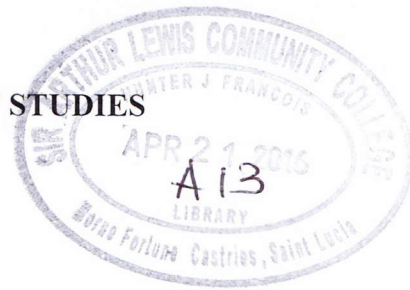


SIR ARTHUR LEWIS COMMUNITY COLLEGE
DIVISION OF TECHNICAL EDUCATION AND MANAGEMENT STUDIES



EXAMINATION SESSION : May, 2015 Examination Alternate
 TUTOR (S) : Mr. Rohan John Baptiste
 PROGRAMME TITLE : Automotive Engineering
 PROGRAMME CODE :
 COURSE TITLE : Automobile Technology I
 COURSE CODE : EGT 107
 CLASS (ES) : Year 1's
 DATE :
 COMMENCEMENT TIME :
 DURATION : 2 1/2 hours
 INVIGILATOR (S) :
 ROOM :

INSTRUCTIONS:

SECTION A: Multiple Choice

One mark for each correct answer. Use the answer sheet provided.

SECTION B: Fill in the blanks.

One mark for each correct answer. Use the answer sheet provided

SECTION C: Essay Questions. Marks are awarded accordingly

- Students are reminded to read **all** questions and instructions in each section very carefully
- Please number your responses accordingly
- **Note: Bags, Books as well as writing paper not given by the invigilator should be deposited at the front of the examination room or as otherwise indicated.**
- **All cell phones must be turned off during the exam**

Students must **not** write their names on their answer sheets, only their **ID number**

SECTION A - Multiple choice questions

1. Which of the following statements best describes an open-end wrench?
 - (A) Have adjustable jaws.
 - (B) Can be used on a ratchet.
 - (C) Has both box and open jaws.
 - (D) Has an open jaw on both ends.

2. Pliers are used for _____ various parts.
 - (A) Gripping
 - (B) Cutting and crimping
 - (C) Holding and bending
 - (D) All of the above.

3. An air ratchet normally has a _____ drive.
 - (A) 1/4"
 - (B) 3/8"
 - (C) 1/2"
 - (D) 7/8"

4. Bench grinders can be used for _____ operations
 - (A) Grinding
 - (B) Polishing operations
 - (C) Cleaning
 - (D) All of the above

5. Which of the following is not one of the procedures to follow when changing the oil in an automotive engine?
 - (A) Warm up the engine.
 - (B) Place a catch pan under the oil drain plug
 - (C) Wipe some clean oil on the O-ring and install the new filter
 - (D) Using an oil filter wrench, screw the new filter on.

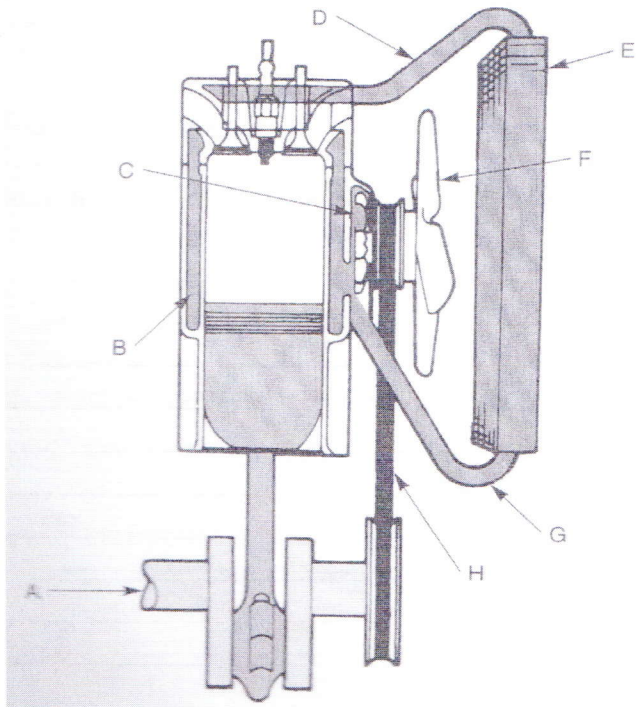
6. Normally, car and truck engines have either _____ cylinders.
 - (A) 4,5, or 6
 - (B) 2,4, or 6
 - (C) 4,6, or 8
 - (D) 6,10, or 12

7. A (n) _____ cylinder engine produces twice as many power strokes per crank revolution as a(n) _____ cylinder engine.
- (A) 3,8
 - (B) 8,4
 - (C) 6,10
 - (D) None of the above.
8. A three-valve combustion chamber has _____ intake valve (s) and _____ exhaust valve (s)
- (A) 1,2
 - (B) 2,1
 - (C) 3,3
 - (D) None of the above
9. The most common valve seat angles are _____.
- (A) 25° and 35°
 - (B) 45° and 35°
 - (C) 45° and 30°
 - (D) None of the above
10. Cam lobe shape can be used to control _____.
- (A) When each valve opens in relation to piston position
 - (B) How long each valve stays open
 - (C) How far each valve opens
 - (D) All of the above.
11. A timing belt may also be used to drive the _____
- (A) Diesel injection pump
 - (B) Ignition distributor
 - (C) Oil pump
 - (D) All of the above.
12. Compression pressure is normally measured in _____.
- (A) Kilopascals
 - (B) Pounds per square inch
 - (C) Newtons
 - (D) Both A and B
13. Normally, _____ of an engine's power is lost to friction.
- (A) 10% - 15%
 - (B) 20% - 30%
 - (C) 35% - 40%
 - (D) 40% - 55%

14. _____ is pressure measured on a valve spring tester
- (A) Valve spring tension
 - (B) Valve spring free height
 - (C) Valve spring squareness
 - (D) None of the above.
15. Which of these parts can be replaced without cylinder head removal?
- (A) Valves
 - (B) Valve seals
 - (C) Valve guides
 - (D) Valve seats
16. Rather than a timing chain, many modern vehicles use a timing _____ to drive a camshaft.
- (A) Belt
 - (B) Gears
 - (C) Shaft
 - (D) Motor
17. All of the following are functions of a cooling system, except:
- (A) Providing a means for warming the passenger compartment.
 - (B) Causing the engine to seize
 - (C) Removing excess heat from the engine
 - (D) Maintaining a constant engine operating temperature.
18. A bad water pump may _____.
- (A) Fail to circulate coolant
 - (B) Produce a grinding noise
 - (C) Leak coolant
 - (D) All of the above.
19. All of the following are methods used to drive an oil pump, except:
- (A) Sump
 - (B) Crankshaft
 - (C) Shaft
 - (D) Gear
20. All of the following are steps to removing an oil pan, except:
- (A) Drain motor oil
 - (B) Unscrew the bolts around the outside of the pan flange
 - (C) Pound hard on the pan with a rubber hammer to free it from the cylinder block.
 - (D) Remove all old gasket or silicone material from the pan and engine block.

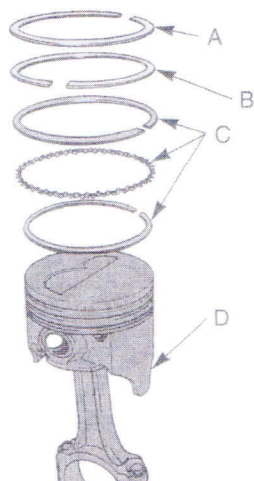
SECTION B: Fill in the blanks

1. A (n) _____ is a set of fitted parts designed to complete a function.
2. Box-end wrenches are available with either _____ - point or _____ point openings.
3. Air tools are also referred to as _____ tools.
4. When lifting heavy objects in the shop, you should lift with your _____ and not your _____.
5. The cylinders of a (n) _____ engine are lined up in a single row.
6. A (n) _____ is a $1/2^\circ - 1^\circ$ difference between the valve seat face angle and the angle of the valve face.
7. Many vehicles use _____ block to reduce weight and increase fuel economy.
8. A(n) _____ may be used to take up slack in the chain as it and the sprockets wear.
9. The amount of throw (offset) built into the _____ controls the piston stroke.
10. When the engine is cold, the thermostat will be _____, and coolant cannot circulate through the radiator.
11. A usual engine operating temperature is between _____⁰F and _____⁰F
12. The small space between moving engine parts for the lubricating oil film is called _____.
13. The heart of the engine lubrication system is the _____.
14. Identify the parts of the cooling system illustrated below.



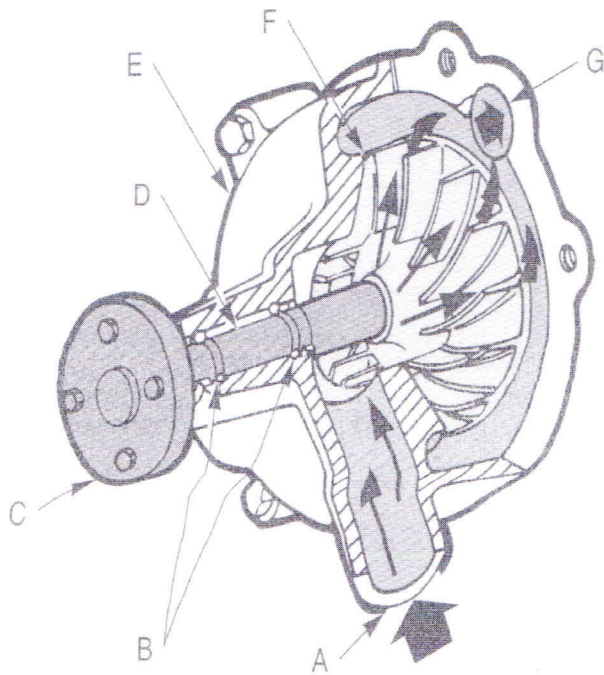
- (A) _____
- (B) _____
- (C) _____
- (D) _____
- (E) _____
- (F) _____
- (G) _____
- (H) _____

15. Identify the parts of the engine piston illustrated below



- (A) _____
- (B) _____
- (C) _____
- (D) _____

16. Identify the parts of the water pump



- (A) _____
- (B) _____
- (C) _____
- (D) _____
- (E) _____
- (F) _____
- (G) _____

SECTION C: Essay Questions. Marks are awarded accordingly

1. List and describe three of the seven modern automotive body types. [9]
2. Why should you buy quality tools? [2]
3. Why should you be careful when loosening or tightening fasteners with an air wrench? [2]
4. How does an engine convert fuel into a useful form of energy? [3]
5. Name six parts of an engine piston. [6]
6. List the three types of combustion chamber design. [3]
7. What is the function of an engine's valve train? [2]
8. Define valve reliefs. [2]
9. What is the purpose of an auxiliary chain? [4]
10. If one piston displaces 30 cu. In. and the engine has four cylinders, what is the engine's displacement? [2]
11. What indicates overcooling? [4]
12. How does an oil pressure indicator operate? [4]
13. What is a clue to the vehicle owner that a problem with high oil consumption exists? [2]