

**ET804M-1 - Program Elective-IV : High Speed Electronics**

P. Pages : 2

Time : Three Hours



**GUG/W/23/14357**

Max. Marks : 80

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- Notes :
1. All questions carry marks as indicated.
  2. Assume suitable data wherever necessary.
  3. Illustrate your answers wherever necessary with the help of neat sketches.

1. a) Explain the importance of interconnect design in high speed electronics. **8**
- b) Write a short note on two general categories of transmission lines that are used in PCB layouts. **8**

**OR**

2. a) Explain the principle of reflection in transmission line. Also explain influence of reflection. **8**
- b) Write a short note on cross-talk induced noise. Illustrate the two types of couplings and simplest equivalent circuit in each case. **8**
3. a) Write a short note on series terminated transmission line. **8**
- b) Draw the circuit showing an unterminated 5V CMOS transmission line and explain what happens when the driver impedance does not match the line impedance? **8**

**OR**

4. a) Why should there be a serpentine traces on the PCB? **8**
- b) Explain electrical behaviour of stubs and their impact on transmission line performance. **8**
5. a) Write short note on Behavioral component models. **8**
- b) Write a note on three methods of signaling in transmission lines. **8**

**OR**

6. a) Explain the fanout- of- four (FO-4) delay in link design. **8**
- b) Write a short note on three types of emission sources identified in PCB. **8**
7. a) Explain the terms. **8**
  - i) Popcorn noise (RTN)
  - ii) Flicker noise (1/F noise)
- b) Explain four most important LNA specifications. **8**

**OR**

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|-----------|----|--|----------|
| <b>8.</b> | a) | Give the differences between Low Noise Amplifier Vs Power Amplifier.   | <b>8</b> |
|           | b) | Give the advantages, disadvantages and applications of low noise amplifier.                                    | <b>8</b> |
| <b>9.</b> | a) | Represent symbolically and explain RF mixer. With neat diagram also explain down conversion and up conversion. | <b>8</b> |
|           | b) | Write a note on types of RF mixer.   | <b>8</b> |

**OR**

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|------------|----|---|----------|
| <b>10.</b> | a) | With neat diagram explain series-fed class-A amplifier. | <b>8</b> |
|            | b) | Write short note on Class-D amplifier.                  | <b>8</b> |

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