ELIZADE UNIVERSITY, ILARA-MOKIN, ONDO STATE, NIGERIA

DEPARTMENT OF MECHANICAL, AUTOMOTIVE AND PRODUCTION ENGINEERING

SECOND SEMESTER EXAMINATIONS

2016/2017 ACADEMIC SESSION

HOD'S SIGNATURE

COURSE: CPE 303 – Workshop Practice & Manufacturing Technology (3 Units)

CLASS: 300 Level General Engineering

TIME ALLOWED: 3 Hours

INSTRUCTIONS: Answer any four questions

Date: July/August, 2017

Question 1

(a) Briefly explain why in the manufacturing of commercial products, the choice of mass production is usually preferred over jobbing and batch system. **(4 marks)**

(b) List any six (6) safety rules adopted when using any of the workshop equipment and tools. **(3 marks)**

(c) Explain any three parameters to be included in a mechanical workshop risk assessment hazard identification sheet. **(3 marks)**

(d) Explain the importance of the following safety gadget:
(i) Laboratory coat (ii) Safety boot (iii) Eye goggle (iv) Nose mask (v) Hand gloves **(5 marks)**

Question 2

(a) Enumerate the classification of engineering materials based on their processing techniques **(3 marks)**

(b) Classify Wood, Ceramics, Rubber, Aluminum, Leather, Glass, Ore, and Carbon Fibre materials into Ferrous Metal, Non-Ferrous Metal, Natural Materials and Artificial Materials. **(4 marks)**

(c) During the evaluations of materials used for car production, the following statements were recorded. Use one of these expressions to complete the statements below: **'covered with'** or **'made of'** or **'contain(s)'** **(4 marks)**

(i) The pipes of the radiator.....copper
(ii) The bumper.....chromium

(iii) The door handles.....zinc.
(iv) The cables.....plastic.
(v) The windscreen.....glass
(vi) The battery.....lead.
(vii) The pistons.....aluminum.
(viii) The cylinder block.....cast iron.

(d) Define the following terms: **(4 marks)**

(i) Thermal longitudinal expansion
(ii) Flexural Strength
(iii) Hardenability
(iv) Fullering

Question 3

(a) Explain with the aid of diagram/s any five (5) operations that could be carried out on the lathe machine. **(5 marks)**

(b) Analyze in brief the procedures for carrying out step turning operation of a rod on an engine lathe. **(3 marks)**

(c) What is the function of the following parts on the lathe machine? **(3 marks)**

(i) Tail stock spindle
(ii) Spindle speed display
(iii) Carriage or saddle
(iv) Tool post
(v) Tool holder
(vi) Compound slide hand wheel
(vii) Cross slide feed lever

(d) Enumerate the steps to be used in the fabrication of the mild steel bracket shown in Figure Q1(d) at any standard engineering workshop. **(4 marks)**

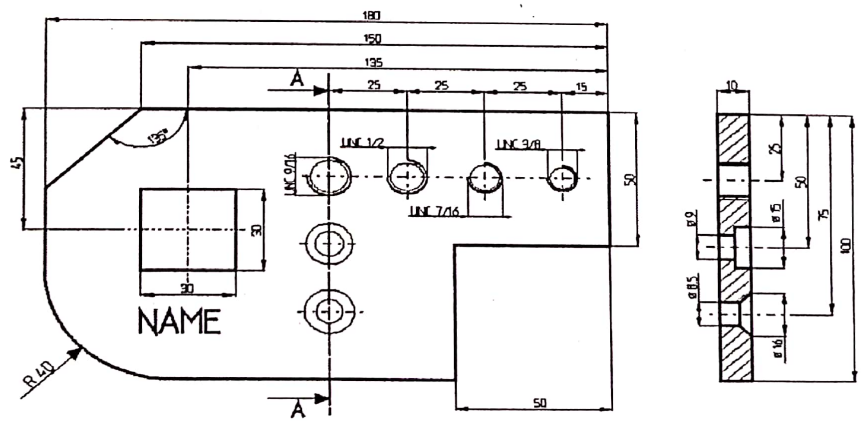

Figure Q1(d): Mild Steel Bracket

Question 4

(a) Distinguish between soft and hard wood and state at least any three (3) characteristics of each. **(4 marks)**

(b) What are the advantages and disadvantages of welded joint over riveted joint? **(5 marks)**

(c) Explain the usefulness of the following tools in Carpentry (i) F-Clamp (ii) Hand saw (iii) Pincers (iv) Crow bar (v) Jack plane (vi) Engineering square. **(6 marks)**

Question 5

(a) Briefly explain the following terms: **(5 marks)**

(i) Normalizing,

(ii) Toughening,

(iii) Stress relieving,

(iv) Hardening, and

(v) Surface treatment.

(b) Explain the importance of seasoning to timber. **(2 marks)**

(c) State three (3) methods of wood Seasoning, and Explain them briefly **(3 marks)**

(d) List and explain four (4) defects of timber **(3 marks)**

(e) Explain the possible preservative measure usually taken to preserve timber. **(2 marks)**

Question 6

(a) Define the term welding and briefly explain the classification of welding **(3 marks)**

(b) State and explain types of welded joint. **(3 marks)**

(c) Name two major polarity in arc welding and briefly explain them. **(2 marks)**

(d) Differentiate between AC and DC arc welding and name any four (4) equipment used in arc welding. **(3 marks)**

(e) Give any four (4) safety precaution to be observed when operating an electric arc welding machine. **(2 marks)**

(f) Discuss the three (3) types of flames as obtainable in oxy-acetylene welding. **(2 marks)**