

Hammer's
Spanner
Pliers

FEDERAL UNIVERSITY OF TECHNOLOGY, OWERRI
MECHANICAL ENGINEERING DEPARTMENT
HARMATTAN SEMESTER EXAMINATION

MEE 501 –Maintenance of Engineering Systems (2019/2020) TIME: 3Hours
INSTRUCTIONS: ATTEMPT ALL QUESTIONS.

1(a) With good sketches, briefly discuss the uses of five maintenance equipment and five maintenance tools.

(b) Briefly explain the following maintenance schedules.

i. Daily routine maintenance

ii. Weekly maintenance

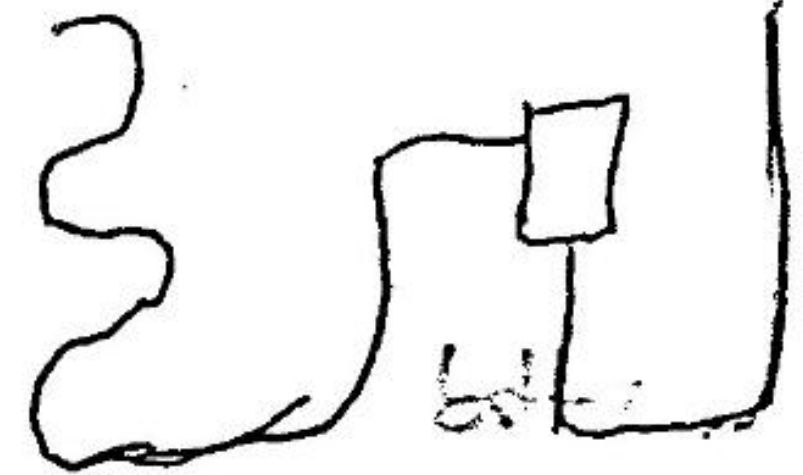
iii. Bi-weekly maintenance

iv. Monthly maintenance

v. Bi-monthly maintenance

vi. Quarterly maintenance

Give example of nature of work activities involved in each of them.



2 (a) Use good sketch to explain the principle of operation of a refrigeration and air conditioning system.

(b) Briefly explain the following system causes and their possible remedy.

i. Very low cooling rate

ii. Very high cooling rate that causes ice formations

iii. Turning off of the refrigeration and air conditioning system

iv. Very hot compressor after running for a short time



3(a) Identify the different types of refrigerants and their areas of application. Classify them in terms of primary and secondary refrigerants.

(b) Why is timing of maintenance, repair or service work in a maintenance workshop very important?



4(a) Distinguish between;

(i) direct and indirect injection compression (diesel) ignition engine with the aid of suitable diagrams.

(ii) single hole and multi-hole of injector nozzle (pintle and pintaux nozzles).

(b) With the aid of a suitable diagram explain the meaning of the phenomenon 'Spill Cut-Off' in injector pump pumping element of a diesel engine

(c) Explain the reason for masking the inlet valve of a compression ignition engine.

5 Discuss the influence of the following factors with the aid of line diagrams as they affect the steering system of an automobile. (i) Ackerman Angle

(ii) Camber Angle (iii) Castor Angle (iv) Kingpin Inclination Angle

(v) Centre Point Steering