

**DIPLOMA – VIEP – MECHANICAL
ENGINEERING (DMEVI)**

Term-End Examination

June, 2017

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**BIME-027(S) : METROLOGY AND QUALITY
CONTROL**

Time : 2 hours

Maximum Marks : 70

Note : Attempt any five questions. All questions carry equal marks.

1. (a) State and explain the Taylor's principle for the design of limit gauges. 7
- (b) Explain Hole Basis system and Shaft Basis system. 7
2. (a) Explain the working principle of sine bar for angular measurement. 7
- (b) Explain the method of calibration of slip gauges. 7

3. (a) What is meant by the term “flatness”, as applied to metrology ? Differentiate between flatness interferometer and length interferometer. 7
- (b) Explain the function and operation of a stylus type surface texture measuring instrument. 7
4. (a) What is meant by the term “magnification” as applied to a mechanical comparator ? Explain the methods of magnification used in a comparator. 7
- (b) Define “Roughness”. Why is the assessment of surface texture important ? 7
5. (a) Define the term ‘Quality’. State the various factors which affect the product quality. 7
- (b) With a neat sketch, explain Pareto Analysis. Write the application of Pareto Analysis. 7
6. (a) Explain different types of sampling plans used in the industry. Differentiate between single sampling and double sampling plan. 7
- (b) Explain the term “Quality Assurance function”. State the advantages of quality assurance. 7

7. (a) Explain the advantages of Co-ordinate Measuring Machines (CMMs) as applied to the inspection department. 7
- (b) Describe the working of a profile projector. Also mention its applications. 7

8. Write short notes on any **four** of the following : $4 \times 3 \frac{1}{2} = 14$

- (a) AQL
- (b) Control Chart for Variables
- (c) Automatic Inspection System
- (d) Floating Carriage Micrometer
- (e) Operational Characteristic (OC) Curve
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