SLIAE
SRI LANKA INSTITUTE OF ADVANCED TECHNOLOGICAL EDUCATION
(Established in the Ministry of Higher Education, vide in Act No. 29 of 1995)

Higher National Diploma in Technology (Agriculture)

Second Year, 2nd Semester Examination – 2015

AG -2208 Manufacturing Technology

Instructions for Candidates:
Answer all questions from part I and any two (02) from part II
All questions do not carry equal marks

No. of questions : 05
No. of pages : 04
Time : One hour and thirty minutes.

Part 1

Q1)

i) Draw a sketch diagram to show following lathe works.
a) Drilling b) boring and c) facing

(6 marks)

ii) Write usages of the below components of the lathe machine.

a) Headstock……

……

b) Carriage……

…….....

c) Tailstock……

……(6 marks)

iii) a) Define steel

…… (2 marks)

b) Group steel according to the percentage of carbon.

……..

…… (3 marks).

c) List four types of elements use in production of ferrous alloys.

……

……

……

…….. (3 marks)

(Total 20 marks)

Q2)

i) According to the technical process draw a flow diagram to show manufacturing process.

……..

……..

……..

(4 marks)

ii) Define guild system in the manufacturing process.

……

……..

……

……..

(4marks)

iii) Name the steel shapes given below.

A B C

……

……

(12marks)

(Total 20marks)

Part II - Answer two questions only

Q3)

i) **Define** the term " Agile manufacturing". (10marks)

ii) Briefly explain a) interchangeable parts
b) assembly line (10marks)

iii) Write short notes on English system of manufacturing. (10marks)

(Total 30 marks)

Q4)

i) List five carpentry works in the agricultural farm. (10 marks)

ii) Draw sketch diagram to show "Motise and Tenon" joints. (10 marks)

iii) Write short notes on following wood working tools.
a) Tenon saw
b) Panel saw (10 marks)

(Total 30 marks)

Q5)

i) List four types of welding. (10 marks)

ii) Draw sketch diagrams of four types of welded joints. (10 marks)

iii) List all the important steps when you are going to fabricate a " Rake".
(10 marks)

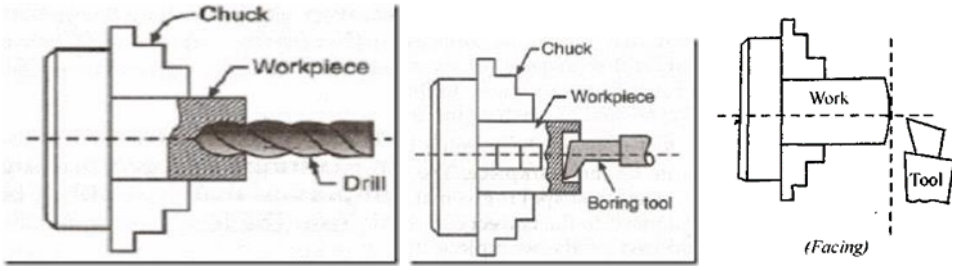
(Total 30 marks)

Marking Guide AG -2208 Manufacturing Technology

Part 1

Q1)

i) Draw sketch diagram to show following lathe works
d) Drilling b) boring and c) facing



(6 marks)

ii) Write usages of the components of the lathe machine given in bellow

- **Headstock:** mounted in a fixed position on the inner ways, usually at the left end. Using a chuck, it rotates the work.
- Carriage: Moves on the outer ways. Used for mounting and moving most the cutting tools.
- Tailstock: Fits on the inner ways of the bed and can slide towards any position the headstock to fit the length of the work piece.. (6 marks)

ii) a) Define steel

Steels are a large family of metals. All of them are alloys in which iron is mixed with carbon and other elements.

b) Grope the steel according to the carbon percentage consist

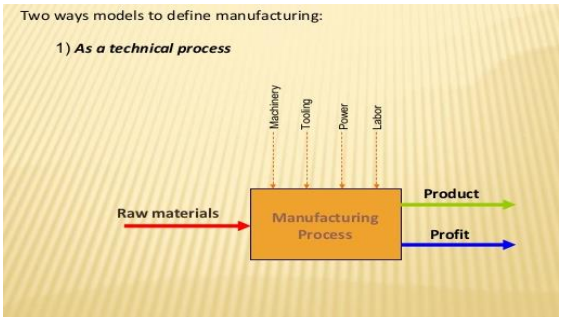
Steels are described as mild, medium- or high-carbon steels according to the percentage of carbon they contain,

c) List four types elements those can be added to produce ferrous alloys

… nickel, chromium, and tungsten and manganus…….. (8 marks)

Q2)

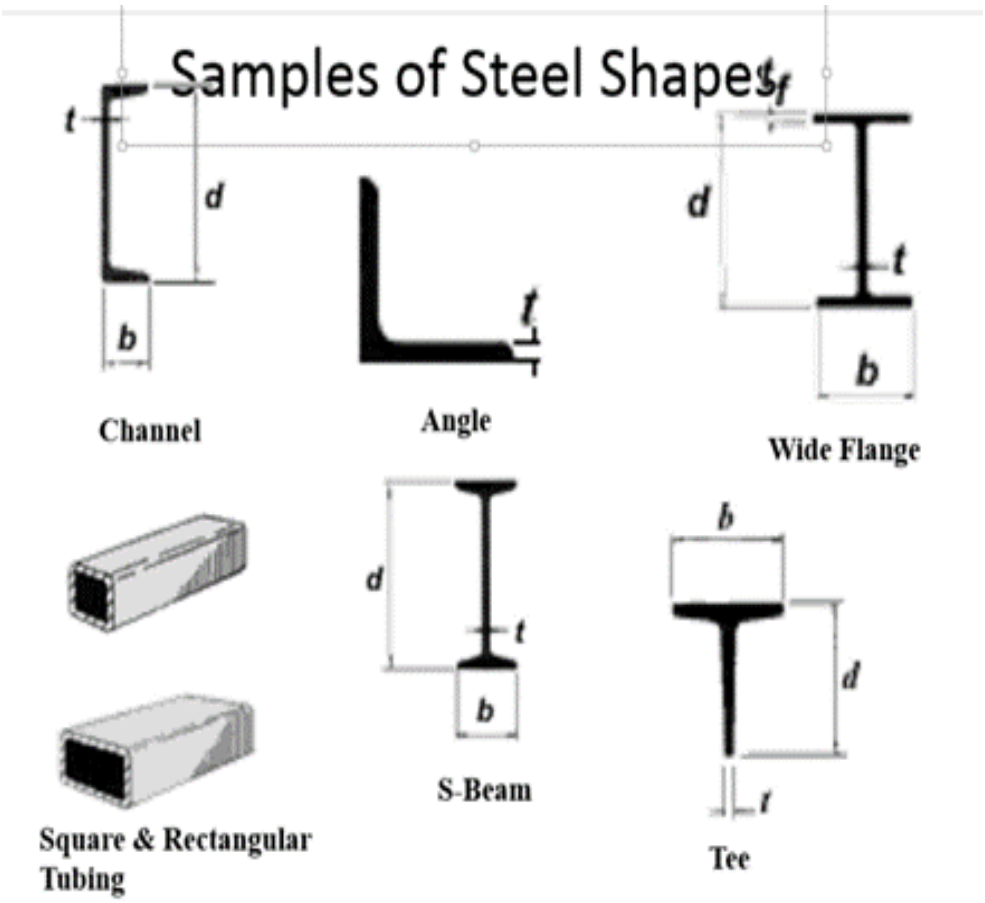
i) According to the technical process draw flow diagram to show manufacturing process



ii) Define guild system in manufacturing process

A guild /gɪld/ is an association of artisans or merchants who control the practice of their craft in a particular town.

iii) Name the steel shapes given in below



(12 marks)

Part II

Answer two questions only

Q3)

i) **Define** the term "Agile manufacturing " (10marks)

Agile manufacturing is a term applied to an organization that has created the processes, tools, and training to enable it to respond quickly to customer needs and market changes while still controlling costs and quality.

ii) Briefly explain a) interchangeable parts
b) assembly line (10marks)

The American System involved semi-skilled labor using machine tools to make standardized, identical, interchangeable parts, manufactured to a tolerance, which could be assembled with a minimum of time and skill. (Meaning 5 marks)

Since the parts are interchangeable, it was also possible to separate manufacture from assembly, and assembly could be carried out by semi-skilled labor on an assembly line—an example of the division of labor. The system typically involved substituting specialized machinery to replace hand tools. (meaning 5 marks)

iii) Write short notes on English system of manufacturing (10marks)

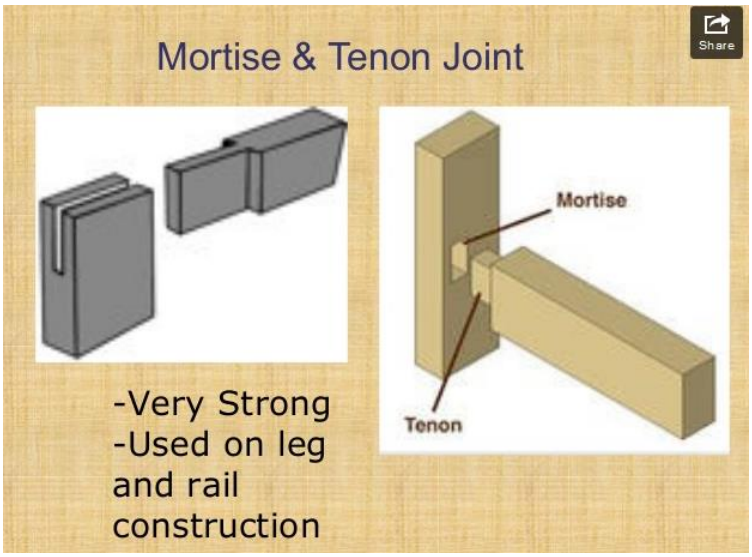
The English system of manufacturing was an early system of industrial production that required skilled machinists who were required to produce parts from a design or model. But however skilled the machinist, parts were never absolutely identical, and each part had to be manufactured separately to fit its counterpart. This was almost always done by one person who produced the completed item from start to finish. (meaning 10marks)

Q4)

i) List five carpentry works in the agricultural farm (10 marks)

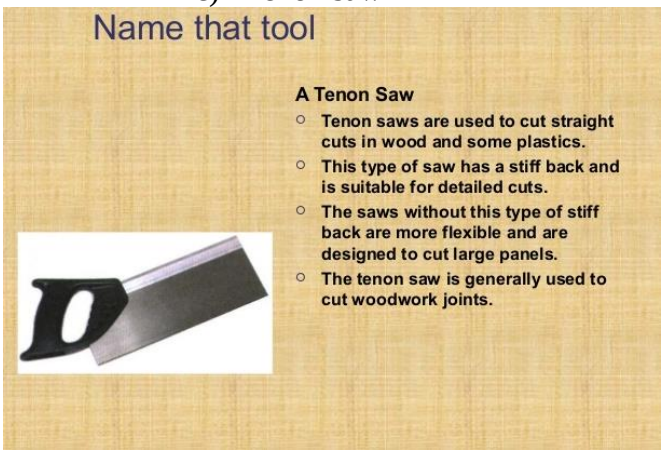
Making animal shed roofs
Making door frame
Making window frame
Making door and window
Making food traf

ii) Draw sketch diagram to show "Motise and Tenon" joints (10 marks)

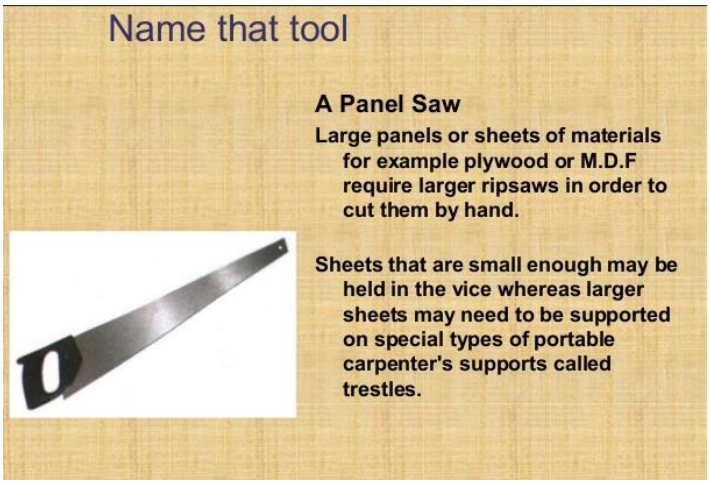


iii) Write short notes on following wood working tools

c) Tenon saw



d) Panel saw (10 marks)

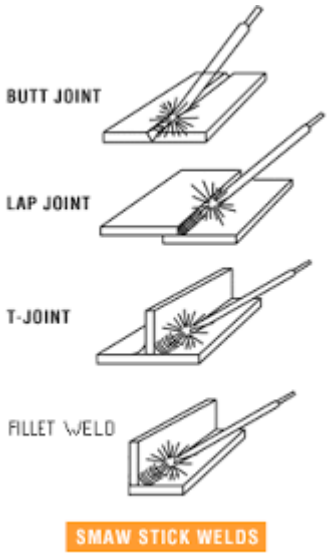


Q5)

iv) list four types of welding (10 marks)

arc welding, gas welding, spot welding, tig welding

v) Draw sketch diagrams of four types of welded joints (10 marks)



vi) If you are going to fabricate " Rake" list all the stapes you would be taken (10 marks)

Select the correct materials

Mark the shapes and length

Cut the material required shapes and pieces

Fitting each material by arc welding

File the rough surfaces to have finishing