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BIME-027

DIPLOMA IN MECHANICAL ENGINEERING

Term-End Examination

June, 2012

01775

BIME-027 : METROLOGY AND QUALITY CONTROL

Time : 2 hours *Maximum Marks : 70*

*Note : Attempt **any five** questions. All questions carry **equal** marks use of scientific **calculator** is permitted.*

1. (a) Describe some sources of errors in precision measurement. **7+7**

   (b) Explain Failure Mode Effect Criticality Analysis (FMECA).

2. (a) Mention the name of the gauge that can be used for checking each of the following : **7+7**

   (i) Shaft (ii) Wire

   (iii) Wheels (iv) Bolt

   (v) Hole (vi) Nut

   (vii) A spherical ball.

   (b) What is a coordinate measuring machine ? What advantages does it offer in measuring various manufactured parts ?

3. (a) What is the important characteristics of dial indicator ? Enumerate its uses. 7+7

(b) Define the pitch of a screw thread. Draw an illustrative line diagram of a pitch measuring machine and describe its working.

4. (a) Describe in detail the adverse effects of poor surface finish. 7+7

(b) Differentiate between primary and secondary standards of measurement.

5. Define : 7+7

(a) (i) Arithmetic mean

(ii) Median

(iii) Mode

(iv) Geometric mean

(v) Quality assurance

(vi) Frequency distribution

(vii) Kaizen Practice

(b) For the following observations of length find arithmetic mean, geometric mean, median and mode :

x (mm) :	5.12, 5.15, 5.16, 5.18, 5.20, 5.21, 5.24, 5.25.

6. (a) Make a list of gauges that are used in production. Describe any two of them with neat diagram. 7+7

(b) Explain the difference between inspection and statistical quality control.

7. (a) What do you mean by acceptance sampling ? State their usefulness over 100 percent inspection. 7+7

(b) What is Zero defect concept ? Discuss the steps involved in implementing zero defect concept.