Seat No: _____ **Enrollment No: _____**

PARUL UNIVERSITY

FACULTY OF ENGINEERING & TECHNOLOGY

B.Tech. Summer 2018 – 19 Examination

Semester: 4 **Date: 08/05/2019**
Subject Code: 03112253 **Time: 2:00 pm to 4:30pm**
Subject Name: Electronic Devices & Circuits **Total Marks: 60**

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 **Objective Type Questions** (All are compulsory) (Each of one mark) **(15)**

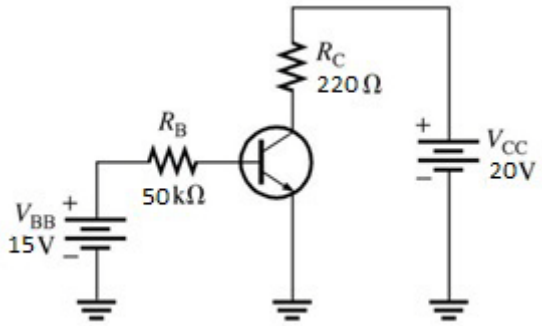
1. FET is _____controlled device.
   a) Current
   b) Voltage
   c) Power
   d) Frequency
2. What is cascading?
3. What is the main advantage of Schottky diode?
4. Compute the value of α, if $\beta = 100$.
5. Draw the symbol of NPN Transistor.
6. Draw graph of induced capacitance vs. reverse voltage in case of varactor diode.
7. What is the full name of MOSFET?
8. Knee voltage of Germanium diode is _____.
   a) 0.7 V
   b) 0.3 V
   c) 0.6 V
   d) 1 V
9. Size of collector is _____ compare to emitter.
10. What is the total current gain of darling-ton pair? (provided individual current gain of transistor1 and transistor2 are β_1, β_2 respectively)
    a) $\beta_1 + \beta_2$
    b) $\beta_1 \beta_2$
    c) β_1 / β_2
    d) $\beta_1 - \beta_2$
11. Write any one application of transistor.
12. The input impedance of a transistor is_____
    a) high
    b) low
    c) very high
    d) almost zero
13. Define 'Small signal amplifier'.
14. Why negative feedback concept is used for amplifier?
15. Define 'Collector Efficiency' with respect to power amplifier.

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

A) What do you mean by Opto-electronic devices? Explain any one in detail with necessary diagram.

B) Explain voltage shunt feedback topology of an amplifier with diagram.

C) Draw the load line and locate operating point for the given circuit. Assume $\beta dc=100$.



D) Differentiate between BJT and FET.

Q.3 A) Explain working of Zener as voltage regulator. **(07)**

B) List different type of power amplifiers. Explain working of class B push-pull amplifier. **(08)**

OR

B) Explain the concept of multistage amplifier. List types of coupling and explain any one type of coupling. **(08)**

Q.4 A) List the types of transistor biasing. Illustrate any one biasing method in detail. Use diagram and equations, wherever required. **(07)**

OR

A) Draw and explain overall working of CE amplifier circuit and working of all the components available in the circuit. Also draw the necessary waveform. **(07)**

B) (i) Derive the relation between α and β of BJT. **(08)**

(ii) Calculate I_B, β, α, I_{CBO}. Provided that I_E=10mA, I_C=9.91mA.