ELIZADE UNIVERSITY, ILARA-MOKIN, ONDO STATE, NIGERIA

DEPARTMENT OF MECHANICAL ENGINEERING

SECOND SEMESTER EXAMINATIONS
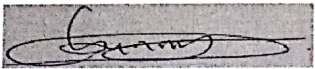### 2018/2019 ACADEMIC SESSION

COURSE: MEE 306 – Workshop Practice (2 Units)

CLASS: 300 Level Mechanical & Automotive Engineering

TIME ALLOWED: 2 Hours

HOD'S SIGNATURE

INSTRUCTIONS: Answer **Question 1** and **ANY OTHER THREE** questions

Date: July, 2019

Question 1

Considering the sketch in figure Q1 below,

   a. write in details the sequence and procedure involved in forming a cylinder from a sheet metal.   (4 marks)

   b. Calculate the;
      i. total surface area of the cylinder produced   (3 marks)
      ii. volume of the cylinder produced   (3 marks)

   c. List 5 apparatus needed to carry out the above operation   (5 marks)

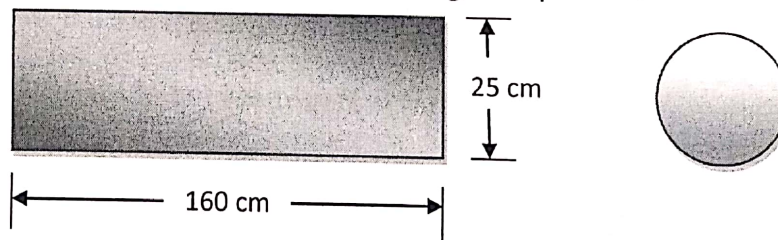   d. List 3 safety precautions to adhere to during the operation.   (3 marks)

25 cm

160 cm

Figure Q1

Question 2

   a. List and explain 5 functional parts of a lathe machine.   (5 marks)

   b. A steel bar of diameter 250mm is to be turned on a lathe resident in the central workshop of Elizade university by a SWEP student. If his choice of cutting speed is 180 m/min, determine the spindle speed he must select on the lathe to achieve this cutting speed.   (5 marks)

   c. With the aid of sketches, describe 4 plant layout types available.   (4 marks)

Question 3

a. Write short notes on 4 different types of lathe available. (8 marks)

b. Write short notes on the following cutting tool types
   i. High speed steel (HSS) (2 marks)
   ii. Cemented carbide (2 marks)
   iii. Diamond (2 marks)

Question 4

A solid shaft of 130 mm length was machined on a lathe to produce the material shown in figure Q4 below.

a. List the operations performed on the material to achieve the shape. (3 marks)

b. List 5 apparatus used in the course of the operation. (5 marks)

c. Enumerate the procedure involved in the operation. (3 marks)
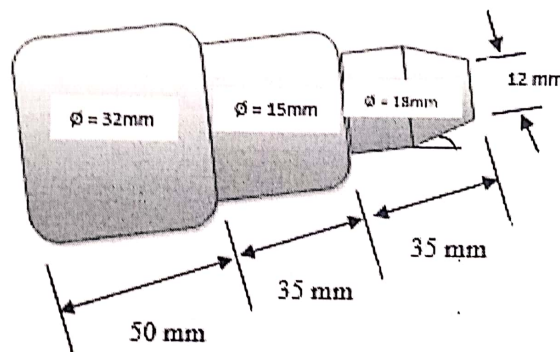
d. List 3 precautions that must be taken. (3 marks)

Figure Q4

Question 5

A chipping hammer is to be produced using high yield steel rod of 16 mm diameter as shown in figure Q5 below. If L = 25 cm and w = 15 cm,
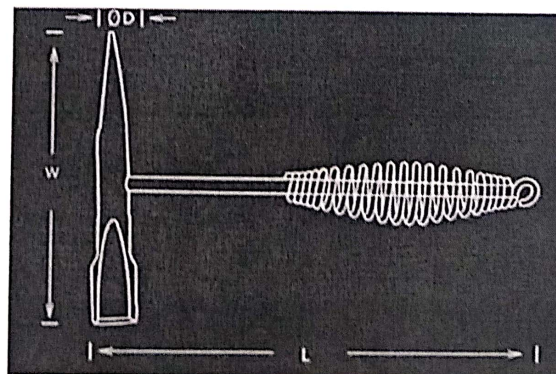

Figure Q5

a. Enumerate the procedure involved in producing the chipping hammer;   (5 marks)
b. What type of welding is needed to perform the operation?   (2 marks)
c. What type of welded joint is formed on the hammer?   (2 marks)
d. List 3 apparatus used for the operation   (3 marks)
e. Mention 2 precautions that must be taken.   (2 marks)

Question 6

a. With the aid of well labelled diagrams explain 4 types of lathe operations.   (8 marks)
b. Define the term "Engineering workshop".   (2 marks)
c. Explain the following briefly
    i.   Tool life   (2 marks)
    ii.   Cutting fluids   (2 marks)