

**ADDITIONAL EXAM. COMMON FOR E & TC/ELECTRONICS / BIOMEDICAL
B.TECH. SEM. - I (CBCS 2014 COURSE) : WINTER- 2019
SUBJECT: ELEMENTS OF ELECTRONICS ENGINEERING**

Wednesday 01/01/2020
10:00 AM-01:00 PM

W-11253-2019
Max. Marks: 60

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- N.B. :** 1) All questions are **COMPULSORY**.
2) Figures to the right indicate **FULL** marks.
3) Use of non-programmable calculator is allowed.
4) Assume suitable data if necessary.
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- Q.1** a) Derive the expression for motion of electron under combined electromagnetic field. (06)
b) Explain use of electric and magnetic fields in focusing system of Oscilloscope. (04)
OR
a) Calculate the deflection of cathode ray beam caused by earth's magnetic field. (10)
Assume that the tube axis is so oriented that it is normal to the field, the strength of which is 0.65G. Anode potential is 450V, anode-screen distance is 25cm.
- Q.2** a) What are Thermistors? Explain its types and applications. (06)
b) The resistivity of doped silicon material is $8 \times 10^{-3} \Omega\text{m}$. Hall coefficient is $3.8 \times 10^{-4} \text{ m}^3/\text{C}$. Find mobility and density of carriers (04)
OR
a) Calculate conductivity of pure silicon at room temperature when concentration of carrier is 1.9×10^{10} per cm^3 Assume $\mu_e = 1800 \text{ cm}^2/\text{volts sec}$.
 $\mu_h = 600 \text{ cm}^2/\text{volts sec}$. (06)
b) Explain significance of Drift current and Diffusion Current. (04)
- Q.3** a) What is function of Capacitors in electronic circuit? Explain different types of Capacitor in brief. (06)
b) Draw CE and CB configurations of BJT and compare its parameters. (04)
OR
a) How Zener diode is different from normal PN junction diode? Explain its working with the help of construction and VI Characteristics. (06)
b) Write a short note on FET—Construction, types and symbol. (04)
- Q.4** a) With the help of neat circuit diagram explain construction and working of Center tapped full Wave Rectifier. (06)
b) What do you mean by Astable, Monostable and Bistable states of Timer? (04)
OR
a) What is SCR? Explain Construction and VI characteristics of SCR. (06)
b) Compare half wave rectifier with bridge rectifier. (04)
- Q.5** a) Draw symbol and explain binary equation of following Logic Gates. (06)
i) NAND Gate ii) Ex-OR Gate iii) NOR Gate
b) Convert following numbers into decimal number system :- (04)
i) $(1110111.1001)_2$ ii) $(842)_8$
OR
a) Solve using 2's complement method :- (06)
i) $(1101)_2 - (1110)_2$ ii) $(1110)_2 - (1101)_2$
b) What are combinational circuits? List down its applications. (04)
- Q.6** a) Explain working of Television Set with the help of proper block diagram. (06)
b) What is working principle of DVD player? (04)
OR
a) How Mobile phone technology is better than Telephone? (06)
b) How food is cooked in Microwave oven? (04)

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