Printed Pages : 1 Roll No. EME403

B. TECH.

THEORY EXAMINATION (SEM–IV) 2016-17

MEASUREMENT AND METROLOGY

Time : 3 Hours ***Max. Marks : 100***

Note : *Be precise in your answer. In case of numerical problem assume data wherever not provided.*

SECTION – A

1. Attempt all parts of the following questions: **10 x 2 = 20**

(a) What is meant by static response?

(b) Define interchangeability.

(c) Mention any four precautions to be taken while using slip gauges.

(d) What is progressive error in screw gauge?

(e) Define limit and tolerance.

(f) Name any four instruments used for temperature measurement.

(g) Distinguish between force and torque.

(h) What is comparator?

(i) Define straightness.

(j) What are the chances of errors using sine bars?

SECTION – B

2. Attempt any five of the following questions: **5 x 10 = 50**

(a) Give the structure of generalized measuring system and explain it in detail.

(b) Explain in detail various types of errors that may arise in engineering measurements.

(c) Explain with a neat sketch the construction and working of sigma comparator.

(d) Explain the working principle of AC laser interferometer and explain how the straightness is measured?

(e) Explain how V-Block and three point probe are used for measurement of roundness. What are the limitations of V-Block?

(f) Describe with neat sketch the measurement of pitch of internal and external threads using a pitch measuring machine

(g) With a sketch explain the displacement measurement using Linear Variable Differential Transformer (LVDT)

(h) Explain the Taylor's principle of gauge design. Define ring gauge and plug gauge.

SECTION – C

Attempt any two of the following questions: **2 x 15 = 30**

3 Describe with neat sketches:

(i) Thermocouples

(ii) Strain gauge torque meter

4 Describe the followings in connection with pressure measurement:

(i) Piezo-electric pressure transducer.

(ii) Variable capacitance transducer.

5 (i) Explain with a neat sketch how a vernier caliper is used for linear measurements.

(ii) Why is sine bar not suitable for measuring angle above 15^0.