22443

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

(7) Preferably write the answers in sequential order.

Marks

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

a) Enlist different types of high pressure gauges.

b) Classify dynamometer's,

c) List the different applications of potentiometer.

d) Name material used for diaphragms.

e) Define Reynolds number. State its formula.

f) List the different types of vibration measuring devices.

g) State the advantages of stroboscope.

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

a) Explain term-fidelity and overshoot.

b) Compare infra-red sensor and frequency modulation transmitter.

c) Describe the working principle of RTD. Explain with neat sketch.

d) Draw the construction and explain working of nutating disc type positive displacement meter.

Marks

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

a) Distinguish between Threshold and Resolution.

b) List the different types of errors in measurement system and explain any one.

c) Explain construction and working of R.V.D.T.

d) Explain radiation pyrometer with neat sketch.

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

a) Draw creep curve for force transducer. State its significance.

b) Explain the construction and working of thermocouple vacuum gauge.

c) Describe working principle of C-type Bourdon tube. List material used in it.

d) Explain FFT analyser with block diagram of the FFT spectrum analyser.

e) Explain haw sound is measured by carbon-microphone.

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

a) State the working principle of piezo-electric transducer and its applications.

b) State the application of orifice meter Venturi tube and Pitot tube.

c) Draw the constructional details of hair hygrometer? State its application.

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

a) Draw and explain the working of coriolis flowmeter.

b) Explain the working and application of bonded strain gauge.

c) Explain with neat sketch working principle of Eddy current generation type tachometer.

22443

11920

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

Marks

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

a) State the parameters for selection of displacement transducer.

b) Enlist the applications of load cell.

c) State the law of intermediate metal.

d) State the materials of tube and float of rotameter.

e) Define gauge factor.

f) State the principle of working of slipping clutch tachometer.

g) State the characteristics of force measurement.

Marks

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

a) Define :

(i) Fidelity

(ii) Threshold

(iii) Overshoot

(iv) Drift

b) Explain with neat sketch working of Eddy current dynamometer.

c) Explain with neat sketch Pirani gauge. State advantages also.

d) Describe the working principle of "Dall tube". Also state applications.

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

a) Explain radiation pyrometer with neat sketch.

b) Classify transducers.

c) Differentiate :

(i) Range and Span

(ii) Accuracy and Precision

d) Draw a creep curve for force transducer. State significance.

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

a) Explain the working of slip ring sensor with neat sketch.

b) Describe the working of platinum resistance thermometer with neat sketch.

c) Explain with neat sketch photoelectric pressure transducer. State advantages.

d) State any four desirable characteristics of bonded type resistance strain gauges.

e) Explain with neat sketch carbon microphone. State disadvantages.

Marks

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

a) Classify errors and explain any two types of errors.

b) State the necessity of contactless electrical tachometer and describe with neat sketch photoelectric tachometer.

c) Explain with neat sketch Coriolis Flowmeter. State advantages and applications.

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

a) Draw a labelled block diagram of FFT analyser. State advantages and applications.

b) Describe with neat sketch working of Hair Hygrometer. Enlist disadvantages.

c) Define ultrasonic flow measurement. Describe working principle of Doppler flow meter with two advantages.

22443

21222

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

15 minutes extra for each hour

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

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

(3) Figures to the right indicate full marks.

(4) Assume suitable data, if necessary.

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

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

Marks

1. Attempt any FIVE : **5 × 2 = 10**

(a) State the working principle of 'RVDT'.

(b) Name different Torque Measuring Instruments.

(c) State the law of 'Intermediate Temperature'.

(d) Enlist types of flow meters.

(e) Define term 'Natural Frequency'.

(f) Enlist types of speed measurement devices.

(g) List desirable characteristics for force measuring sensor.

2. Attempt any THREE : **3 × 4 = 12**

(a) Differentiate between 'Accuracy' and 'Precision'.

(b) Explain working principle of 'Slip Ring' with neat sketch.

(c) Compare 'Radiation' and 'Optical' Pyrometer.

(d) Explain the working of 'Hot Wire Anemometer.

3. Attempt any THREE : **3 × 4 = 12**

(a) Explain term 'Drift' and 'Sensetivity'.

(b) Draw block diagram of Generalised Measuring System.

(c) Explain 'Infra-Red Sensor' with neat sketch.

(d) Explain working principle of photo-electric pressure transducer with sketch.

4. Attempt any THREE : **3 × 4 = 12**

(a) Draw 'Creep Curve' for force transducer.

(b) Enlist any four applications of 'Optical Pyrometer'.

(c) Draw labelled diagram of 'Pressure Thermometer'.

(d) Explain the procedure of 'Strain Measurement' of cantilever beam.

(e) Write sound level norms as per API.

(i) 4-cylinder I.C. engine

(ii) Centrifugal pump

(iii) Lathe Machine

(iv) Industrial Exhaust fan

5. Attempt any TWO : **2 × 6 = 12**

(a) Write two applications of following :

(i) Contact Transducer

(ii) Active Transducer

(iii) Non-contact Transducer

(b) Draw and explain working of 'Ultrasonic Flow Meter'.

(c) Draw the constructional details of 'Sling Psychrometer'. Write the procedure of measuring air-properties using 'Sling Psychrometer' and 'Psychrometric Chart'.

6. Attempt any TWO : **2 × 6 = 12**

(a) Write any two applications of following :

(i) Orifice Meter

(ii) Venturi Tube

(iii) Pitot Tube

(b) Draw flow diagram of FFT analyser. Enlist any four applications of FFT.

(c) Explain with neat sketch the construction of 'Slipping Clutch Tachometer'.

———————