Code No: RT31036   **R13**   SET - 1

III B. Tech I Semester Supplementary Examinations, May - 2017
METROLOGY
(Mechanical Engineering)

Time: 3 hours   Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
2. Answering the question in **Part-A** is compulsory
3. Answer any **THREE** Questions from **Part-B**
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PART –A

1	a)	Define basic size and fundamental deviation.	[4M]
	b)	Explain why sine bar cannot be used beyond 45° angle measuring.	[4M]
	c)	What is the application of Tool makers Microscope in metal cutting process?	[4M]
	d)	Difference between comparator and measuring instrument	[3M]
	e)	Define total composite error, tooth to tooth composite error.	[4M]
	f)	What are the instruments used for machine tool testing?	[3M]

PART -B

2	a)	Write a short note on interchangeable manufacture and the 'selective assembly' of machine parts.	[8M]
	b)	Calculate the fundamental deviation and tolerances and hence the limits of size for the shaft and hole for the following fi: 60 mm h8-f7. The diameter steps are 50 mm and 80 mm.	[8M]
3	a)	Describe the measuring principle and working of sine bar.	[8M]
	b)	Draw a neat sketch of progressive type solid plug gauge and describe advantages and disadvantages of this type of gauging.	[8M]
4	a)	Describe with a neat sketch the working principle and the applications of Toolmaker's microscope.	[8M]
	b)	Explain about principle of interference of light.	[8M]
5	a)	Discuss what you understand by the following terms in connection with surface finish measurement: i) Waviness ii) Lay iii) Envelope method iv) Crest line method	[8M]
	b)	Explain how a optical comparator works and briefly enumerate the advantages of optical comparators.	[8M]
6	a)	Describe a method for inspecting the involute profile of a spur gear tooth.	[8M]
	b)	Describe about three wire method for measuring the effective diameter of various screw threads.	[8M]
7	a)	What is meant by alignment tests on machine tools? Why they are necessary? Explain?	[8M]
	b)	Explain the procedure of use of straight edges to check straightness.	[8M]

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