NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY

FACULTY OF INDUSTRIAL TECHNOLOGY

DEPARTMENT OF INDUSTRIAL AND MANUFACTURING ENGINEERING

Bachelor of Engineering Honours Degree Industrial and Manufacturing Engineering

2nd Semester Main Examination

COURSE	**:**	**Workshop Technology II**
CODE	**:**	**TIE 1203**
DATE	**:**	**April/May 2014**
DURATION	**:**	**3 Hours**

INSTRUCTIONS AND INFORMATION FOR THE CANDIDATE

1. Answer any **five (5) questions**.
2. All questions carry **20 marks** each.
3. This paper contains **seven (7)** questions.
4. There are **three (3)** printed pages.

QUESTION 1

With the aid of sketches, explain a "Two Stroke" internal combustion engine for petrol and diesel engines, clearly showing the differences and giving examples of their applications. [20]

QUESTION 2

(a) Give a brief description of a vehicle suspension system and its purpose. [5]
(b) Give five (5) functions of a suspension system. [5]
(c) Name and explain five (5) components of a suspension system. [10]

QUESTION 3

(a) Clearly explain the "Air Fuel Ratio" in an engine and how it affects engine performance. [5]
(b) With the aid of a sketch explain the "Single Point Electronic Fuel Injection System (EFI). [10]
(c) With the aid of a sketch, give a brief description of a vehicle fuel system. [5]

QUESTION 4

With the aid of sketches explain the vehicle transmission systems clearly explaining the major individual components and their role. [20]

QUESTION 5

(a) What do you understand by metal joining processes? [5]
(b) With reference to a product of your choice, clearly explain the metal joining methods used and why. [5]
(c) With the aid of sketches, identify a product and show the best joining methods to be applied, clearly explaining the method and its advantages. [10]

QUESTION 6

a) Name and explain five (5) fire hazards that must be prevented in a welding/cutting environment. [10]
b) Name and explain precautions to be taken when working with oxygen [5]
c) Fuel gas can explode in air or oxygen if ignited by a flame, spark or other ignition source, what precautions must be observed to avoid this? [5]

QUESTION 7

a) With the aid of a sketch, explain the process of arc welding, also explaining the type of the joining medium used and what happens during welding. [10]
b) Briefly explain what cold welding is, giving examples. [5]
c) Name five (5) fastening methods giving examples of application. [5]

End of Examination