Scheme – G

Sample Test Paper-I

Course Name : Diploma in Production Technology/Production Engg.

Course Code : PG/PT

Semester : Fifth

17532

Subject Title : Machine Tool Design

Marks : 25 **Time:1 hour**

Instructions:

1. All questions are compulsory
2. Illustrate your answers with neat sketches wherever necessary
3. Figures to the right indicate full marks
4. Assume suitable data if necessary
5. Preferably, write the answers in sequential order

Q1. Attempt any three **9 Marks**

a) Define machine tool.

b) Give any three basic requirements of machine tool.

c) What are the types of machine tool guide ways?

d) State any three machine tool structures for lathe machine

Q2. Attempt any two **8 Marks**

a) State the different materials used for machine tool structures.

b) Which profile of machine tool structure is mostly use? Why?

c) Compare machine tool with cutting tool (At least 4 points each)

Q3. Attempt any one **8 Marks**

a) How machine tools are classified? Give example of each type and its application in detail

b) Draw a block diagram of Engineering Design Pocess applied to machine tool and explain in detail

Scheme – G

Sample Test Paper-II

Course Name : Diploma in Production Technology/Production Engg.

Course Code : PG/PT

Semester : Fifth

17532

Subject Title : Machine Tool Design

Marks : 25 **Time:1 hour**

Instructions:

1. All questions are compulsory.
2. Illustrate your answers with neat sketches wherever necessary.
3. Figures to the right indicate full marks.
4. Assume suitable data if necessary.
5. Preferably, write the answers in sequential order.

Q1. Attempt any three only **9 Marks**

a) State three the functions of guide ways?

b) Give two basic types of guide ways and draw neat sketch of each

c) State the functions of spindle unit? Give any three

d) What the Ray diagram. What is its use in Machine Tool Design?

Q2. Attempt any two **8 Marks**

a) State types of structure diagram and draw each one.

b) Define "Common ratio. State any four common ratios used for machine tools.

c) What are different sources of vibrations? Explain in brief any one

Q3. Attempt any one **8 Marks**

a) What are the effects of vibrations on a) Machine tool b) work piece. Explain in detail

b) What are Aesthetics Characteristics in machine Tool Design describe in detail

Scheme – G

Sample Question Paper

Course Name : Diploma in Production Technology/Production Engg.

Course Code : PG/PT **17532**

Semester : Fifth

Subject Title : Machine Tool Design

Marks : 100 **Time: 3 hours**

Instructions:

1. All questions are compulsory
2. Illustrate your answers with neat sketches wherever necessary
3. Figures to the right indicate full marks
4. Assume suitable data if necessary
5. Preferably, write the answers in sequential order

Q1. A Attempt any THREE **12 Marks**

a) Why safety and convenience of controls is important in case of machine tools?
b) What are different requirements of machine tool structures?
c) Sketch any one open and closed type guide way and explain where is it used.
d) Differentiate between machine tool and cutting tool(At least four points each)

Q1. B Attempt any ONE **6 Marks**

a) State the different factors which govern the selection of factor of safety.
b) State the factors affecting stiffness of machine tool structure and also write methods to improve it.

Q2. Attempt any FOUR **16 Marks**

a) Define stress concentration factor? Write its importance in design.
b) Write the properties of material required for machine tool spindles.
c) Draw any structure diagram for following 1x2x3 and 3x1x2
d) What is ray diagram? Describe the significance of ray diagram
e) Define Aesthetics? Why is it important?

Q3. Attempt any TWO **16 Marks**

a) State the different materials used for machine tool Structures. Write their properties? What are different shapes in which they are used? State one example of each one
b) Draw the block diagram of design process of machine tool and describe each element in detail.
c) Describe stepped regulation used in machine tools? What are its basic types?

Q4. A Attempt any THREE **12 Marks**

a) State the different constraints for stepped regulation of speed.
b) Why feasibility of Ray diagram is required? How feasibility of Ray diagram is checked?
c) List out the different sources of vibrations in machine tools?

d) What is the function of knob? Draw any two sketches of knobs used in machine tools.

Q4. B Attempt any ONE **6 Marks**

a) What is spindle unit? What are its functions? State any two requirements of spindle unit
b) How vibrations in machine tools can be eliminated or reduced? Discuss in brief.

Q5. Attempt any FOUR **16 Marks**

a) Why location of displays is important in machine tools? Explain with suitable example
b) State any four effects of vibration on work piece.
c) Define speed chart? Why is it necessary?
d) State different standard values of Φ i.e. common ratio and state factors on which selection of Φ depends.
e) What are antifriction guide ways? State any four advantages of it over conventional guide ways.
f) Draw two neat sketches of antifriction ways used in machine tools.

Q6. Attempt any FOUR **16 Marks**

a) Calculate the spindle speeds for the following. Given Φ=1.2 N1=36rpm and no of steps six. Also draw suitable structure diagram for six speed and Ray diagram for the same.
b) State different types of bearings used for spindle support?
c) Draw a neat sketch of star wheel and write it's any one application.
d) State type of guide ways used in following
    i. Cross slide of lathe
    ii. Tail stock of lathe
    iii. CNC lathe machine
    iv. Milling machine table
e) Which type of machine tool structure profile is mostly used in machine tools? Why? Describe with suitable example.