(4)

Roll No. ..... Total Pages : 2

752104

Mar. 2022

M.Sc. (Phy) I SEMESTER

Electronic Devices and Integrated Circuits (MPH-104)

Time : 90 Minutes] [Max. Marks : 25

Instructions :

1. *It is compulsory to answer all the questions (1 mark 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

1. (a) Write two advantages and limitations of ICs. (1)

(b) What are the linear and digital ICs? (1)

(c) In common base connection I_c = 0.96 milliampere and base current is 0.05 milliampere. What is the value of alpha? (1)

(d) Compare JFET and BJT four point. (1)

(e) Define break down and saturation region. (1)

(f) Define power supply rejection ratio and input offset current. (1)

(g) Convert $(2047)_{10}$ to hexadecimal number. (1)

(h) Calculate the address lines required for an 8K byte memory chip. (1)

(i) A ripple counters are also called ..... . (1)

(j) Calculate the number of select line required in 1-to-4 demultiplexer. (1)

PART-B

2. (a) How you fabricate an NPN transistor? (3)

(b) Explain photolithographic process. (2)

3. (a) Explain how OP-AMP is used as difference amplifier. (2)

(b) Explain the functional block diagram of IC-555 timer. (3)

4. Write short notes on multiplexer and demultiplexer. (5)

5. (a) Draw the equivalent circuit of a MOSFET operating in enhancement mode. (3)

(b) Explain characteristic curves of JEFT. (2)

6. (a) Draw and explain working of Master-slave JK flip-flop. (2)

(b) What is shift register? What are the different configuration of shift registers? (3)