22432

21819

3 Hours / 70 Marks Seat No. | | | | | | | | |

Instructions : (1) All Questions are *compulsory.*

(2) Answer each next main Question on a new page.

(3) Illustrate your answers with neat sketches wherever necessary.

(4) Figures to the right indicate full marks.

(5) Assume suitable data, if necessary.

(6) Use of Non-programmable Electronic Pocket Calculator is permissible.

(7) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

(8) Use of steam tables, logarithmic, Mollier's chart is permitted.

Marks

1. Attempt any FIVE of the following : **10**

(a) State the types of electromagnetic tachometers.

(b) List down the transducers for force measurement.

(c) State the working principle of ultrasonic type thickness measurement.

(d) State the need of vibration measurement.

(e) Name the sensing element used in microphones.

(f) State the units of vibration.

(g) Define force. State its units.

2. Attempt any THREE of the following : **12**

(a) Describe the troubleshooting procedure of piezo-electric load cell.

(b) With suitable sketches explain the working of differential roller LVDT.

(c) State the quantities involved in the measurement of vibration. Draw the diagram of electromagnetic relative vibration pickup.

(d) Draw and explain measurement of sound level using condenser type microphone.

3. Attempt any THREE of the following : **12**

(a) State any two advantages and disadvantages of contact type digital encoder.

(b) Compare AC & DC tachometer.

(c) Draw and explain hydraulic force meter. State its major specifications.

(d) With relevant diagram explain sound measurement using electro dynamic type microphone.

4. Attempt any THREE of the following : **12**

(a) With necessary diagram explain the calibration procedure of any one type of contactless tachometer.

(b) Draw and explain pressductor load cell.

(c) Draw and explain non-contact type of thickness measurement.

(d) Draw a neat sketch of electromechanical type relative vibration pickup.

(e) Draw and explain method of sound measurement using piezo-electric crystal microphone.

5. Attempt any TWO of the following : **12**

(a) Draw and explain method of speed measurement using stroboscope. State its any two applications.

(b) With necessary diagrams explain the working of strain gauge load cell.

(c) Draw and explain electromagnetic relative vibration pickup. Compare it with electro-mechanical relative vibration pick-up.

6. Attempt any TWO of the following : **12**

(a) With relevant diagram explain thickness measurement using capacitive type transducer. State its advantages and disadvantages. (one point each)

(b) State the common causes of vibration. Explain calibration procedure of any one vibration sensor with appropriate sketches.

(c) (i) Define the following terms related to sound measurement :

(a) sound pressure

(b) sound power

(c) intensity level

(ii) Explain the working principle of electorates type microphone.
