

DTEMS PAST PAPERS

TECHNICAL

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

EXAMINATION SESSION : May 2001, Final Examination
TUTORS : James Finisterre
PROGRAMME TITLE :
PROGRAMME CODE :
COURSE TITLE : Basic Car Maintenance
COURSE CODE : BCM 311
CLASS(ES) : ELECTIVE
DATE : 7th May 2001
TIME : 1:00 p.m.
DURATION : 2 hours
ROOM : MVM. R.1
INVIGILATOR :



#C1



INSTRUCTIONS:

This question paper comprise TWO (2) Sections

SECTION I - Multiple Choice Section.

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

SECTION II - Marks are awarded accordingly. Answer all questions in this Answer Book.

GOOD LUCK !!!!

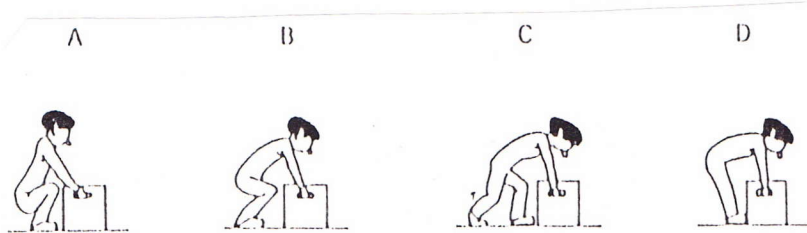
(1) Technician A says the engine camshaft converts reciprocating motion of the piston into rotary motion. Technician 'B' disagrees and says the crankshaft performs this function. Who is right?

- (a) A only
- (b) B only
- (c) Both A and B
- (d) Neither A nor B

(2) The air fuel mixture is actually burned during the:

- (a) intake stroke
- (b) compression stroke
- (c) power stroke
- (d) exhaust stroke

(3) Which of the four sketches below illustrate the correct way to lift a heavy load?



(4) In an automobile engine, the distributor shaft rotates:

- (a) at the same speed as the crankshaft
- (b) at twice the speed of the crankshaft
- (c) one and one-half the speed of the crankshaft
- (d) half as fast as the crankshaft

(5) Which of the following restricts the air-flow through the carburetor air horn when the engine is cold?

- (a) heat riser
- (b) thermostat
- (c) choke
- (d) secondary circuit

(6) Brake pads in disc brakes:

- (a) keep the piston from rotating
- (b) may be renewed one at a time, as required
- (c) must always be renewed together and never for only one wheel
- (d) cannot be renewed

- (7) When checking automatic transmission fluid, the following should be done.
- (a) engine off, transmission in park
 - (b) engine running, transmission in park
 - (c) engine off, transmission in neutral
 - (d) engine on, transmission in neutral
- (8) Ignition system wires operating at battery voltage are considered part of the:
- (a) ignition coil
 - (b) primary windings
 - (c) secondary windings
 - (d) primary circuit
- (9) As the piston moves towards the combustion chamber while both valves are closed, the :
- (a) power events occurs
 - (b) exhaust events occurs
 - (c) intake event occurs
 - (d) compression event occurs
- (10) How does a normal lubricant reduce friction? The lubricant:
- (a) allows air to pass between the surfaces
 - (b) smoothes the surface of the metal
 - (c) keeps the surfaces apart
 - (d) prevents the generation of heat
- (11) Which statement is an accurate condition for changing the oil filter?
- (a) change the filter every six months
 - (b) always change the filter when changing the oil
 - (c) change the filter more often than called for in the owner's manual when operating the car in excessive heat.
 - (d) Change the filter more often when the car is operated in severe cold weather to allow better oil passage.
- (12) Oil has three major functions in an engine. They are:
- (a) cleansing, cooling and lubricating
 - (b) collecting debris, cooling and lubricating
 - (c) transporting loose products to the oil pan, cleansing and lubricating
 - (d) absorbing shock, pumping oil to the filter and oiling moving parts.
- (13) Four (4) reasons why tyres must be properly inflated are:
- (a) proper traction, riding comfort, fuel mileage and tyre mileage
 - (b) proper traction, tyre mileage, fuel mileage and tyre run-out
 - (c) proper traction, wheel run-out, tyre mileage and riding comfort
 - (d) tyre run-out, wheel run-out, fuel mileage and riding comfort.

- (14) Which of the following controls coolant flow through a radiator?
- (a) fan shroud
 - (b) fan switch
 - (c) thermostat
 - (d) temperature sensor
- (15) The major electrical/electronic systems found on a vehicle are:
- (a) ignition, charging, starting and hydraulic systems
 - (b) lighting, charging, starting and lubricating systems
 - (c) lubricating, hydraulic, starting and ignition systems
 - (d) ignition, charging, starting and lighting systems
- (16) External oil leakage may be detected by/as:
- (a) oil puddles under the vehicle
 - (b) high oil consumption
 - (c) oil-wet areas around the engine
 - (d) all/any of the above
- (17) Which of the following is *not* part of an engine?
- (a) block
 - (b) piston
 - (c) muffler
 - (d) crankshaft
- (18) Which of the following rotations are needed to complete the four-stroke cycle?
- (a) one
 - (b) two
 - (c) three
 - (d) four
- (19) Which electrical/electronic system provides the spark at the spark plug to ignite the air/fuel mixture at the proper time?
- (a) starting system
 - (b) charging system
 - (c) ignition system
 - (d) lighting system
- (20) In a 4-cylinder in-line engine, piston # 2 is going down on power at a certain instant. At the same instant, piston #3 is, going:
- (a) down on intake
 - (b) up on exhaust
 - (c) down on compression
 - (d) compression event occurs

- (21) A unit which adds materially to the efficiency of the cooling system is the:
- (a) carburettor
 - (b) fan
 - (c) distribution
 - (d) generator
- (22) The three major parts of a tyre are:
- (a) bead, ply and weight
 - (b) ply, height and tread
 - (c) tread, bead and ply
 - (d) ply, tread and section width
- (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) Extra care must be taken when removing a modern radiator cap from a hot engine, because:
- (a) the seal can be damaged
 - (b) of the risk of scalding
 - (c) the cooling system pressure is lower than atmosphere
 - (d) the sudden decrease in pressure can damage the radiator
- (25) A bolt head is rusted and partially rounded off. Which wrench would work best for removing the bolt?
- (a) open-end wrench
 - (b) 6-point box-end wrench
 - (c) 12-point box-end wrench
 - (d) 16-point box-end wrench
- (26) Use this tool to support the car while working under the car
- (a) floor jack
 - (b) jack stand
 - (c) transmission jack
 - (d) bumper jack
- (27) Power tools are tools that use:
- (a) electricity
 - (b) hydraulics
 - (c) compressed air
 - (d) all of the above

(28) Which of the following provides voltage to the battery and ignition system after the engine is running?

- (a) Alternator
- (b) Condenser
- (c) Plugs
- (d) Starter solenoid

(29) During a complete lubrication service, all of the following are done except:

- (a) change engine oil
- (b) change oil filter
- (c) check all fluid levels
- (d) check ride height

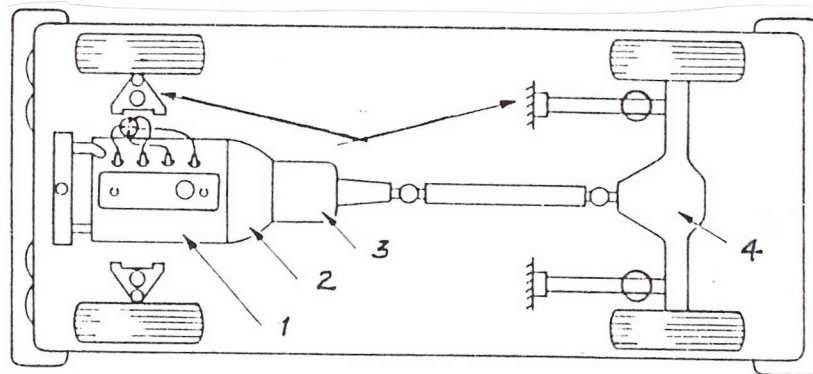
(30) An automobile has a "spongy" brake pedal. Technician 'A' checks to see if there is an excessive amount of fluid in the brake system. Technician 'B' bleeds the brake system. Who is right?

- (a) A only
- (b) B only
- (c) Both A and B
- (d) Neither A nor B

END OF SECTION ONE

SECTION 2

1. Figure A



(a) State the name given to the layout shown in figure A [2 marks]

(b) List the names of the components from 1 – 4. [4 marks]

1. _____
2. _____
3. _____
4. _____

(c) State one advantage of this layout. [2 marks]

1	2	3	4	
P				180°
				360°
				540°
				720°

Firing Order _____

2. The table above represents a 4 cylinder in-line engine. Using either of the firing orders, complete the table in order that the engine would function. Please state the firing order. [10 marks]

3. Name the main parts of the simple coil-ignition system shown in Fig. B [10 marks]

- (a)
- | | | | |
|----|-------|----|-------|
| 1. | _____ | 2. | _____ |
| 3. | _____ | 4. | _____ |
| 5. | _____ | | |

(b) State the main function of the part numbered '3'. [2 marks]

4. Engine identification – Fig. C

(a) Name the engine parts identified by the various numbers

- | | | | |
|-----|-------|-----|-------|
| 1. | _____ | 4. | _____ |
| 5. | _____ | 6. | _____ |
| 7. | _____ | 8. | _____ |
| 11. | _____ | 16. | _____ |

[8 marks]

(b) Of what value is item #26 to the operation of the engine.

[2 marks]

(c) In terms of cylinder classification, how would you classify the engine in Fig. C? [2 marks]

5. The diagram represents some basic hand tools. You are to correctly identify any (5) of the tools shown. Refer to Fig. D [10 marks]

6. I. _____ II. _____
II. _____ IV. _____
V. _____

6. Explain the following terms :- [6 marks]

(a) Transaxle: _____

(b) Engine Stroke: _____

(c) Ignition Timing: _____

7. Of what value is a thermostat to liquid cooled system? [3 marks]

8. Battery maintenance should be done periodically. State any (3) battery maintenance operations. [6 marks]

i. _____ ii. _____

iii. _____

9. State three (3) maintenance checks that should be carried out to prolong tyre service life. [3 marks]

i. _____ ii. _____

iii. _____

FIG. C

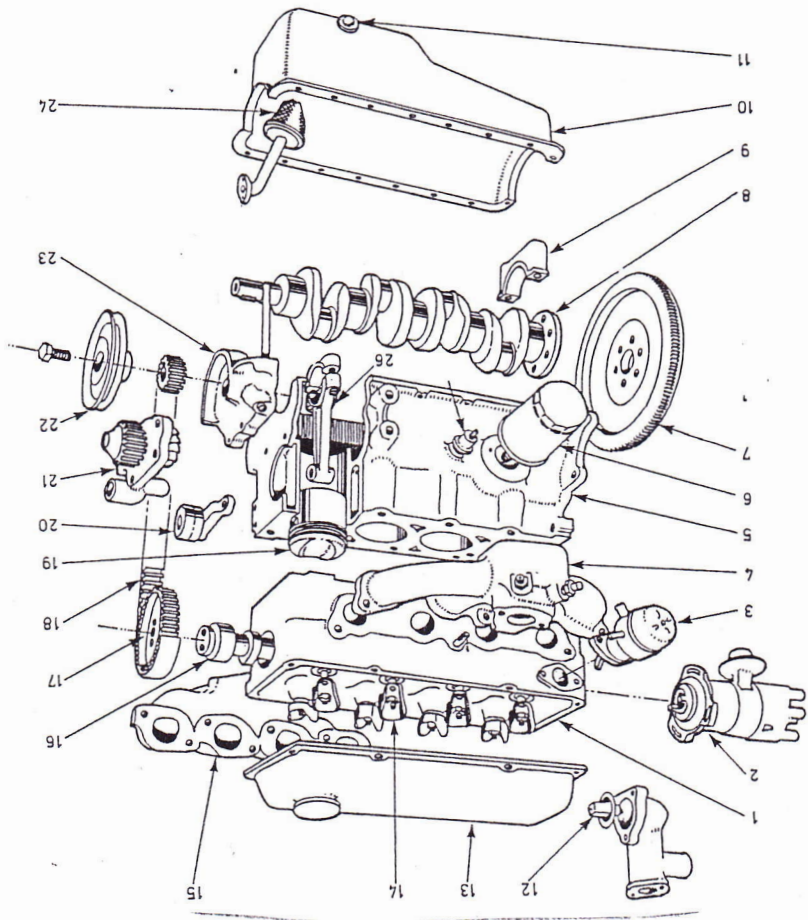


Figure B

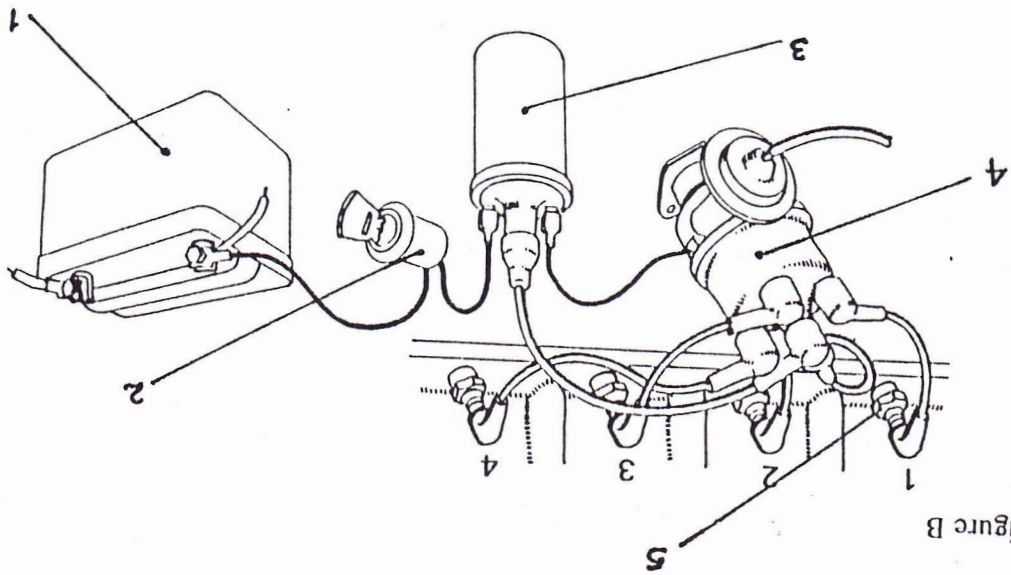
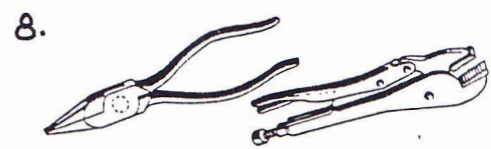
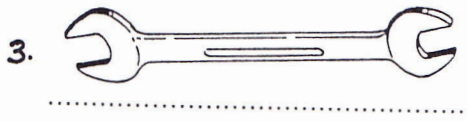


FIG. D



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MULTIPLE CHOICE EXAM - ANSWER SHEET

NAME : _____ DATE : _____

INSTRUCTIONS: Check off the appropriate box to indicate your response A, B, C or D.

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