorem?	2 M
5	Define Bandwidth and selectivity?	2 M
6	Define the term form factor, peak factor and Time period?	2 M
7	Draw the phasor diagram for AC through series RL circuit.	2 M
8	What is complex power?	2 M
9	What do you mean by Two port network?	2 M
10	Explain Symmetrical and Reciprocal Network?	2 M

Part-B

Answer All the following questions. (5X10M=50Marks)

11 Form the basic incidence Matrix, basic cut set and basic tie set for a given network 10M



OR

12 a) Define Self and Mutual inductance? 2M

b) Two coupled coils with L 1 = 0.01 H, L 2 = 0.02H and K= 0.4 are connected in four different ways. 8M

Find effective inductance with (i) series aiding (ii) series opposing (iii) parallel aiding (iv) parallel opposing.

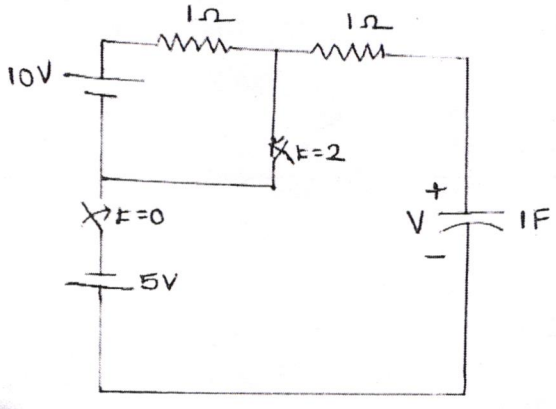
13 a) Derive the Transient state response for Current in first order RL series circuit. 7M

b) Define:
(i)Order of circuit?
(ii)Forced Response & Natural Response? 3M
(iii)Time constant.?

OR

14 a) Write the transient free condition for series RL circuit with AC excitation. 2M

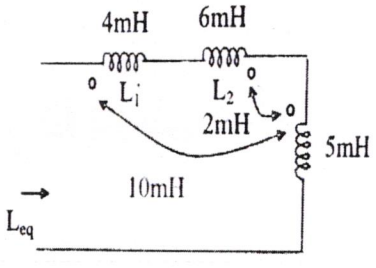
b) Determine the complete expression for V and Plot V(t), t>0 8M

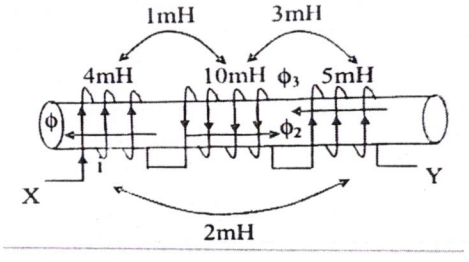


15 a) Derive the RMS and Average value for the pure sinusoidal signal? 8M
b) Calculate Form factor and peak factor for pure sinusoidal signal? 2M

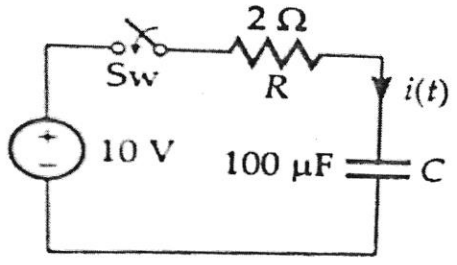
OR

16 a) What is ideal transformer? 2M
b) Find the Equivalent inductance for the following circuit? 8M





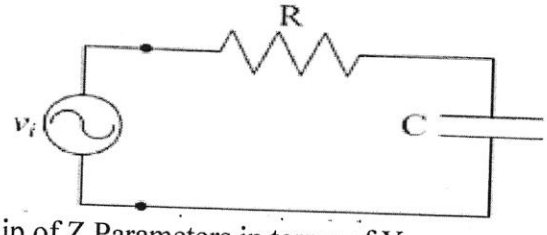
17 For the circuit shown in the figure, Obtain the current through the capacitor at t=0 and assume the capacitor is initially discharged. 10M



OR

18 a) Find the initial and final value of the function whose Laplace transform is $H(S)=20/(S+3)(S^2+8S+25)$ 2M

b) Using Laplace Transform find the current i(t) in the below circuit. 8M



19 Express the relationship of Z Parameters in terms of Y-parameters and h-Parameters 10M

OR

20 In the given network as shown in Fig. Find ABCD – parameters and check the condition for symmetry and Reciprocity. 10M