

**Instructions to candidates**

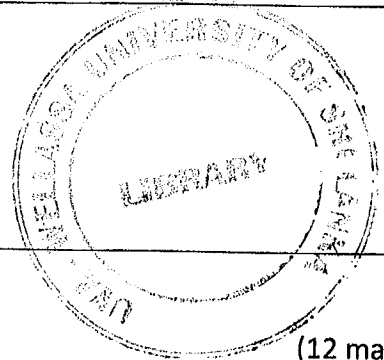
**Duration:** 02 hours

**Number of questions:** Four (04) Essay Questions

**Mark allocation:** 100 mark

Answer All Questions.

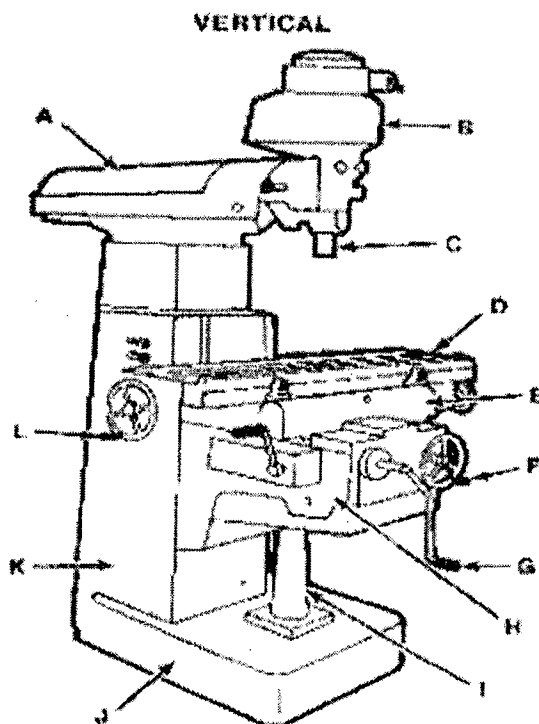
Scientific Calculators are allowed.



1.

a. Name the parts of the milling machine.

(12 mark)



b. Briefly explain the four milling cutters using sketches.

(08 mark)

c. Write down five milling operations.

(03 mark)

d. Compare and contrast milling machine and lathe machine.

(07 mark)

2.

a. Name the four welding joints.

(04 mark)

b. List four welding positions and draw the relevant sketches.

(08 mark)

c. Discuss the advantages and disadvantages of welding.

(10 mark)

d. Briefly explain types of welding flames.

(08 mark)

3.

- a. Define "indexing". (06 mark)
- b. Explain different methods of indexing. (08 mark)
- c. Calculate the indexing requirement for,
  - i.  $10^\circ$  divisions.
  - ii.  $15^\circ$  divisions.
  - iii. 24 divisions.

Using a milling machine where the index plates available are ,

Plate no. 1 15, 16, 17, 18, 19, 20 holes.

Plate no. 2 21, 23, 27, 29, 31, 33 holes.

Plate no. 3 37, 39, 41, 43, 47, 49 holes.

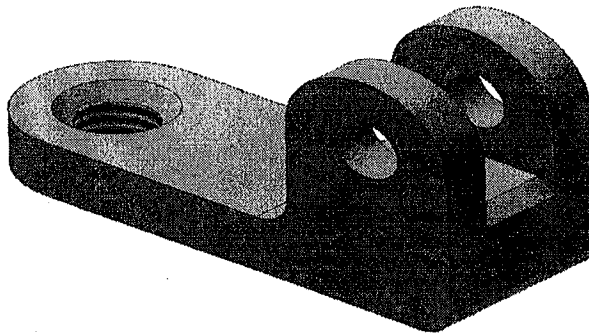
(06 mark)

4.

- a. Selecte the appropriate tool/machine/process for applications given in bellow.
  - i. Bend a metal plate to  $45^\circ$
  - ii. Join two plates
  - iii. Smooth surface of metal cube
  - iv. Remove a bareing from a shaft
  - v. Cut a gear wheel
  - vi. Cut metal palte with 2 inches thickness

(06 mark)

- b. You have given a task to produce a bracket. Describe the process, equipment and tools that you are going to use.



(14 mark)