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WT—316—2024

FACULTY OF SCIENCE

M.Sc. (Second Year) (Fourth Semester) EXAMINATION

NOVEMBER/DECEMBER, 2024

PHYSICS

Paper PHY-404(B)

(Electronic Instrumentation)

(Wednesday, 18-12-2024) **Time : 2.00 p.m. to 5.00 p.m.**

Time—3 *Hours* *Maximum Marks*—75

N.B. :— (1) *All* questions are compulsory.

(2) Figures to the right indicate full marks.

1. Describe in detail generalized measurement systems and instrument characteristics. 15

Or

(*a*) Explain classification of instruments. 8

(*b*) Discuss errors in detail. 7

2. Define piezoelectric and photoelectric effects. What is a transducer ? Discuss in detail piezoelectric and photoelectric transducers. 15

Or

(*a*) Explain in detail, with the help of block diagrams, temperature and pressure transducers. 8

(*b*) Draw block diagrams and discuss displacement transducer and strain gauges. 7

P.T.O.

3. Define automation. Discuss in detail automation in digital instruments, auto-zeroing and auto-ranging. 15

Or

(*a*) Explain in detail applications of PC for measurement of displacement. 8

(*b*) With the help of neat block diagram, explain working of digital storage oscilloscope. 7

4. Define telemetry. Draw and discuss in detail working of Q meter and lock in amplifier. 15

Or

(*a*) Draw and discuss sample and hold circuit. 8

(*b*) Describe humidity measurement using data acquisition system. 7

5. Write short notes on any *three* :

(*a*) Importance of measurements 5

(*b*) Biomedical electrode and transducers 5

(*c*) AC motor speed measurement and control 5

(*d*) Thickness measurement using LVDT. 5