

Code No: **R32241****R10****Set No. 1****III B.Tech II Semester Regular/Supplementary Examinations, April – 2017****MACHINE TOOLS & METROLOGY**

(Automobile Engineering)

Time: 3 hours**Max. Marks: 75****Answer any FIVE Questions****All Questions carry equal marks**

- 1 Discuss the constructional features of speed gear box and feed gear box with suitable diagrams. [15M]
- 2 a) What is the significance of capstan, turret and automatic lathes in production shop? [7M]
b) What is an indexing? Explain with a neat sketch the types of indexing. [8M]
- 3 a) Describe various slotting tools and slotter operations. [6M]
b) What do you understand by number size drill and letter size drill? [5M]
c) What are the probable effects of incorrect drill feed rates? [4M]
- 4 a) What is the marking system followed in case of grinding wheels? Explain the individual elements of the marking system from the stand point of the functioning of the wheel. [10M]
b) Describe vitrified shellac, and resinoid bonds. [5M]
- 5 a) Explain the terms: Hole based system, shaft based system. Enumerate the differences between them. [7M]
b) Determine and sketch the limits of tolerance and allowance for a 70mm shaft and hole pair designated H_8-n_9 . The basic size lies in the range of 50-80 mm. The multipliers for grades 8 and 9 are 25 and 40 respectively. The fundamental deviation for 'n' shaft is $(+5 D^{0.34})$ microns. [8M]
- 6 a) Give the classification of angle measuring instruments. [8M]
b) What are two standard systems of linear measurement? Explain. [7M]
- 7 Describe the working principle of NPL Flatness interferometer with a sketch. What are the fringe patterns obtainable in case of tapered surfaces? [15M]
- 8 a) Briefly enumerate the advantages and limitations of a differential pneumatic comparator. Explain the basic principle of operation of a typical pneumatic measuring instrument. [8M]
b) "Measurement of effective diameter by three wires is more accurate than any other method" - Explain. [7M]
