BACHELOR OF TECHNOLOGY (C.B.C.S.) (2014 COURSE)
B.Tech.Sem - VI MECHANICAL : WINTER- 2022
SUBJECT : MACHINE TOOL DESIGN

Day : Wednesday
Time : 10:00 AM-01:00 PM

Date : 30-11-2022
W-13454-2022
Max. Marks : 60

N.B.:

1) All questions are **COMPULSORY.**
2) Figures to the right indicate **FULL** marks.
3) Draw neat and labelled diagram **WHEREVER** necessary.
4) Assume suitable data if necessary.

Q.1 Explain in detail the general requirements of machine tool design. **[10]**

OR

Q.1 Define working motions and auxiliary motions in machine tools. Show the same for lathe, drilling and milling machines. **[10]**

Q.2 State the various laws of stepped regulation. Why geometric progression is commonly used for speed gear box design? **[10]**

OR

Q.2 Design a 9 speed gear box with speed ranging from 30 rpm, given that $\phi = 1.41$. Draw the structural diagram, best ray diagram and layout sketch of gear box. **[10]**

Q.3 Explain the different factors which decide the materials used for machine tool structure. Also explain the materials used for same. **[10]**

OR

Q.3 What are the various factors affecting stiffness of machine tool structure? Explain in detail the methods to improve it. **[10]**

Q.4 What is the basic function of guide ways and explain its types? **[10]**

OR

Q.4 Give the different materials used for sliding friction power screw. Explain in detail the different profiles of power screw. **[10]**

Q.5 Explain in detail the effect of machine tool compliance on machining accuracy. **[10]**

OR

Q.5 State the common requirement of spindle support. Explain in detail the preloading of antifriction bearings. **[10]**

Q.6 State and explain the different type of maintenances in detail. **[10]**

OR

Q.6 Define transfer devices. What are the advantages and limitations of transfer devices? **[10]**

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