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PG CBCS
M.Sc. Semester-II Examination, 2021
PHYSICS
PAPER: PHS 203

Full Marks: 40**Time: 2 Hour****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

203.1: ANALOG ELECTRONICS - II**Marks: 20****Answer any TWO questions of the following:****2x10=20**

1. (a) What is a SCR? Explain its principle of operation and give its volt-ampere characteristics. 10
 (b) What is firing angle? How can it be controlled in a rectifier current using SCR? 10
 (c) What is the advantage of a TRIAC over SCR? 10
2. What is the basic difference between transducer and sensor? Write a short note on photo electric transducer. 10
3. (a) A T-section of a low pass filter has series inductances of 100mH and shunt capacitance of 0.025uF. Find the cut-off frequency and nominal design impedance. Also design an equivalent π -section. 10
 (b) What is the basic difference between Ideal filter and practical filter? What are the applications of filter circuit? 10
4. Derive the expressions for voltage and current along a parallel wire transmission line and obtain its solution. Define the propagation constant of transmission Line. 10

203.2: DIGITAL ELECTRONICS - II**Marks: 20****Answer any TWO questions of the following:****2x10=20**

1. (a) Discuss the modulation and demodulation of PAM systems? 10
 (b) What is sampling theorem? What is Nyquist rate and Nyquist interval? 10
2. (a) Why are the program counter and the stack pointer 16-bit registers? What are flags? 10
 (b) Define opcode and operand, and specify the opcode and the operand in the instruction MOV H, L. 10
 (c) Explain the functions of the ALE and IO/M' signals of the 8085 microprocessors. 10

(P.T.O.)

(2)

3. Describe a dual slope analog-to-digital converter and mention its applications. Write a short note on R-2R ladder type digital to analog converter. 10
4. What is a demultiplexer? How can a decoder circuit be used as a demultiplexer? Give the block diagram of a 4-to-16-line demultiplexer. Write a short note on RAM and ROM. 10
