**METROLOGY & INSTRUMENTATION- PC604ME**

**ASSIGNMENT – I (UNIT- I & II)**

1). Define the terms **Tolerance, Allowance, Limits & Fit**

2)Distinguish between **Tolerance and Allowance** of sizes of components.

3).Explain the **Shaft basis & Hole basis systems** with neat sketches & examples

4).What are the basic principles that should be observed in **the design** **of Instruments**

5)Name the **different types of Micrometers** in part measurements

6).Explain the use of **Optical Projectors** in part measurements

7).Differentiate between **i) Measuring Instrument & Comparator**

**ii ) Gauge & Comparator**.

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| 8). Explain the roundness error with a neat sketch? |
| 9) Define the term straightness and flatness? |

10). Distinguish between **Interchangeable Assembly and selective assembly with** examples & sketches.

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11).. In a **Hole & Shaft base Assembly** of 30mm nominal size ,the tolerances for the hole & shaft are as follows **Hole ; 30 +0..02-0.000 mm, Shaft : 30-0.070 - 0.040**mm. Determine i)Max & Mini Clearance obtainable ii) Allowance iii) Hole & Shaft Tolerance and iv) the type of fit.

12).Determine limits dimensions for a clearance fit between mating parts of **diameter 40mm**.providing a **minimum clearance of** **0.10mm** with a tolerance on the hole equal **to 0.025mm** and shaft **0.05mm** using hole base system and shaft basis system?

13).Explain in detail **Sine bar** and **the various types of Sine Bars with sketches & state the limitations of Sine Bar**

14) Explain the working Principle of **back pressure type Pneumatic Comparator** with neat sketch

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| 15)Explain **the Autocollimator** with neat sketch in detail and write its advantages? |  |
| 16)..Explain the working of **sigma comparator** with a neat sketch? 17).Explain the **roundness measurement with Talyrond** |  |

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