B.TECH
(SEM VI) THEORY EXAMINATION 2022-23
TOOL DESIGN

Time: 3 Hours   *Total Marks: 100*

Note: Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1.   **Attempt *all* questions in brief.**   **2 x 10 = 20**

(a)   Write the requirements of a control system of a machine tool.
(b)   What are the functions of guide ways of machine tool?
(c)   What is tool chatter?
(d)   Write the requirements of machine tool structure.
(e)   Write the materials used for spindles.
(f)   Define Tool.
(g)   Write the application of sliding bearings.
(h)   Differentiate between bending & Drawing.
(i)   Write the full form of CNC.
(j)   Define chip.

SECTION B

2.   **Attempt any *three* of the following:**   **10x3=30**

(a)   Enumerate the various factors on which tool life depend.
(b)   Discuss various types of tools wears.
(c)   Explain the method of cutting gears by milling.
(d)   What are the common procedures carried out during the design of cutting tool?
(e)   Differentiate between single & Multi point cutting tool.

SECTION C

3.   **Attempt any *one* part of the following:**   **10x1=10**

(a)   With the help of neat sketches explain the various clamping devices in use.
(b)   Sketch a single point cutting tool and show on it various tool elements and tool angles

4.   **Attempt any *one* part of the following:**   **10x1=10**

(a)   Discuss the important variables that affect metal flow during drawing operation in brief.
(b)   Write short notes on the following:
a) Coated carbide tools.
b) Grinding fixtures.
c) Materials handling equipment

5. **Attempt any *one* part of the following:**   **10x1=10**

   (a) Define a jig. Differentiate between a jig and a fixture. Name the essential elements which make up a jig.

   (b) With the help of neat sketches explain the various clamping devices in use.

6. **Attempt any *one* part of the following:**   **10x1=10**

   (a) Discuss in brief the essential requirements of a tool material. List the various cutting tool materials used in industry

   (b) Explain the design criteria for machine tool structures.

7. **Attempt any *one* part of the following:**   **10x1=10**

   (a) Explain how the machine tools are classified?

   (b) Explain the speed and feed changing system with simple centralized control.