Reg. No ..... Name **19P4041**

MSc DEGREE END SEMESTER EXAMINATION - MARCH/APRIL 2019

SEMESTER 4 : PHYSICS

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

(For Regular - 2017 Admission and Supplementary - 2016 Admission)

Time : Three Hours Max. Marks: 75

Section A
Answer all the following (1 marks each)

1. Resistive transducers are ----------
   a) Primary transducers b) Secondary transducers
   c) Either primary or secondary d) None of the mentioned
2. Process of physical deformation on application of electric field is described by --------
   a) Electromagnetic property b) Electro mechanical property
   c) Magnetostriction property d) Electrostriction property
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. Sensitivity is of thermocouple is of the order of _____
   a) MV b) V c) GV d) mV
5. In AM wave the modulation index is 100%. If the carrier is suppressed,the percentage saving in power will be
   a)66.6% b)50% c)75% d)None of these

(1 x 5 = 5)

Section B
Answer any 7 (2 marks each)

6. Describe briefly piezo-electric transducer.
7. What are the advantages of a foil type strain gauge?
8. What is meant by coupling coefficient for a magnetostrictive transducer?
9. What are resistive Transducers?
10. Give the circuit diagram of a simple sweep generator and explain its working.
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. What is single-sideband suppressed carrier modulation? What are its advantages with respect to ordinary AM ?
14. Explain the process of modulation.

15. How ionosphere help in sky wave propagation?

(2 x 7 = 14)

Section C
Answer any 4 (5 marks each)

16. Explain Hall Effect transducers
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. Explain with a diagram the working of a digital pH meter. How is pH measured?
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. What is the minimum value that the characteristic impedance of an air dielectric parallel wire can have?

(5 x 4 = 20)

Section 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. Discuss any two types of transducers used for the measurement of Pressure.

23.1. Describe with a neat diagram the operation of a chopper type micro voltmeter.

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 single side band amplitude modulation circuit and explain its working. What are the advantages with SSB transmission?

(12 x 3 = 36)