

PG (CBCS)
M.Sc. Semester- IV Examination, 2023
PHYSICS
PAPER: PHS 404B
(APPLIED ELECTRONICS – SPL-II)



Full Marks: 40

Time: 2 Hours

Write the answer for each unit in separate sheet

The figures in the right-hand margin indicate full marks.
Candidates are required to give their answers in their own words as far as practicable.

PHS 404B.1
APPLIED ANALOG ELECTRONICS
F.M. - 20

GROUP-A

1. Answer any **TWO** of the following questions: 2×2=4
- Explain image formation process of a camera tube and schematically depict the associated pulse train for that.
 - Explain the terms -Even field and odd field.
 - Find the length of the dipole required to receive channel VI.
 - Draw the waveform of composite video signal between consecutive horizontal sync pulses.

GROUP-B

2. Answer any **TWO** of the following questions: 4×2=8
- Explain in detail the operation of VIDICON TV Camera with a neat diagram.
 - Why are color difference signals transmitted instead of transmitting individual colour signals? Which colour difference signals are transmitted and why?
 - Explain the operation of ramp type digital voltmeter with neat diagram.
 - Explain construction details and operation of a precision in-line colour picture tube with necessary.

GROUP-C

3. Answer any **ONE** of the following questions: 8×1=8
- Explain the positive and negative modulation with proper diagram? Which modulation is preferred in TV signal modulation and why? Explain horizontal, vertical, and interlaced scanning with detailed description.
 - What is wave guide? Describe different modes of propagation of EM wave in rectangular waveguides?

(P.T.O)

PHS 404B.2
APPLIED DIGITAL ELECTRONICS
F.M. - 20

GROUP-A

1. Answer any **TWO** of the following questions:

2×2=4

- a) What are the different FLAG registers in 8085 microprocessors?
- b) Define Pulse Width Modulation (PWM).
- c) Mention two reasons why a signal should be sampled for transmission through digital communication system.
- d) Write down the result of the execution of the following two instructions:

LXI H, E051

DCR C

GROUP-B

2. Answer any **TWO** of the following questions:

4×2=8

- a) If a memory location starts with 0000 and ends with FFFF then how many locations are there? If a word length is 8 then how many flip-flops are there in that memory cell?
- b) Explain the relationship between the minimum bandwidth required for a BPSK system and the bit rate. Determine the minimum bandwidth and baud for a BPSK modulator with a carrier frequency of 40 Hz and an input bit rate of 500 kbps.
- c) State and explain sampling theorem and aliasing effect.
- d) Write an assembly language programme in 8085 microprocessor to subtract 65H from 97H.

GROUP-C

3. Answer any **ONE** of the following questions:

8×1=8

- a) What are the advantages of digital communication over analog communication? Define and describe pulse code modulation. What do you mean by quantization and encoding?
- b) (i) Explain assembly language programming model of a 8085 microprocessor,
(ii) Explain the output of the following program:

MVI C 05

MVI A 05

LINE 1 ADD A

DCR C

JNZ LINE 1

HLT
