

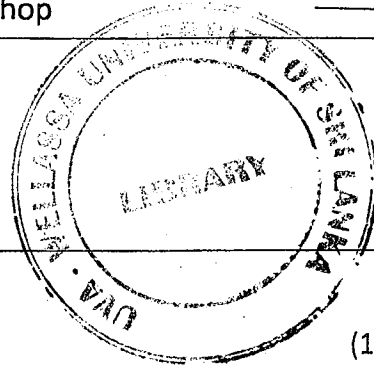
**Instructions to candidates**

**Duration:** 03 hour

**Number of questions:** Six Essays

**Mark allocation:** 200 mark

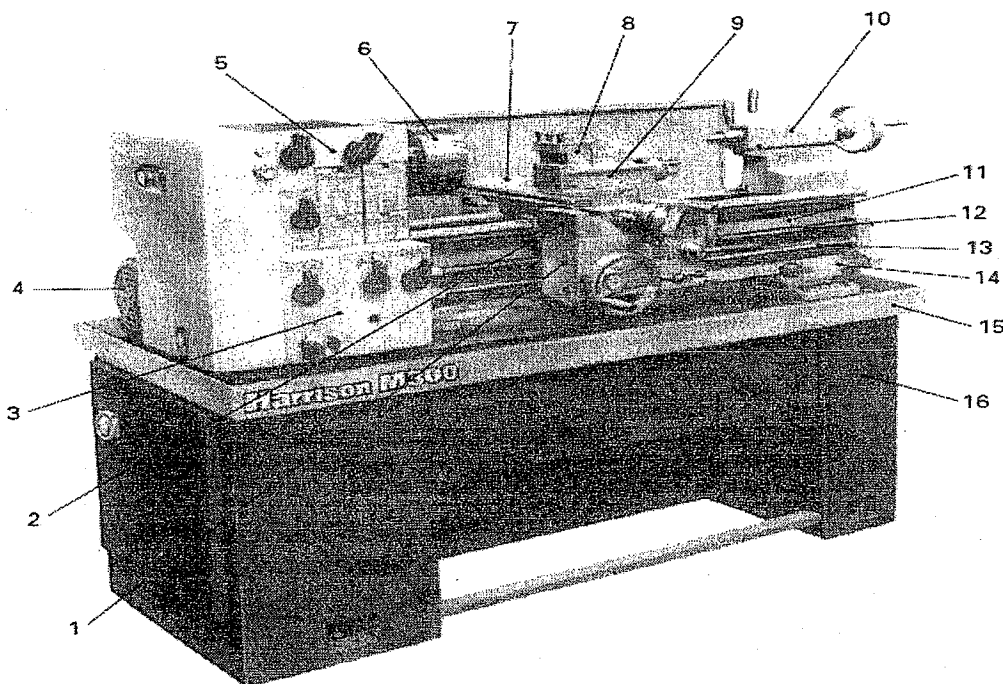
Answer all questions.



1.

a. Name the parts of the lathe machine

(16 mark)



b. Briefly explain the lathe elements

(08 mark)

- i. Chuck
- ii. Tailstock
- iii. Headstock
- iv. Bed

c. Write down five lathe operations.

(05 mark)

d. Name available taper turning methods? Explain three methods.

(12 mark)

2.

a. Name four welding joints.

(04 mark)

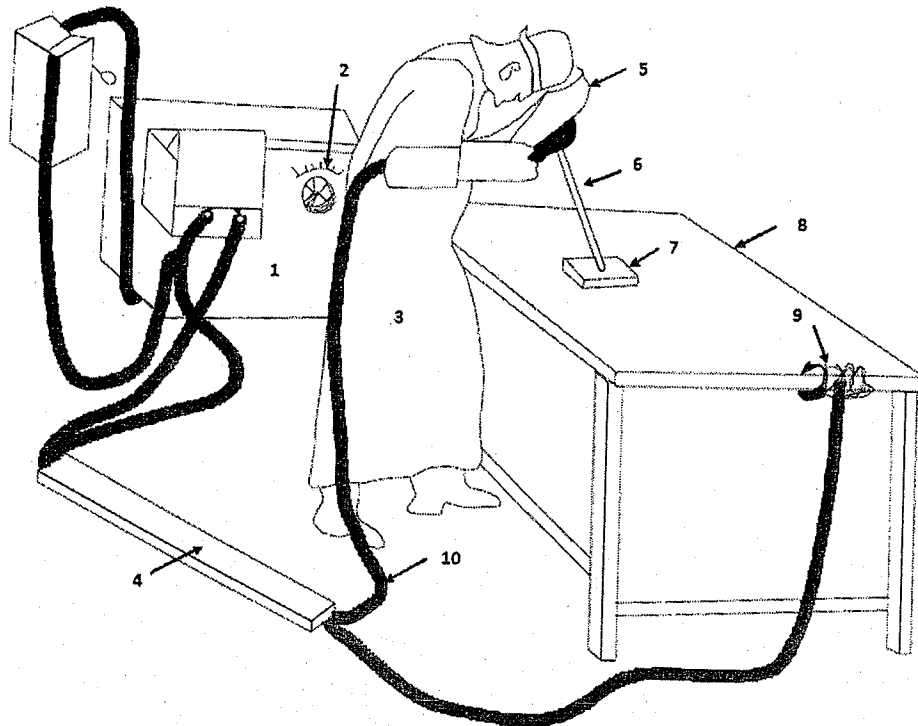
b. What are the four welding positions and draw the relevant sketches

(12 mark)

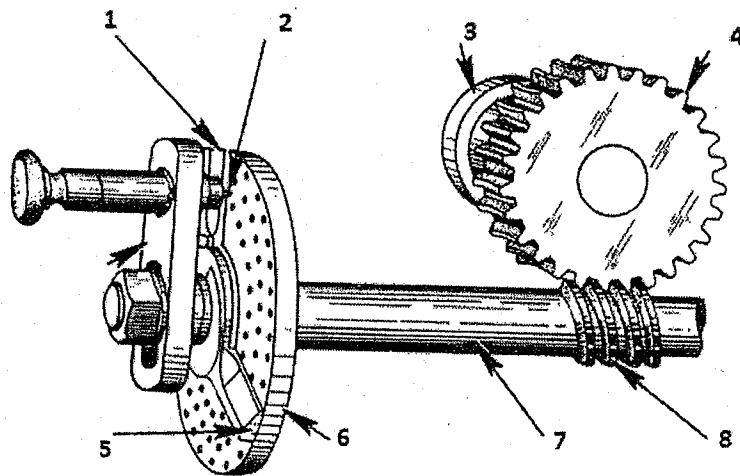
c. Discuss the advantages and disadvantages of welding

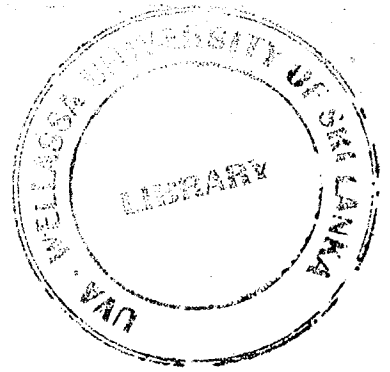
(10 mark)

- d. What are the three types of welding flames? Briefly explain. (09 mark)
- e. An arrangement of Arc welding process setup is shown in the below figure. Name all the parts. (10 mark)



- 3.
- a. What is indexing? (05 mark)
- b. What are different methods of indexing? Explain. (15 mark)
- c. Name the parts of the dividing head given below. (08 mark)





- d. Calculate the indexing requirement for
- 15° divisions
  - 13.5° divisions
  - 14 divisions

Using a milling machine where the index plates available are ,

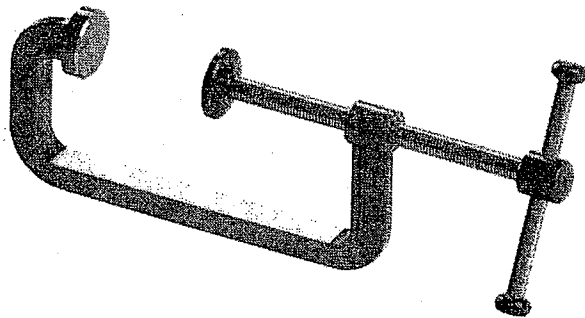
Plate no. 1 15, 16, 17, 18, 19, 20 holes

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

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

(12 mark)

- 4.
- What are the different chip formation method? Give two instances where we can find each type of chips. (09 mark)
  - Briefly explain positive negative rack angle (10 mark)
  - Name three operations that can be done using a milling machine and explain using sketches. (12 mark)
  - Mention five safety precautions you should follow inside the workshop. (08 mark)
5. Selecte appropriate tool/ machine/ process for applications given bellow.
- Create corn shape metal piece.
  - Cut a T shape groove
  - Cut a tread of a nail
  - Creat 8 mm hole
  - Bend a metal plate to 45°
  - Join two plates
  - Smooth surface of metal cube
  - Remove a bareing from a shaft
  - Cut a gear wheel
  - Cut metal plate with 2 inches thickness
- (20 mark)
6. You are asked to produce a C-Clamp. As a student, following engineering workshop subject, describe the process, equipment and tools step wise.



(15 mark)