G 2077 (Pages : 2) Reg. No.....

Name.....

M.Sc. DEGREE (C.S.S.) EXAMINATION, JUNE 2016

Fourth Semester

Faculty of Science

Branch II : Physics–A—Pure Physics—Elective Bunch-A—Electronics

PH 4E A3—INSTRUMENTATION AND COMMUNICATION ELECTRONICS

(2012 Admissions—Regular)

Time : Three Hours Maximum Weight : 30

Part A

Answer any **six** *questions.*
Each question carries a weight of 1.

1. Briefly explain resistive transducer.
2. Explain the principle and working of a strain gauge.
3. Explain voltage to frequency conversion.
4. What is a Q meter ? Explain the merits.
5. Explain the working of a magnetic recorder.
6. What is SSB technique ? Explain.
7. Give an idea of monochrome reception.
8. Bring out the principle of high definition TV.
9. Differentiate between PWM and PCM.
10. Explain TDMA.

(6 × 1 = 6)

Part B

Answer any **four** *questions.*
Each question carries a weight of 2.

11. A resistance wire strain gauge uses a soft iron wire of small diameter. The gauge factor is + 4.2. Calculate the Poisson's ratio.
12. A Piezo electric crystal having dimension of 5 mm × 5 mm × 1.5 mm and a voltage sensitivity of 0.055 Vm/N is used for force measurement. Calculate the force if the voltage developed is 100 V.

Turn over

13. Sketch the equivalent circuit of a photo electric transducer and obtain the expression for voltage of an equivalent voltage source .

14. Give the basic ideas of high definition LCD TV.

15. Describe the ionosphere variations in space.

16. Discuss magnetron with theory. State the limitations.

(4 × 2 = 8)

Part C

Answer **all** *questions.*
Each question carries a weight of 4.

17. (a) Discuss the construction and principle of working of a LVDT. Explain how the magnitude and direction of the displacement of core of an LVDT detected.

Or

(b) Draw and explain the circuit of a digital frequency meter. What are the different methods used for high frequency determination ?

18. (a) Explain the circuit diagram and operation of a chopper type dc amplifier voltmeter.

Or

(b) What is an X-Y recorder ? How do you distinguish it from a X-t or Y-t recorder ? Explain with suitable circuit diagram, the working of a X-Y recorder. Discuss its applications

19. (a) Discuss transmission lines and its losses.

Or

(b) Describe the basic principles of colour TV transmission and reception in detail.

20. (a) Explain PAM in detail. State its merits and demerits. Discuss PPM and its applications.

Or

(b) Discuss on satellite communications.

(4 × 4 = 16)