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| UNIT REF: L1AM03 | LEARNER SUPPORT MATERIAL TASK SHEET **UNIT TITLE: SPARK IGNITION ENGINE SYSTEMS COMPONENTS AND OPERATION** |
| **Learner Name:** | **Date of Task:** |
| **KNOWLEDGE QUESTIONS** |
| **Question Number** | **Question** | **AC** | **Marks Awarded** |
| 1. | Identify and State the purpose of the following main components used in petrol Spark Ignition **(SI)** engines: **(32 marks)** | AC1.1-1.2 |  |
| A. | http://www.vtrustcorporation.com/wordpress/wp-content/gallery/cylinder-head/2013-6-2l-ls3-c-cylinder-head-2.jpg | Identify Part: |
| State purpose: |
| B. | http://www.enginebasics.com/Engine%20Basics%20Root%20Folder/Images/camshaft.jpg | Identify Part: |
| State purpose: |
| C. | http://media.appliednanosurfaces.com/2013/04/crankshaft.png | Identify Part: |
| State purpose: |
| D. | http://www.superformance.co.uk/parts/0586f_fiat_246_308_2v_valves.jpg | Identify Part: |
| State purpose: |

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| E. | http://www.venolia.com/gallery/d/194-2/ferrari-v12-piston.jpg | Identify Part: |
| State purpose: |
| F. | http://www.regalautosport.com/shop/image/data/corsa_d/Piston_Ring.jpg | Identify Part: |
| State purpose: |
| G. | http://www.govindcrankrod.com/pro_img/rod/1.jpg | Identify Part: |
| State purpose: |
| H. | http://www.jbugs.com/store/graphics/00000001/vw_valve_spring_intake_113109623c.jpg | Identify Part: |
| State purpose: |
|  |
| 2. | Outline the main purpose for each of the following systems **(8 marks)** | AC1.3 |  |
| A. | Cooling System – |
| B. | Lubrication System – |
| C. | Fuel System – |

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| D. | Ignition System – |
| **Question Number** | **Question** | **AC** | **Marks Awarded** |
| 3. | State the operating cycle of the 2 stroke petrol engine: **(4 marks)** | AC2.1 |  |
| 1. |  |
| 2. |  |
|  |
| 4. | State the operating cycle of the 4 – stroke petrol engine: **(8 marks)** | AC2.1 |  |
| 1. | Stroke: |
| 2. | Stroke: |
| 3. | Stroke: |
| 4. | Stroke:  |
|  |
| 5. | Draw a circular diagram of the 4 stroke cycle indicating:* Inlet valve opening and closing
* Exhaust valve opening and closing
* Top and bottom dead centres
* Typical ignition point
* Direction of rotation **(16 marks)**
 | AC2.2 |  |
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| **Question Number** | **Question** | **AC** | **Marks Awarded** |
| 6. | Give examples of the correct type air / fuel ratios for each of the following: **(6 marks)** | AC2.3 |  |
| A. | Rich Mixture –  |
| B. | Weak Mixture – |
| C. | Ideal Mixture– |
|  |
| 7. | Identify the four main constituents of SI exhaust gas emissions and their effects on the environment: **(16 marks)** | AC2.4 |  |
| Gas A: | Effects on health and the environment: |
| Gas B: | Effects on health and the environment: |
| Gas C: | Effects on health and the environment: |
| Gas D: | Effects on health and the environment: |