

7382 – A11 – IS BSc (CS) – N – 17

FIRST SEMESTER B.Sc. (CS) DEGREE EXAMINATION, NOVEMBER 2017

BASIC ELECTRICALS AND ELECTRONICS

(Theory)

[Max. Marks : 80]

Time : 3 Hours]

*Answer any five full questions.
Use of scientific calculators is allowed.*

1. a) Derive the equation for alternating Voltage i.e. $e = E_m \sin \omega t$. [6 + 4 + 4 + 2]
b) Define Average value and R. M. S value of alternating quantity.
c) Write note on Phasor diagrams.
d) Explain the concept of in Phase.
2. a) Explain RLC series circuit. Derive expression for Impedance and Phase angle.
b) A Capacitor of Capacitance $80 \mu\text{f}$ is connected in series with 30Ω resistor across 230V 50Hz supply. Draw circuit and find (i) Impedance(Z) (ii) Current (I) (iii) Phase angle (ϕ) [$80 \mu\text{f} \rightarrow \text{Micro Farads}$]
c) Define Frequency, waveform, cycle and Instantaneous value. [6 + 6 + 4]
3. a) Explain Reason for the use of 3 Phase system. Also explain working of elementary 3- Phase alternator.
b) Mention different parts in transformer and explain what is the use of transformer. Also mention types of transformers.
c) Define and explain voltage regulation in case of transformers. [6 + 6 + 4]
4. a) Define P-N Junction. Explain working principle of diode in Reverse biased condition.
b) Explain Zener diode as a voltage regulator.
c) Derive Ripple factor Full wave rectifier circuit. [5 + 5 + 6]

[P.T.O.]

5. a) Define operating point. Explain why operating should be stable.
b) With necessary diagram explain the CE Configuration along with I/P , O/P Characteristics of NPN transistor.
c) Explain transistor as an amplifier. [4 + 6 + 6]
6. a) Explain Barkhausen criteria while designing oscillator.
b) Draw the circuit for Hartley oscillator.
c) Explain op-amp as a subtracter. [6 + 4 + 6]
7. a) Explain frequency Modulation. Derive expression F.M Wave
b) Mention types of antenna .
c) Write Note on Microwave bench. [8 + 4 + 4]
8. Write note on any **four** of the followings:
a) Pin diagram of IC-741.
b) Difference between A.C and D.C signals.
c) Impedance triangle.
d) Ripple and Ripple Factor.
e) Block diagram of communication system. [4 + 4 + 4 + 4]