

Code No: RT32241

**R13****SET - 1****III B. Tech II Semester Regular/Supplementary Examinations, April -2018**  
**MACHINE TOOLS & METROLOGY**

(Automobile 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) Why can't be relief or clearance angles zero or negative? Explain. [3M]
- b) Calculate the tail stock set over to turn a taper of 50 mm per m on a job of 200 mm length. [4M]
- c) How is a shaper specified? Explain. [4M]
- d) What is form grinding? Explain. [3M]
- e) Differentiate between workshop gauges and inspection gauges. [4M]
- f) Explain the principle of fluid displacement comparator. [4M]

**PART -B**

- 2 Explain the mechanism of chip formation. Also explain the conditions that promote formation of various types of chips in detail. [16M]
- 3 a) What are the differences between a turret lathe and a capstan lathe? Explain. [8M]
- b) Discuss briefly the procedure for cutting threads on lathe. [8M]
- 4 a) Draw the block diagram of a slotting machine and explain briefly its various parts. [8M]
- b) What are the various operations performed on a planer? Explain. [8M]
- 5 a) Discuss briefly the following: [8M]  
i) Mounting of wheels ii) Wheel truing
- b) Draw the block diagram of a horizontal milling machine and explain briefly its various parts. [8M]
- 6 A hole and mating shaft are to have a nominal assembly size of 50mm. The assembly is to have a maximum clearance of 0.15mm and a minimum clearance of 0.05mm. The hole tolerance is 1.5 times the shaft tolerance. Determine the limits for both hole and shaft: By using i) Hole basis system ii) Shaft basis system. [16M]
- 7 a) Distinguish between Mechanical comparator and Electrical comparator. [8M]
- b) What are the differences between surface roughness and surface waviness? Explain. [8M]

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