

JUNE 2022

ADVANCED LEVEL

Specialty Name and Acronym	AUTOMOBILE CONSTRUCTION AND MAINTENANCE: LIGHT VEHICLE (AM-LV)
Centre No.	
Centre Name	
Candidate Identification No.	
Candidate Name	

Mobile phones are NOT allowed in the examination room

7130 CHASSIS SYSTEMS AND TRANSMISSION1: MULTIPLE CHOICE QUESTION PAPER

One and a half hours

INSTRUCTIONS TO CANDIDATES

Read the following instructions carefully before you start answering the questions in this paper. Make sure you have a soft HB pencil and an eraser for this examination.

1. USE A SOFT HB PENCIL THROUGHOUT THE EXAMINATION.
2. DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.

Before the examination begins:

3. Check that this question booklet is headed **Advanced Level – 7130 CHASSIS SYSTEMS AND TRANSMISSION 1**
4. Insert the information required in the spaces above.
5. Insert the information required in the spaces provided on the answer sheet using your HB pencil: **Candidate Name, Exam Session, Subject Code, Centre Number and Candidate Identification Number.** Take care that you do not crease or fold the answer sheet or make any marks on it other than those asked for in these instructions.
6. **Answer ALL questions**
7. Each question has **FOUR** suggested answers: **A, B, C** and **D**. Decide on which answer is correct. Find the number of the question on the Answer Sheet and draw a horizontal line across the letter to join the square brackets for the answer you have chosen.
For example, if **C** is your correct answer, mark **C** as shown below:
[A] [B] [C] [D]
8. Mark only one answer for each question. If you mark more than one answer, you will score a zero for that question. If you change your mind about an answer, erase the first mark carefully, then mark your new answer.
9. Avoid spending too much time on any one question. If you find a question difficult, move on to the next question. You can come back to this question later.
10. Do all rough work in this booklet, using, where necessary, the blank spaces in the question booklet.
11. Texts, notes and pre-prepared materials of any kind are also **NOT** allowed in the examination room.
12. **At the end of the examination, the invigilator shall collect the answer sheet first and then the question booklet after. DO NOT ATTEMPT TO LEAVE THE EXAMINATION HALL WITH IT.**

Turn Over

1. Drive shafts are connected to the differential and wheel hub through universal joints because the universal joints
 - A absorb the vibration transferred from the surface of the road.
 - B compensate for variations in the relative position of the differential and the wheels which result from bumpy road surface or other similar driving conditions.
 - C absorb any difference in speed between the left and the right wheels when the vehicle is running.
 - D ensure rigid transmission of the drive output.

2. Ball joints are used on tie rod ends because they
 - A reduce the amount of noise generated.
 - B reduce the amount of sliding resistance.
 - C can deal with movement of the suspension.
 - D improve the transmission speed.

3. The torque converter uses.....to transfer torque.
 - A Air
 - B Automatic transmission fluid (ATF)
 - C Gears
 - D Belt

4. During braking, the brake shoe is moved outward to force the lining against the
 - A wheel piston or cylinder.
 - B anchor pin.
 - C brake drum.
 - D wheel rim or axle.

5. One advantage of the tubeless tyre over the tubed tyre is
 - A slow air leakage and less chance of running flat.
 - B low cost.
 - C absorb more road shocks.
 - D lighter in weight.

6. The correct way to rectify an imbalanced wheel is to
 - A adjust the tyre pressure.
 - B rotate the tyre.
 - C adjust the damper spring tension.
 - D attach appropriate weight on the wheel at the appropriate position.

7. The different kinds of resistant forces to vehicle motion are
 - A air resistance, rolling resistance and gradient resistance.
 - B air resistance, engine resistance and gradient resistance.
 - C air resistance, rolling resistance and sliding resistance.
 - D aerodynamic resistance, rolling resistance and gradient resistance.

8. The different types of tyres used in automobile are
 - A cross ply, radial ply and flat ply tyres.
 - B cross ply, radial ply and belted ply.
 - C radial ply, belted ply and rubber ply tyres.
 - D belted ply, cushion ply and cross ply tyres.

9. During normal acceleration, a harsh uplift of gears in an automatic transmission can be caused
 - A failed throttle position sensor.
 - B faulty oxygen sensor.
 - C defective air control valve.
 - D failed intake air temperature sensor.

10. A manual transmission slips out of high gear. Which of these could be the cause?
 - A Worn shifter interlocks.
 - B Broken synchronizer keys.
 - C Too much main shaft end play.
 - D Worn blocking rings.

11. One cause of a manual transmission making a clunking noise during acceleration and deceleration can be
 - A weak suspension springs.
 - B vehicle loaded out of balance.
 - C a loose differential case pinion shaft.
 - D wheel dynamics imbalance.

12. A vehicle pulls to the right during braking. This is caused by
 - A a worn strut rod bushing.
 - B bent right wheel.
 - C heavy braking.
 - D air bubbles in the brake line.

13. Shock absorbers control spring action and help to prevent
 - A improper wheel and tyre position.
 - B wheel oscillation.
 - C excessive steering effort.
 - D slow steering return after a turn.

14. The cause of the automatic transmission not holding in PARK position could be
 - A misadjusted shift linkage.
 - B a roller clutch installed backwards.
 - C low level ATF.
 - D damaged torque converter.

15. The correct order of motion from steering wheel to steered wheel is
- steering wheel-steering gear-pitman arm-tie rod-pivots.
 - steering wheel-steering gear-tie rod-pitman arm-pivots.
 - steering wheel-pitman arm-tie rod-steering gear-pivot.
 - steering wheel-tie rod-steering gear-pitman arm.
-
16. A bit of clutch slip is necessary between the rubbing surfaces in the dry friction plate so as to
- avoid clutch drag.
 - avoid clutch judder.
 - avoid clutch spin.
 - allow a shock-free connection to be made between the engine and the gearbox.
-
17. To ensure that the clutch components are properly aligned when remounting them after repair we should
- align the flywheel first.
 - align the clutch disc first.
 - first mark the relative positions of the components prior to dismantling.
 - simply use a clutch guide to mount them.
-
18. The linkage between the clutch pedal and the release fork or yoke could be
- hydraulic or mechanical or a cable link.
 - hydraulic, servo-assisted (air/hydraulic) or electrical.
 - hydraulic or mechanical or servo assisted (air/hydraulic).
 - electrohydraulic or mechanical.
-
19. Over filling or topping up a gearbox with oil will cause
- gear teeth clashing.
 - a damage to oil seals as well as oil foaming.
 - hard shifting into gears.
 - noisy gear operation.
-
20. The lock-up clutch used in some torque converters has as function to
- lock the converter's stator to its shaft.
 - engage with the converter's cover to prevent slip and create a one-to-one link between the engine and the transmission.
 - lock up the turbine with the impeller.
 - lock up the stator with the impeller.
-
21. The automatic transmission gearbox governor
- maintains a constant flow of fluid under pressure in the system.
 - supplies fluid to the valve control body.
 - regulate the application and release of the gear set according to the road speed.
 - governs the automatic gearbox.
-
22. Black carbon is added to vulcanized rubber during tyre construction to
- combine with the rubber and produce a much harder, tougher and wear resistant material.
 - assist in producing an even dispersion of the rubber compound ingredients.
 - preserve the desirable properties of the rubber compound.
 - reduce the elasticity and increase the strength of the rubber.
-
23. A tyre's specifications are 185/70R13 80S MXV. 70, 80 and S indicate
- its aspect ratio, wheel rim diameter and the speed symbol.
 - its section width, the load index and its speed symbol.
 - its aspect ratio, its load index and speed symbol.
 - the section height, the load index and its speed symbol.
-
24. To correct the defect of a static wheel/ tyre imbalance, we
- simply replace the damaged spot on the wheel/tyre.
 - place a chip in weight of similar mass opposite the heavy side of the wheel.
 - pull the wheel radially outwards for it to be orbiting on a circular path.
 - replace the swivel pin.
-
25. A coil spring's rate or constant refers to the
- rate at which the spring compresses.
 - rate at which the spring stretches.
 - ratio between the load on the spring and its deflection.
 - rate at which the spring is loaded.
-
26. The leafspring's bump stop
- makes the suspension to be soft when laden.
 - stiffens the suspension when laden and prevents the chassis from scrubbing on the axle.
 - helps to minimize interleaf friction.
 - helps to increase interleaf friction.

27. Air spring (air suspension)
 A is a spring that is exposed to air.
 B pumps air to steel spring.
 C sucks air out of steel springs.
 D makes use of flexible rubber cylinders fitting between the sprung and the unsprung weights.
-
28. Generally, a good shock absorber should stop car body movement
 A in a single stroke.
 B after five rebounds.
 C after seven rebounds.
 D in two or three rebounds.
-
29. Backlash between the rack and pinion teeth in a manually operated rack and pinion type of steering is adjusted by
 A adjusting the tie rod nuts.
 B adjusting the ball joint suckets.
 C turning the adjusting spring loaded scrow below the rack tube(supporting the rack).
 D adjusting the rack housing.
-
30. The grade of oil suitable for use in the Rack and pinion steering gearbox is
 A SAE10W.
 B SAE30W.
 C SAE70W or SAE80W or SAE90.
 D SAE40.
-
31. The hydraulic modulator (hydraulic actuator) in an ABS system
 A monitors the speeds of the different wheels.
 B monitors system failure and informs the driver via a dashboard warning lamp.
 C gets command orders from the ECU and command the solenoids which regulate the braking pressure.
 D commands the master cylinder.
-
32. Release levers are pivoted on
 A springs.
 B pins.
 C threaded levers.
 D levers.
-
33. A situation where the engine and the gearbox unit shudder and vibrate when the clutch is released is known as
 A clutch slip.
 B clutch drag.
 C clutch spin.
 D clutch judder.
-
34. If two meshed gears have 4 : 1 gear ratio and the smaller gear has 12 teeth, the larger gear will have
 A 12 teeth.
 B 24 teeth.
 C 36 teeth.
 D 48 teeth.
-
35. Which of the following parts is splined to the clutch disc?
 A Cluster shaft.
 B Lay shaft.
 C Main shaft.
 D Main gear.
-
36. Transmission permanent gear reduction is achieved at the
 A clutch unit.
 B gear unit.
 C final drive unit.
 D differential unit.
-
37. Differential noise noticed only when cornering is due to
 A heavy heel contact on gear teeth.
 B heavy toe contact on gear teeth.
 C binding in differential case.
 D loose pinion.
-
38. The centre part of the universal joint is called the
 A trunnion.
 B joint.
 C bearing.
 D spider.
-
39. The power assisted braking system makes use of
 A electromagnets.
 B compressed air.
 C vacuum.
 D vapour.
-
40. A wheel speed sensor furnishes the ABS computer through a/an
 A voltage signals.
 B resistance signals.
 C frequency signal.
 D electromagnetic signal.
-
41. A part of an unsprung mass is the
 A springs.
 B brakes.
 C gearbox.
 D frame.
-

42. Caster is the inclination of the
A front wheel to the vertical.
B kingpin axis in the fore and aft plane.
C kingpin axis in the transverse vertical plane.
D axis of stub axle to the horizontal.
-
43. If a tube of large size than required is installed in a tyre then the
A tyre will over expand.
B tyre and tube will not fit the rim.
C tube will overlap and wear.
D tyre height will increase.
-
44. The height/width ratio of a tubeless tyre of 185/60R14 is
A 0.32
B 3.08
C 89
D 111
-
45. An air conditioning refrigerant is a low-pressure gas at the
A condenser outlet.
B evaporator inlet.
C evaporator outlet.
D condenser inlet.
-
46. Speed reduction of the torque converter results to a
A constant torque.
B torque increase.
C power increase.
D torque decrease.
-

47. A fluid coupling acts as
A a flexible power transmitting coupling
B an automatic gear changer
C a synchronizing device
D a three element torque multiplier
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48. Dead axles
A are simply beams which support the vehicle weight.
B are usually the rear axles.
C contain differential.
D are solid beams of rear axles.
-

49. A transfer gearbox is used for
A all vehicles.
B front wheel drive vehicles.
C rear wheel drive vehicles.
D four wheel drive vehicles.
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50. The term 'Gross Vehicle Weight' indicates the
A maximum operating weight of the vehicle without trailer.
B weight of the vehicle without passengers.
C weight of the vehicle when its body is removed.
D weight of the passengers that the vehicle can carry.
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STOP

NOW GO BACK AND CHECK YOUR WORK
