Department: PHYSICS

2nd YEAR: SEMESTER – IV (UG/SHPHS/403/C-10) CORE-10

ANALOG SYSTEMS AND APPLICATIONS

Credit-4; Full Marks: 25

Subject Teacher: Mahitosh De

SYLLABUS UNITIZATION

Month	Week	Topics to be taught
March	1	P and N type semiconductors. Energy level diagrams. Conductivity and mobility. Concept of drift velocity.
March	2	PN junction fabrication (Simple idea). Barrier formation in PN junction diode. Static and dynamic resistance. Current flow mechanism in forward and reverse biased diode
March	3	Rectifier Diode: Half wave rectifiers. Center tap and bridge full wave rectifiers
April	1	Calculation of ripple factor and rectifier efficiency
April	2	Zener diode and voltage regulation.
April	3	Principle and structure of a) LED b) Phootodiode c) Solar cell.
April	4	*Class Test.*
May	1	Bipolar junction transistors: NPN and PNP transistor. Characteristics of CB, CE and CC configurations. Current gains α and β. Active, cut-off and saturation regions.
May	2	Load line analysis of transistors. DC load line and Q-factor.
May	3	Field Effect Transistor: JFET and its IV characteristics, pinch-off voltage. Applications.
May	4	MOSFET- structure, classification of MOSFET.
June	1	Enhancement and depletion type, typical applications and IV characteristics.
June	2	*Class test.*
June	3	Revision and problem solving exercise.
June	4	Revision and problem solving exercise.

References;

1. Electronics Fundamentals and Applications, J.D Ryder,2004 Prentice Hall.
2. Integrated Electronics, J. Milman and C.C Halkias,1991 Tata McGraw Hill.
3. Electronics Fundamentals and Applications, D. Chattopadhyay, P.C Rakshit