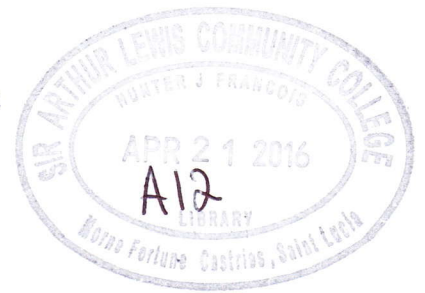


**SIR ARTHUR LEWIS COMMUNITY COLLEGE**  
**DIVISION OF TECHNICAL EDUCATION AND MANAGEMENT STUDIES**

**EXAMINATION SESSION** : May 2015 Final Examination  
**TUTOR (S)** : Mr. Rohan John Baptiste  
**PROGRAMME TITLE** : Automotive Engineering  
**PROGRAMME CODE** : 3ME-AUT-AD  
**COURSE TITLE** : Automobile Technology I  
**COURSE CODE** : EGT 107  
**CLASS (ES)** : Year 1's  
**DATE** : Wednesday 6<sup>th</sup> May, 2015  
**COMMENCEMENT TIME** : 1:00 pm  
**DURATION** : 2 hours  
**INVIGILATOR (S)** : **K. Numa**, F. Nicholas  
**ROOM** : TRA-R3



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**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:** Answer all questions. Marks are awarded accordingly. Use the answer sheet provided.

- 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**
- **All work must be done in either Blue or Black in pen**

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

**SECTION A-Multiple choice questions**

1. All of the following describe a common automotive engine except

- (A) Reciprocating piston engine
- (B) External combustion
- (C) Internal combustion
- (D) Burns air – fuel mixture

2. Which of the following statements is correct?

- I. A grinder is an electric power tool.
- II. An impact wrench is a hydraulic power tool.

- (A) I only
- (B) II only
- (C) Both I and II
- (D) Neither I nor II

3. Technician A says that it is safe to leave a power tool running if you will only be away for a moment. Technician B says that it is safe to wear long sleeve when working with electrical power tools if you are careful.

Who is correct?

- (A) A only
- (B) B only
- (C) Both A and B
- (D) Neither A nor B

4. The dangers in pneumatic tools include all of the following except

- (A) Compressed air blowing particles into your eyes.
- (B) Sparks from motors when working around flammable liquids
- (C) Powerful turning forces
- (D) Moving parts and turning shafts

5. Technician A says wear can cause piston slap. Technician B says too small a piston can cause piston slap.

Who is correct?

- (A) A only
- (B) B only
- (C) Both A and B
- (D) Neither A nor B

6. Technician A says that all valve trains must have valve clearance to allow the valves to be opened. Technician B says that hydraulic lifters or lash adjusters maintain a small valve clearance automatically.

Who is correct?

- (A) A only
- (B) B only
- (C) Both A and B
- (D) Neither A nor B

7. When the internal body structure of a vehicle is used as its frame, it is called:
- (A) Unibody construction
  - (B) Body – frame construction
  - (C) Integral construction
  - (D) Body – over frame construction
8. When changing engine oil, technician A says the engine oil should be cool. Technician B says the oil should be warm. Who is correct?
- (A) A only      (C) Both A and B
  - (B) B only      (D) Neither A nor B
9. Which of the following *does not* refer to camshaft location and design?
- (A) OHC
  - (B) SOHC
  - (C) DOHC
  - (D) UHC
10. Which of the following refers to a two – stroke cycle engine?
- (A) One crankshaft revolution completes a power stroke.
  - (B) Two strokes complete all four events.
  - (C) Uses reed valves or rotary valves.
  - (D) All of the above
11. A two – stroke – cycle engine requires how many crankshaft revolutions per power cycle?
- (A) One
  - (B) Two
  - (C) Four
  - (D) None of the above.
12. Variations in camshaft lobe shape control:
- (A) When each valves opens
  - (B) How long each valve stays open.
  - (C) How far or wide each valve opens.
  - (D) All of the above.
13. An engine top end typically consists of each of these except:
- (A) Valve train
  - (B) Connecting rod
  - (C) Cylinder head
  - (D) Intake manifold

14. Low valve spring tension can cause:
- (A) Valve float
  - (B) Valve rotation
  - (C) Valve spring shim
  - (D) Mushroomed valves
15. Which of the following is not a method by which a camshaft can be driven?
- (A) Belt
  - (B) Chain
  - (C) Gears
  - (D) Rotator
16. Which of the following normally operates belts for the alternator, water pump, and other units?
- (A) Auxiliary chain
  - (B) Timing sprockets
  - (C) Vibration damper
  - (D) Crankshaft pulley
17. Which of the following transfers power from the crank sprocket to the cam sprocket?
- (A) Spur Gear
  - (B) Timing belt
  - (C) Timing chain
  - (D) Timing gears
18. Which of the following devices is used to prevent chain slap?
- (A) Chain guide
  - (B) Auxiliary chain
  - (C) Timing sprocket
  - (D) Chain link.
19. Each of the following is an engine lubrication system function except:
- (A) Cleans inside the engine
  - (B) Helps cool engine parts
  - (C) Prevents heat transfer
  - (D) Increases fuel economy
20. Which of the following is used to prevent metal on metal contact?
- (A) Oil film
  - (B) Bearings
  - (C) Galleries
  - (D) Additives



21. Oil additives are used to prevent:
- (A) Deposits
  - (B) Foaming
  - (C) Oxidation
  - (D) All of the above.
22. Which of the following system controls coolant flow?
- (A) Fan
  - (B) Radiator
  - (C) Thermostat
  - (D) Temperature sensor
23. Which of the following *is not* a radiator cap function?
- (A) Absorb heat
  - (B) Seal radiator top
  - (C) Pressurize system
  - (D) Relieve excess pressure
24. Overcooling may be caused by each of these except:
- (A) Ice in coolant
  - (B) Stuck thermostat
  - (C) Locked fan clutch
  - (D) Shorted fan switch
25. Which of the following *is not* a common indicator that an engine is overheating?
- (A) Boiling coolant
  - (B) Slow engine warm-up
  - (C) Glowing temperature light
  - (D) High temperature gauge reading
26. A bad water pump may:
- (A) Leak coolant
  - (B) Fail to circulate coolant
  - (C) Produce a grinding noise
  - (D) All of the above

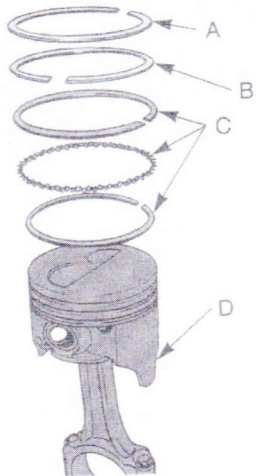
27. All of the following are steps to removing an oil pan, except:
- (A) Drain motor oil
  - (B) Unscrew the bolts around the outside of the pan flange
  - (C) Pound hard on the pan with a rubber hammer to free it from the cylinder block.
  - (D) Remove all old gasket or silicone material from the pan and engine block.
28. Oil viscosity refers to a motor oil's:
- (A) Fluidity
  - (B) Thickness
  - (C) Flow ability
  - (D) All of the above
29. Each of the following problems may be found in a lubrication system except:
- (A) Low oil pressure
  - (B) High oil pressure
  - (C) Low oil consumption
  - (D) High oil consumption
30. Internal oil leakage will appear as what color smoke?
- (A) Blue
  - (B) Black
  - (C) White
  - (D) None of the above

**SECTION B: Fill in the blanks.**

1. The \_\_\_\_\_ system reduces the amount of toxic substances released by the vehicle.
2. The \_\_\_\_\_ controls the opening and closing of the engine's valves.
3. A(n) \_\_\_\_\_ is a swivel that lets the socket wrench reach around obstructions.
4. Firing order refers to the \_\_\_\_\_ in which the sparks fire in the combustion chambers.
5. A(n) \_\_\_\_\_ engine does not use pistons that slide up and down
6. A(n) \_\_\_\_\_ valve guide is a separate sleeve forced into a hole in the cylinder head.
7. Engines use poppet valves, which are also called \_\_\_\_\_ valves.
8. A(n) \_\_\_\_\_ is a heavy wheel mounted on a rubber ring to control harmonic vibration.
9. A camshaft drive must turn the camshaft at \_\_\_\_\_ crankshaft speed.
10. \_\_\_\_\_ is the small space between moving engine parts for the lubricating oil film.

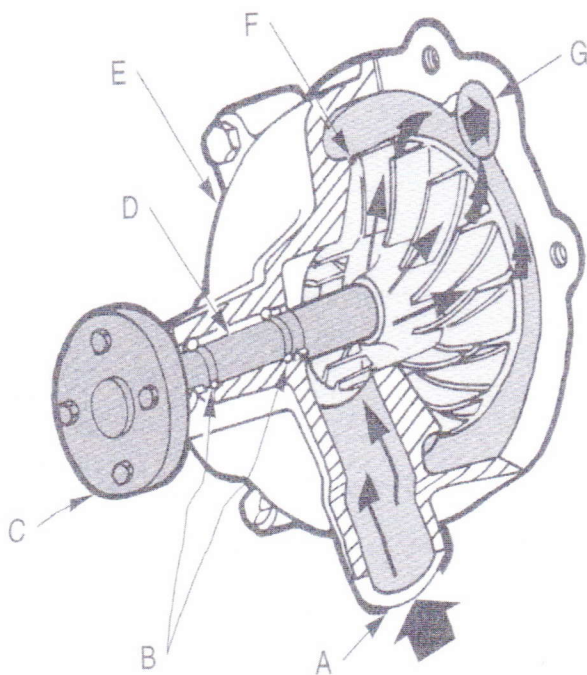
**SECTION C:** Answer all essay questions. Marks are awarded accordingly.

1. Describe the major parts of a gasoline piston engine. (8 marks)
2. Describe the four-stroke cycle. (8 marks)
3. Why should you buy quality tools? (2 marks)
4. Describe the advantages and disadvantages of the over head camshaft and pushrod engine designs. (4 marks)
5. Describe the two basic types of valve seals. (4 marks)
6. List and describe the major parts of an engine lubrication system. (6 marks)
7. List five common causes of engine overheating. (5 marks)
8. List five common causes of engine overcooling. (5 marks)
9. Identify the parts of the engine piston illustrated below (8 marks)



- (A) \_\_\_\_\_
- (B) \_\_\_\_\_
- (C) \_\_\_\_\_
- (D) \_\_\_\_\_

10. Identify the parts of the water pump (7 marks)



- (A) \_\_\_\_\_
- (B) \_\_\_\_\_
- (C) \_\_\_\_\_
- (D) \_\_\_\_\_
- (E) \_\_\_\_\_
- (F) \_\_\_\_\_
- (G) \_\_\_\_\_