

Register No.: ..... Name: .....

**SAINTGITS COLLEGE OF ENGINEERING (AUTONOMOUS)**

(AFFILIATED TO APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY, THIRUVANANTHAPURAM)

**SECOND SEMESTER M.TECH DEGREE EXAMINATION (Regular), JULY 2022****TELECOMMUNICATION ENGINEERING****(2021 Scheme)****Course Code: 21TE206-B****Course Name: RF MEMS****Max. Marks: 60****Duration: 3 Hours****PART A***(Answer all questions. Each question carries 3 marks)*

1. What are the limitations of RF MEMS.
2. Outline various actuation mechanisms in RF MEMS.
3. Illustrate the dry etching process in detail.
4. Explain the properties of substrate material for RF application.
5. Discuss Shear Mode Resonance of MEMS resonator.
6. Compare MEMS and NEMS.
7. Explain briefly about micro machined tunable filters.
8. What is the principle of micro machined oscillators?

**PART B***(Answer one full question from each module, each question carries 6 marks)***MODULE I**

9. Explain the potential applications of MEMS in wireless communication. (6)

**OR**

10. Describe the potential applications of RF MEMS in phased arrays. (6)

**MODULE II**

11. Explain MEMS based sensors and their applications. (6)

**OR**

12. What is a transducer? List and briefly explain the classification of transducers in MEMS. (6)

**MODULE III**

13. Describe Surface micromachining techniques in MEMS. (6)

**OR**

14. Outline the silicon process for MEMS fabrication. (6)

**MODULE IV**

15. Draw and explain the capacitive fixed beam RF MEMS switch and its equivalent model. (6)

**OR**

16. Explain variable inductors and polymer-based inductors. (6)

**MODULE V**

17. What is micro machined antenna? Describe a pattern reconfigurable patch antenna with RF MEMS switch. (6)

**OR**

18. What is RF NEMS? Explain its benefits. (6)

**MODULE VI**

19. Explain High-Q bulk micro machined silicon cavity resonator at Ka-band. (6)

**OR**

20. Illustrate the commonly used transmission line structures for RF MEMS applications. (6)

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