

B.TECH. SEM -VII PRODUCTION 2014 COURSE (CBCS) :
SUMMER - 2018
SUBJECT: MACHINE TOOL DESIGN

Day: **Tuesday**
Date: **22/05/2018**

S-2018-2524

Time: **02.30 PM TO 05.30 PM**
Max Marks: 60

N.B.:

- 1) All questions are **COMPULSORY**.
 - 2) Figures to the right indicate **FULL** marks.
 - 3) Assume suitable data, if necessary.
 - 4) Draw neat diagrams wherever necessary.
 - 5) Use of non-programmable pocket calculator is allowed.
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- Q.1** Discuss in detail working and auxiliary motions used in machine tools. (10)
OR
- Q.1** Explain with neat sketch the optimization of layouts of machine tools? (10)
- Q.2** Design an 18 speed back geared gear box with speed ranging from 30rpm and $\phi = 1.26$. Draw the structural diagram, best ray diagram and layout of gear box. (10)
OR
- Q.2** Discuss in detail the selection of electrical motors used in machine tools. (10)
- Q.3** Discuss the design criteria for machine tool structures along with suitable examples. (10)
OR
- Q.3** What are the factors affecting stiffness of machine tool structures? Discuss the methods to improve it. (10)
- Q.4** Explain with neat sketch the different shapes of slideways along with its merits and limitations. (10)
OR
- Q.4** Discuss in detail the design considerations of hydrodynamic slideways. (10)
- Q.5** Explain in detail the effect of machine tool compliance on machining accuracy? (10)
OR
- Q.5** Discuss in detail the materials used for the spindle unit used in machine tools. (10)
- Q.6** Discuss in detail the general principles for design of cams for single spindle automat. (10)
OR
- Q.6** Explain the bar feeding mechanism used for Turrets and Capstan lathe. (10)

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