Reg. No ..... Name **21P4041**

M. Sc DEGREE END SEMESTER EXAMINATION - APRIL 2021

SEMESTER 4 : PHYSICS

COURSE : **16P4PHYT16EL - INSTRUMENTATION AND COMMUNICATION ELECTRONICS**

(For Regular - 2019 Admission and Supplementary - 2018/2017/2016 Admissions)

Time : Three Hours Max. Marks: 75

PART A

Answer All (1 mark each)

1. Which of the following is not a characteristic of ideal transducer?
   a) High dynamic range b) Low linearity c) High repeatability d) Low noise
2. Which of the following can be measured using change in resistivity?
   a) Temperature b) Visible radiation c) Moisture content d) All of the mentioned
3. Phase difference between two voltages at frequencies above 10Hz can be measured using:
   a) CRO b) Voltmeter c) X-Y plotter d) Multi meter
4. Main disadvantage of a true r.m.s responding voltmeter is _____
   a) presence of transducer b) presence of thermocouple
   c) presence of transformer d) presence of oscillator
5. In a TV, the part of electron gun to which blanking pulses are fed is
   a)the cathode b)the grid c)the anode d)the filament

(1 x 5 = 5)

PART B

Answer any 7 (2 marks each)

6. Explain foil type strain gauge
7. What is the working principle of a thermistor?
8. Define transducers
9. What are resistive Transducers?
10. What are the advantages of DVM over analog voltmeter?
11. What is the capacitance of a tuning circuit, tuned to a station of frequency 1MHz, if the series inductance is 1 mH.
12. Write short note on Stroboscope
13. Explain the process of modulation.
14. Sketch a colour picture tube, and indicate its signal voltage inputs.
15. What are the four main layers of Ionosphere?

(2 x 7 = 14)

PART C

Answer any 4 (5 marks each)

16. Write a short note on pH meter.
17. A certain crystal has a coupling coefficient of 0.32.How much electrical energy must be applied to produce an output of 7milli joules of mechanical energy?
18. How drift problem in DC Amplifier is eliminated using chopper type voltmeters?
19. Give the principle and working of basic dc standard differencial voltmeter as a dc differencial voltmeter
20. Discuss the types of losses that may occur with RF transmission lines.
21. A 400 W carrier is modulated on a depth of 75%.calculate total power in the modulated wave in the following forms of AM: (i) Double side and suppressed carrier; (ii) SSB.

(5 x 4 = 20)

PART D

Answer any 3 (12 marks each)

22.1. What are X-Y recorders? With a block diagram, explain how the recording can be done using this type of recorders.

OR

2. Explain in detail about the following nuclear radiation transducers
   i) Proportional counter ii)Geiger Muller counter

23.1. Draw the circuits of an AC voltmeter using rectifier and explain Its operation

OR

2. With a neat diagram explain the components of CRO.

24.1. Draw a neat block diagram of monochrome television transmitter. Explain the function of each block.

OR

2. Draw the circuit diagram of a balanced modulator and explain its working. Show that the balanced modulator produces an output consisting of side bands only.

(12 x 3 = 36)