BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(MID SEMESTER EXAMINATION)

CLASS: BE **SEMESTER: V**
BRANCH: ECE **SESSION : MO/2019**

SUBJECT : EC5203 MICROWAVE ENGINEERING

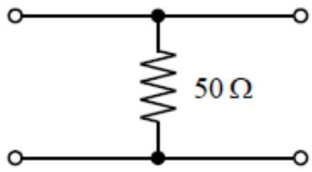
TIME: 1.5 HOURS **FULL MARKS: 25**

INSTRUCTIONS:
1. The total marks of the questions are 30.
2. Candidates may attempt for all 30 marks.
3. In those cases where the marks obtained exceed 25 marks, the excess will be ignored.
4. Before attempting the question paper, be sure that you have got the correct question paper.
5. The missing data, if any, may be assumed suitably.

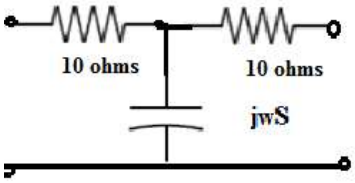
Q1 (a) Why can't regular lumped circuit components such as resistors, inductors, and capacitors be used at microwave frequencies? [2]
(b) Explain major applications of microwave engineering. [3]

Q2 (a) Write the name of four substrates suitable for MMICs. [2]
(b) What is the difference between EMI and EMC? Describe the techniques to minimize the Electromagnetic interferences. [3]

Q3 (a) Describe the conditions need to be fulfilled while defining equivalent voltage, current and impedance for a non-TEM lines. [2]
(b) Find the s-parameters for the network shown in Figure assuming an input reference impedance of 50 Ω and output reference impedance of 75Ω. [3]



Q4 (a) A reciprocal transmission line has a return loss of 4.64 dB and an insertion loss of 1.93 dB. Calculate the S parameters. [2]
(b) Find the ABCD parameters of a two port network given below [3]



Q5 (a) Find the S parameters of a lossless three port network assuming all the three ports are matched. [2]
(b) Shows that half of the supplied power is dissipated in the resistors of the equal split resistive power divider. [3]

Q6 (a) Design a 50Ω branch line quadraure hybrid junction. [2]
(b) Explain how a branch line coupler can be decomposed into a set of two decoupled two port net work. [3]

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