

Mar. 2022

M.Sc(Phy)- I SEMESTER

Electronic Devices and IC Technology (PHL-104)

Time: 90 Minutes

Max. Marks:25

- Instructions:**
1. It is compulsory to answer all the questions (1 marks each) of Part -A in short.
 2. Answer any three questions from Part -B in detail.
 3. Different sub-parts of a question are to be attempted adjacent to each other.

PART -A

- Q1 (a) Convert the following decimal number to binary (1)
12.0625
- (b) What are shift registers? (1)
- (c) In common base connection collector current =0.96 miliampere and base current =0.05 miliampere .what is the value of alpha. (1)
- (d) Define Avalanche breakdown voltage? (1)
- (e) Define CMRR . (1)
- (f) Define linear & Digital IC. (1)
- (g) What is monolithic IC? (1)
- (h) Define pinch off voltage. (1)
- (i) Define flip-flop. (1)
- (j) Define counter . (1)

PART -B

- Q2 (a) Draw the logic diagram, construct the excitation table and give the characteristic equation and explain the working of a J-K flip-flop. (3)
- (b) What is multiplexer? Design a 4:1 multiplexer. (2)
- Q3 (a) Explain the working of JFET .Define the parameter of a JFET and develop its equivalent circuit. (3)
- (b) In what respect, JFET differs from MOSFET? (2)
- Q4 (a) Explain how OP-AMP is used as a difference amplifier and its functions as inverter? (3)
- (b) Explain the functions of IC-555timer as Astable multivibrator . (2)
- Q5 (a) Explain how will you fabricate diode and transistor in IC chip? (3)

(b) Design a synchronous 4-bit up counter.

(2)

Q6 Write short notes of any one : Photolithographic process or Memory . (5).
