

Roll No. :

Total No. of Questions : 11]

[Total No. of Printed Pages : 3

BPF-2234

M.Sc. (Final) Examination, 2022

PHYSICS

Paper - VII (B)

(Analog, Digital Systems and Communications)

Time : 3 Hours]

[Maximum Marks : 75

Section-A

(Marks : 2 × 10 = 20)

Note :- Answer all *ten* questions (Answer limit **50** words). Each question carries **2** marks.

Section-B

(Marks : 5 × 5 = 25)

Note :- Answer all *five* questions. Each question has internal choice (Answer limit **200** words). Each question carries **5** marks.

Section-C

(Marks : 10 × 3 = 30)

Note :- Answer any *three* questions out of five (Answer limit **500** words). Each question carries **10** marks.

Section-A

1. Attempt all questions :

- (i) Draw circuit diagram of logarithmic amplifier.
- (ii) Write *two* differences between ROM and RAM.

BR-426

(1)

BPF-2234 P.T.O.

- (iii) What is principle of a photodetector ?
- (iv) Which semiconductor is used for LED ?
- (v) What is Semiconductor Switch ?
- (vi) Define Modulation Index.
- (vii) Draw the circuit diagram of JK flip-flop.
- (viii) What is Multiplexer ? Write its application.
- (ix) What is Microcomputer ?
- (x) Explain memory in brief.

Section-B

2. What is advantage of active filter ? Give active low pass filter and obtain its various parameters.

Or

What is DAC ? Explain 8-bit DAC.

3. Write short notes on the following :
- (i) Photoconductor
 - (ii) Photoresistor

Or

Explain difference between polarity tester and voltage tester.

4. What is Optocoupler ? Discuss its type and applications.

Or

What is DSBSC modulation and how can it generate for communication ?

5. Draw the logic circuit and obtain the truth table for the following expression :

$$Y = AB + \bar{A}B + ABC$$

Or

What is the use of Demultiplexer ? Write the truth table and logic circuit of 4 : 1 Demultiplexer.

6. What is addressing mode ? Explain with suitable examples.

Or

Explain :

- (i) Counters
- (ii) Timing delay

Section-C

- 7. What is waveform generator ? Draw and explain triangular wave generator.
- 8. Draw the circuit diagram of Numeric display unit and explain.
- 9. Explain Frequency Division Multiplexing (FDM) and give its applications.
- 10. Draw the circuit diagram of D-flip-flop and find its characteristic equation using function table.
- 11. Draw and explain architectural diagram of 8085.