

**DIPLOMA VIEP MECHANICAL ENGINEERING****Term-End Examination****December, 2013****BIME-027 : METROLOGY AND QUALITY CONTROL***Time : 2 hours**Maximum Marks : 70*

*Note : Attempt any five questions. Each question carries equal marks. Assume missing data if any.*

1. (a) What do you understand by interchangeable manufacture ? Explain selective assembly of machined parts. 7
- (b) What is meant by gauge maker's tolerances and wear allowance ? State their recommended values in terms of work tolerance. 7
2. (a) Sketch a line diagram of the optical arrangements of an NPL gauge interferometer and explain its working principle. 7
- (b) Define pitch of a screw thread. Draw a line diagram of a pitch measuring machine and describe its working. 7
3. (a) Define the term primary texture and secondary texture. Describe the instrument used for obtaining a graphical record of primary texture. 7
- (b) What is the speciality of a tool maker's microscope as compared to an ordinary laboratory microscope ? 7

4. (a) Describe and sketch an optical system used in a comparator with which you are familiar. 7
- (b) What are the various methods of specifying pitch of a gear ? Why the base pitch of a spur gear is so important ? 7
5. (a) What do you understand by cost of quality and value of quality ? How to balance them ? 7
- (b) Describe the quality system in TQM. Explain TQM principles in brief. 7
6. (a) What do you understand by the term "field complaints" ? State the significance of field complaints in quality assurance function. 7
- (b) State and explain the conditions favourable for economic use of control charts for defects per unit. 7
7. (a) State and explain the advantages and limitations of acceptance sampling over 100% inspection. 7
- (b) Describe the philosophical basis for quality circles. State its characteristics. 7
8. Write short notes on **any four** of the following : 3½x4=14
- (a) Acceptance sampling
- (b) Process capability
- (c) Zero defect
- (d) Automatic inspection system
- (e) Profile projector
- (f) Flatness and smoothness.
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