

(20519)

Roll No. \_\_\_\_\_

Total Questions : 13 ]

[ Printed Pages : 4

# NP-3590

B.Sc. (Computer Science) IInd Semester  
Examination, May-2019

## BASIC ELECTRONICS (BCS-203)

Time : 3 Hrs. ]

[ M.M. : 75

Note :- Attempt questions from all Sections as per instructions.

### Section-A

(Very Short Answer Type Questions)

Note :- Attempt all five questions. Each question carries 3 marks.

1. Explain the Drift current and Mobility. 2
2. What is the Ripple factor of Rectifier ? Find the Ripple factor of half-wave rectifier. 3

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3. A transistor has an  $I_C$  of 100 mA and  $I_B$  of 0.5 mA. What is the value of  $\alpha_{dc}$  ?
4. Explain the JFET Parameters.
5. Drive the output equation for Non-inverting summing amplifier.

### Section-B

(Short Answer Type Questions)

Note :- Attempt any two questions out of the following three questions. Each question carries 7½ marks.

6. Find the concentration of holes and electrons in an N-type silicon at 300 K if the conductivity is  $0.1 \text{ (ohm-cm)}^{-1}$ . Given that  $n_i$  at 300 K for silicon =  $1.5 \times 10^{10}/\text{cm}^3$ ,  $\mu_e$  at 300 K for silicon =  $1300 \text{ cm}^2/\text{V-S}$ .
7. Describe the Ebers-Moll model of a bipolar junction transistor and explain the working of the transistor. 5
8. Explain in brief, the construction and operation of MOSFET. 4

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Section-C 32

(Long Answer Type Questions)

Note :- Attempt any three questions out of the following five questions. Each question carries 15 marks.

9. Draw the circuit diagram of a Half-wave rectifier and calculate :

- (i)  $I_{dc}$
- (ii)  $I_{rms}$
- (iii) Ripple factor
- (iv) Efficiency of rectification
- (v) PIV rating of diode

10. What do you understand by Thermal Run-away ? In what situations it can occur ? Derive an expression for stability factor for a fixed bias circuit.

11. Explain the Common Drain (CD) JFET Amplifier.

12. Drive an expression for Adder-Subtractor circuit using OP-AMP.

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13. Write short notes on any three on the following :

- (i) Bridge rectifier circuit
- (ii) SVRR and CMRR
- (iii) Intrinsic semiconductor
- (iv) Emitter biasing

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