Seat No: _____ Enrollment No: _____

# PARUL UNIVERSITY

## FACULTY OF ENGINEERING & TECHNOLOGY

**M.Tech., Summer 2017 - 18 Examination**

**Semester: 2** **Date: 28/05/2018**
**Subject Code: 03204183** **Time:02:00 pm to 04:30 pm**
**Subject Name: RF Circuit Design** **Total Marks: 60**

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**Instructions:**
1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

**Q.1** A) Explain the following terms: **(05)**

1) Decibel 2) Bandwidth 3) Insertion Loss 4) Shape Factor 5) Ripples

B) Explain why skin effect are considered important for RF circuit design. **(05)**

C) Proof that $P_{out}$ maximum occurs when $R_L=R_S$. **(05)**

**Q.2** **Answer the following questions**. (Attempt any three) (Each five mark) **(15)**

A) What are the two basic approaches in handling of matching of complex impedance ?

B) Discuss about T matching network.

C) What is dual network? Explain its step with an example and also mention the advantages of dual network.

D) A transistor has the following Y parameters at 100 MHz, with $V_{CE}$=10 volts and $I_C$ =5 mA. $Y_i$= 8 + j5.7 mmho, $Y_o$= 0.4 + j1.5 mmho, $Y_f$= 52 - j20 mmho, $Y_r$= 0.01 - j0.1 mmho Calculate Criteria C and MAG.

**Q.3** A) Explain Bipolar and Field Effect Transistor. Compare with an appropriate point of view. **(07)**

B) What is barkhausen criteria of oscillation? Explain it with basic oscillator model. **(08)**

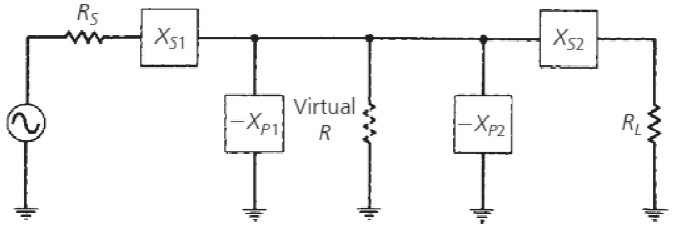
**OR**

B) Describe briefly how passive components are realized on printed circuit board at RF. **(08)**

**Q.4** A) What is band pass filter and band reject filter. Define its transformation procedure from the low pass filter. **(07)**

**OR**

A) Using Fig. as a reference for T- Network, design four different networks to match a 10-ohm source to a 50-ohm load. Each network is to have a loaded Q of 10. **(07)**




B) What is smith chart? Write down its application and characteristics. **(08)**