

Register No.: Name:

SAINTGITS COLLEGE OF ENGINEERING (AUTONOMOUS)

(AFFILIATED TO APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY, THIRUVANANTHAPURAM)

THIRD SEMESTER M.TECH DEGREE EXAMINATION (Regular), FEBRUARY 2022*(Telecommunication Engineering)***(2020 Scheme)****Course Code :** 20ECTET223**Course Name:** RF MEMS**Max. Marks :** 60**Duration: 3 Hours****PART A***(Answer all questions. Each question carries 3 marks)*

1. Describe the Limitations of RF MEMS.
2. Discuss the process of dry etching.
3. What are the critical evaluation criteria for RF MEMS Switch?
4. Draw the capacitive fixed beam switch and its equivalent.
5. List various types of MEMS capacitors.
6. Briefly discuss series and shunt equivalent circuit of capacitors.
7. Illustrate the difference between bulk mode and shear mode of resonance of MEMS resonators.
8. Describe the basic concept of RF MEMS.

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

9. With neat diagrams explain the basic fabrication process of MEMS in detail. (6)

OR

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

MODULE II

11. Write short notes on (i) Piezoelectric actuation (ii) Electrostatic actuation. (6)

OR

12. Explain surface and bulk micromachining in detail. (6)

MODULE III

13. Explain high speed silicon diodes RF switches in detail. (6)

OR

14. Discuss the integration and biasing issues for RF switches. (6)

MODULE IV

15. Explain in detail about the process of designing RF MEMS switch. (6)

OR

16. Describe the electromechanical finite element analysis of RF MEMS switch. (6)

MODULE V

17. Differentiate between gap tuning and area tuning capacitors. (6)

OR

18. Explain various types of inductors in MEMS. (6)

MODULE VI

19. Describe a pattern reconfigurable patch antenna with RF MEMS switch. (6)

OR

20. Explain the application of resonators in RF oscillator. (6)
