ELIZADE UNIVERSITY, ILARA-MOKIN,
ONDO STATE, NIGERIA

DEPARTMENT OF

MECHANICAL, AUTOMOTIVE AND PRODUCTION ENGINEERING

FIRST SEMESTER EXAMINATIONS

2017/2018 ACADEMIC SESSION

COURSE: ATE 507 – Automotive Maintenance & Testing (3 Units)

CLASS: 500 Level Automotive Engineering

HOD'S SIGNATURE

TIME ALLOWED: 3 Hours

INSTRUCTIONS: Answer question **ONE (1)** and any other **THREE (3)** questions

Date: March, 2018

Question 2 (15 Marks)

(A) Which of the following creates a flapping sound near the front of the engine?
(a) Timing belt tension too tight (b) Drive belt too tight (c) Drive belt too loose (d) Timing belt tension too loose

(B) An engine noise sounds like a knock at the side of the engine that is louder when the engine is cold and goes away or is reduced when the engine reaches operating temperature. Which of the following is the MOST likely cause?
(a) Cam bearing (b) Main bearing (c) Piston slap (d) Wrist pin

(C) The surface of the cylinder head has just been machined. What will have to be done to the valve train?
(a) Lengthening the push rods (b) Increasing valve spring tension (c) Grinding the valve stems (d) Shim the head

(D) Which of the following measuring tools is MOST likely used to measure the temperature of the diesel exhaust gases?
(a) MDI (Multiple Diagnostic Interface) (b) Exhaust manometer (c) Diagnostic scan tool (d) Exhaust pyrometer

(E) Technician A says the rear camber determines the thrust angle. Technician B says the rear toe angle determines the thrust angle. Who is right?
(a) A Only (b) B Only (c) Both A and B (d) Neither A and B

(F) A tight timing belt makes what type of noise?
(a) Thumping sound (b) Whining sound (c) Slapping sound (d) Will not make noise

(G) Which of the following should be the first step in diagnosing an engine performance concern?
(a) Discussing concern with the vehicle owner (b) Retrieve diagnostic trouble codes (c) Check for symptoms in the on-line service manual (d) Road test the vehicle

(H) During an injector power balance test, a technician finds one injector has failed but is receiving a good power supply. What should be done next?
(a) Voltage drop of the injector ground (b) Voltage check at the ignition power feed (c) Continuity check between PCM and injector (d) Continuity check between fuse and injectors

(I) Technician A says if the PCV valve is clogged, the engine could have a rough idle. Technician B says if the PCV valve rattles, then it does not need to be replaced. Who is right?
(a) A only (b) B only (c) Both A and B (d) Neither A nor B

(J) When closing a convertible top, the driver's side has a larger gap than the passenger's side before locking in place. Which of these could be the cause?
(A) Bent roof frame (B) Shrunken convertible top material (C) Normal condition (D) Bent B-pillar

(K) Technician A says that the gas flow rate must be regulated before using a GMAW (MIG) welder. Technician B says that the wire speed must be adjusted before using a GMAW (MIG) welder. Who is right?
(A) A only (B) B only (C) Both A and B (D) Neither A nor B

(L) Cracks in a thermoplastic bumper fascia are to be repaired. Technician A says that the repairs can be made with a plastic welder. Technician B says that the repairs can be made with a structural adhesive. Who is right?
(A) A only (B) B only (C) Both A and B (D) Neither A nor B

(M) Technician A says the closed coil end of a valve spring should go against the cylinder head. Technician B says all valve springs use shims to control free spring height. Who is right?
(a) A Only (b) B Only (c) Both A and B (d) Neither A and B

(N) Technician A says old antifreeze may cause corrosion build-up in the cooling system. Technician B says some original equipment manufacturers (OEM) recommend that the coolant be changed at specified intervals. Who is right?
(a) A Only (b) B Only (c) Both A and B (d) Neither A and B

(O) How often does a car require services?

<u>Question 2</u> (15 MARKS)

(a) The terms "maintenance" and "maintenance engineering" may mean different things to different people. Explain.

(b) List and explain the different level of maintenance for any Toyota brand of car.

<u>Question 3</u> (15 MARKS)

(a) Name the type of drive belt shown in Fig. Q3(a) and explain how it works.

(b) Name the components that are usually driven by this belt.

(c) A whining noise is heard when the engine is running. You suspect a faulty bearing in one of the driven components where the timing belt is location. Outline the procedure that should be carried out to isolate which component that is at fault.

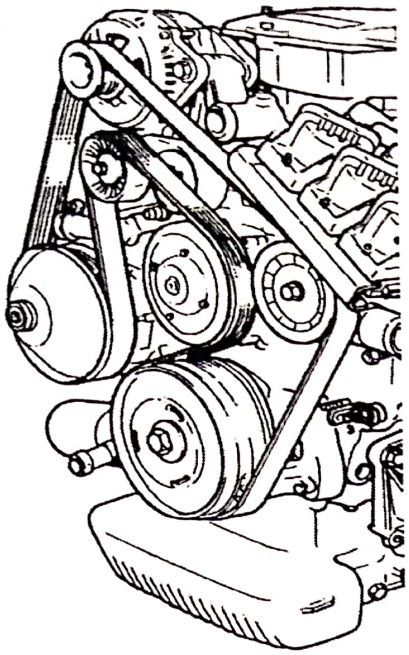

Fig. Q3(a)

Question 4 (15 MARKS)

(a) Identify five major part of an engine system stating the function(s) of each.

(b) What is Muffler and does it work?

Question 5 (15 MARKS)

(a) Identify six major tools use in automotive maintenance and state at least one application each.

(b) What are the steps involved in exhaust system fabrication?

(c) List the steps involved in metal finishing and body filling

Question 6 (15 MARKS)

(a) What did you understand by static and dynamic balance.

(b) Before a tyre can be balanced, it must be concentrically seated. How would you determine if a tyre is concentrically seated?

(c) To mount a tyre/wheel assembly on a balancer, there are three main method. List and explain these methods