

FEDERAL UNIVERSITY OF TECHNOLOGY, OWERRI.

DEPARTMENT OF TRANSPORT MANAGEMENT TECHNOLOGY

HARMATTAN SEMESTER EXAMINATIONS, 2011/2012 SESSION

TRP 309: AUTOMOTIVE ENGINES

DATE: 07/04/2012

TIME: 2 HOURS

INSTRUCTION: ANSWER ANY FOUR QUESTIONS

QUESTION ONE

- a. The power developed in the cylinder of an engine is 70kw and the power at the flywheel is 50kw. What is the efficiency of the engine? (7%)
- b. An automotive engine is fitted with a pump which circulates the cooling water at rate of 90 litres per minute. The temperature at the top of the radiator is 84°C and the temperature at the bottom of the radiator is 75°C. Calculate the quantity of heat passing to the cooling water (1 litre of water has a mass of 1kg). (10%)

QUESTION TWO

- a. Illustrate with diagram the operation of the thermo-syphon cooling system. (15%)
- b. With diagram, describe the different types of cylinder liners. (5%)

QUESTION THREE

- a. Use diagram to describe the working of a four stroke compression ignition engine. (12%)
- b. State four advantages of the compression ignition engine. (5%)

QUESTION FOUR

- a. Discuss three effects of heat on a material. (6%)
- b. Describe three ways of heat transfer in an automobile engine. (9%)
- c. What is responsible for over-floating in the carburettor? (2%)

QUESTION FIVE

- a. With diagram, illustrate the working of an Electrical Fuel Pump. (12%)
- b. Describe the two types of piston ring in use and state their functions. (5%)

QUESTION SIX

- a. Describe with the aid of a diagram the operation of a single-plate clutch. (12%)
- b. State the functions of the clutch. (5%)

