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

CLASS: **M.Tech./Ph.D.** **SEMESTER: II**
BRANCH: **ECE (Microwave Engineering)** **SESSION: SP/22**

SUBJECT: EC-603 Millimetre Wave for Wireless Communication

TIME: 2 hrs **FULL MARKS: 50**

INSTRUCTIONS:
1. The question paper contains 10 questions each of 5 marks and total 50 marks.
2. Attempt all questions.
3. The missing data, if any, may be assumed suitably.
4. Before attempting the question paper, be sure that you have got the correct question paper.
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

Q.1. With respect to millimetre wave answer the following questions: [5]
(a) 3 major challenges in its implementation in wireless communication
(b) 2 major applications in wireless domain

Q.2. How does multipath propagation effect mm-wave communication? [5]

Q.3. Describe the Rayleigh and Rician fading models briefly. [5]

Q.4. What do you mean by an on-chip antenna? Describe with the help of a suitable diagram the cross-section of a CMOS chip. [5]

Q.5. Describe 2 techniques for gain improvement for on-chip antennas. [5]

Q.6. Describe the operation of a successive approximation ADC with the help of a suitable diagram. [5]

Q.7. What is the problem with a current switching DAC? How do we overcome it using a current-steering DAC? [5]

Q.8. Write brief note on the following: [5]
(a) Differential non-linearity in an ADC
(b) Track and Hold amplifier

Q.9(a) What do you mean by channel estimation? [3]
Q.9(b) Briefly describe Frequency Shift Keying and Amplitude Shift Keying. [2]

Q.10(a)What are the losses associated in an on-chip antenna. Describe with a suitable diagram. [3]
Q.10(a)What is PHY and state its significance. [2]

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