15/05/2025 BE EXTC SEM-VIII C-SCHEME RF DESIGN QP CODE: 10083716

Time: 3 Hours **Marks: 80**

Note:
1. Question No.1 is compulsory.
2. Attempt any three from the remaining questions.
3. Assume suitable data if applicable.
4. Figures on the right hand side indicate full marks.

Q1: Solve any four

a) What is meant by electromagnetic compatibility? **5**

b) Explain 1 dB compression in power amplifier designing **5**

c) State and explain the term Unilateral Figure of Merit **5**

d) State the conditions to generate oscillations for two port oscillator. **5**

e) Explain multi point ground systems **5**

Q2: A) Design a composite low pass filter by image parameter method for the Following specifications **10**

Zo = 50Ω, fc= 50 MHz, f∞ = 52MHz

B) Give the significance of each section in Image parameter method of filter Design. **10**

Q3: A) A microwave transistor has the following S parameters at 10 GHz with 50Ω Source and reference impedance **10**

S_{11}=0.45∠150°, S_{12}=0.01∠-10°, S_{21}=2.05∠10°, S_{22}=0.40∠-150°

The load impedance is 30Ω. Find out i) power gain ii) available power gain

B) Design a microwave amplifier using a GaAs FET to operate at 6 GHz with maximum transducer power gain. The transistor S parameters fat a linear bias point Vds = 4V and Ids = 0.5 Idss are **10**

S_{11}=0.641∠-171.3°, S_{12}=0.057∠16.3°, S_{21}=2.058∠28.5°, S_{22}=0.572∠-95.7°

Q4: A) List and explain the power amplifier performance parameters **10**

B) Compare various types of Diode and FET Mixers **10**

Q5: A) Write short note on CISPR and FCC standard **10**

B) Explain Kuroda's identity and Richard's Transformation. **10**

Q6: A) Explain Bonding and Shielding in EMC **10**

B) What is phase noise? How it is represented? **10**

****