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Q22 (a) The information portrayed will be of great importance to a mechanic as it holds critical information on the engine timing. When performing a timing belt change on a vehicle it needs to be ~~100%~~ one hundred percent perfect as it ~~will~~ runs the engine and determines when vital components such as valves and pistons move in the cylinders. The information would greatly assist the mechanic to perform this task to the best of their ability.

(b) On a four stroke engine, valve and camshaft timing is critical ~~as it~~ ~~is~~ as it determines how the car runs and operates in the engine's four strokes. During production and testing manufacturers attempt to find how the engine will run best according to its timing of valves, ~~and~~ camshaft and piston placement. Thus resulting in a smooth running engine. If the timing is out by a certain amount of teeth or chain, the engine will run ruff, affecting performance and fuel efficiency. However the most critical aspect of following the manufacturer's specifications is that if the timing belt or chain is fitted incorrectly, the timing will result in the pistons valves altering the space of the pistons resulting in them colliding and major damage being dealt to the engine, this is why it is critical to ensure the timing is in sync with the manufacturer's specifications.

(c) On an overhead camshaft engine the camshaft is located on top of the engine and above the valves, triangular lobes on the shaft turn push down on the valves opening them in the combustion chamber for intake and exhaust, overtime these wear or other issues may result in the cylinder head being removed and re fitted. The cam timing set up consists of two shafts ^{with gears}, one being driven by a belt or chain that turns the other shaft to open the other set of valves. On the gears there are marks provided by the manufacturer to portray where the teeth should sit with the two gears, usually there is an arrow on both gears to indicate how the teeth should sit with each other for them to be in the correct timing. A mark will also be supplied by the manufacturer on the crankshaft, this mark align with the camshaft timing, then the belt/chain can be applied to re fit the cam timing. Adjusting the valve clearance is critical to the engines performance and efficiency, and also the timing as there is also critical in reducing and potential engine damage with collisions between valve and piston in the combustion chamber. A mechanic would set up the and adjust the valve clearance by observing the state of how far down the valve goes into the combustion chamber, resulting in the amount of intake and exhaust is going in and coming out. The tappets that the camshaft pushes down on can be machined or replaced to adjust the clearances when refitting a cylinder head.

Additional writing space on back page.