

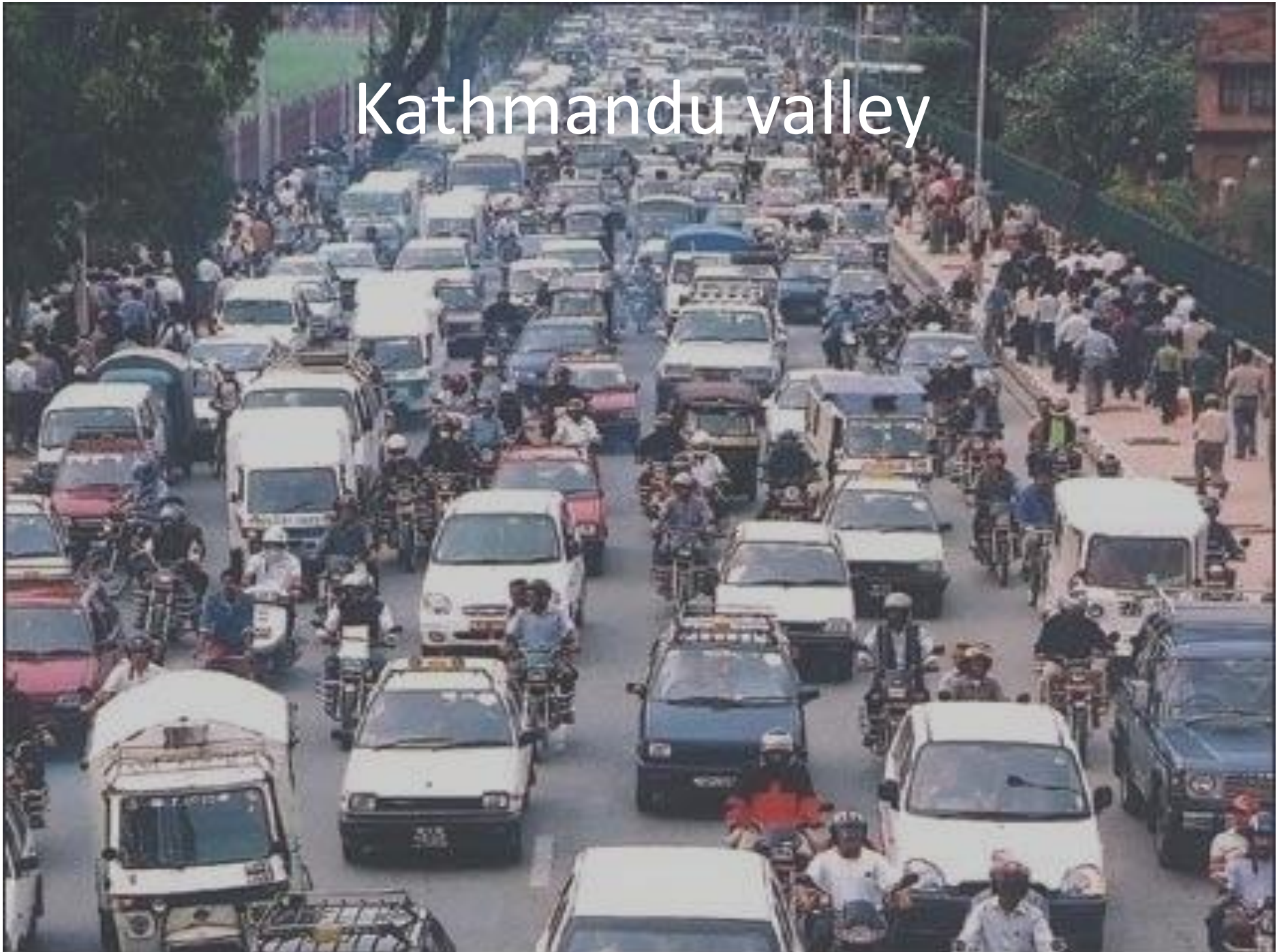


VEHICLE INSPECTION FOR REDUCING EMISSIONS

Sharad Adhikary

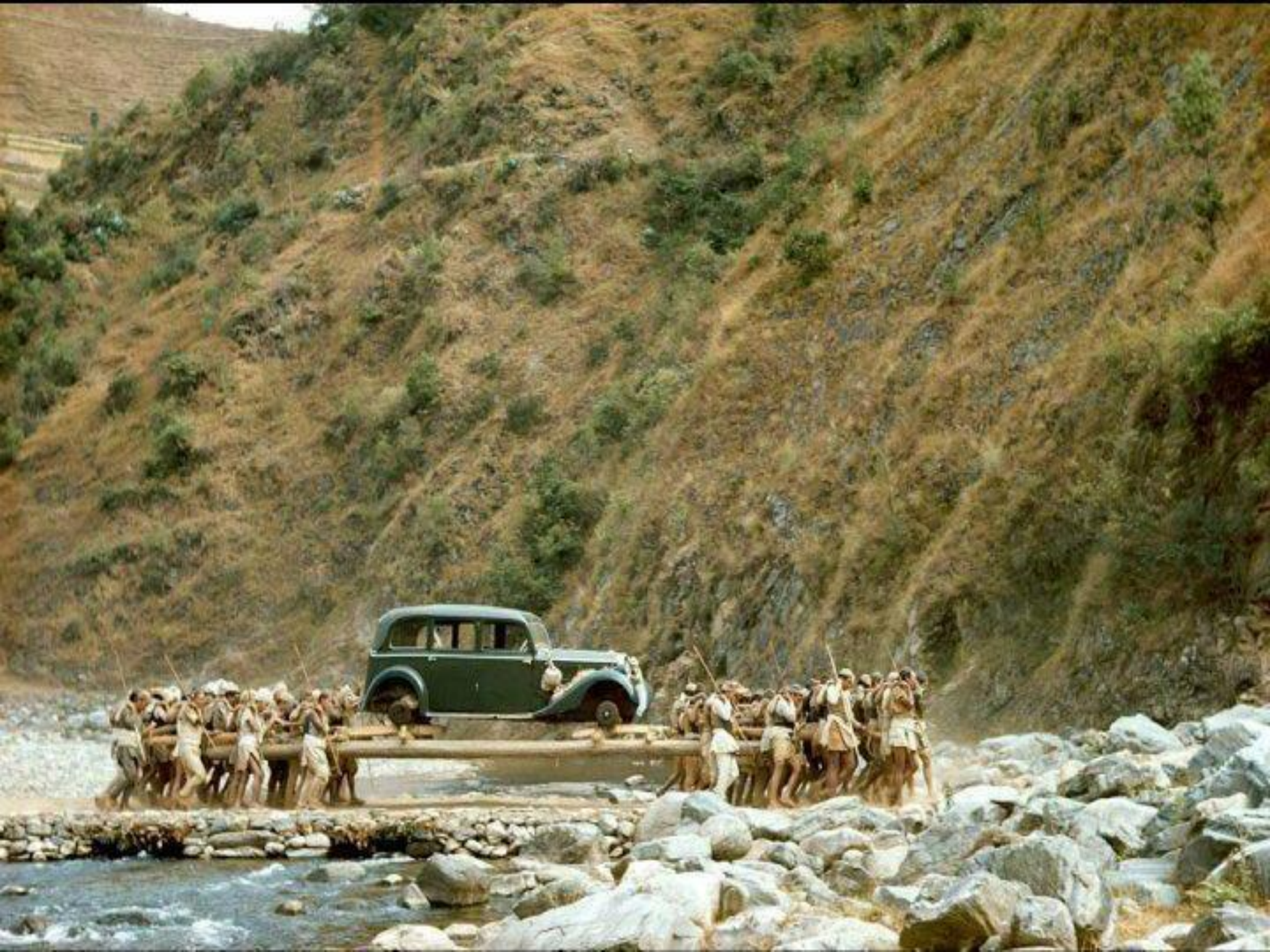
Director ,
Department of Transport Management

Kathmandu valley



Once upon a time, in Nepal









संस्कृत विभाग
राज्य स्वास्थ्य मन्त्रालय
वाहन स्वास्थ्य विभागको
सर्वोन्मुख केन्द्र (Vehicle fitness test Center)
निर्माण स्थल



Vehicle Fitness Test Center, Teku

December 31, 2013

84th Annual Meeting

Fact about mass emissions

The scale of the environmental pollution due to vehicular emission is very large specially in Kathmandu Valley. and growing rapidly with increased motorization in the developing world. An informal research shows that 60% of the pollution in the valley is due to the tail pipe emission from the vehicles. The trend of increment in the registration of new vehicles gives the indication that the percentage will be more. Experience indicates that certain interventions to reduce pollution due to tail pipe emission have the potential to be highly cost-effective compared with other large-scale public health programs.

Issues related to vehicular emissions

- Over loading specially in cargo transport: overloaded cargo vehicles specially in the hilly terrain emits unimaginable amount of black smoke which contains excess of carbon mono oxide and hydrocarbon.
- Engine tuning, timely servicing of vehicles : Timely maintenance of the vehicles is must.
- Fuel quality- it is the major factor.
- Replacement of old vehicles- Plans to remove and manage the old vehicles used in Public Transport.
- Fixing the operational life of vehicles used in Public Transport - 20 years.
- In use vehicles emission standard to be revised to match with EURO III.
- Regular (In the centre) and unscheduled checking (On road) of vehicles.

- Mechanized Vehicle Fitness Test Centers
- Review on existing Vehicle Fitness Test System.
- Management of the vehicles imported before the implementation of Euro Standards in Nepal (2000 AD).
- Training of the technical personnels engaged in the inspections
- Only Automobile Engineers are to be deputed in the testing and inspection of the vehicles.
- Plans to hold Awareness programs in various regions.

DOTM on POLLUTION

Department Of Transport Management is keen on reducing the Pollution due to Vehicles. Our Assumption is **A TECHNICALLY SOUND VEHICLE PRODUCES LESS POLLUTION.**

DOTM is going to improve in the following two factors. If the improvements are carried out successfully there will be sizable reduction in the emission.

- Human Factor
- Engineering Factor

Human Factor

- DOTM has developed and implemented curriculum for the Drivers of all categories of the vehicles, which includes various topics including the preliminary repair and maintenance of the vehicles and emission standards (EUROIII)
- Changed and improved the theoretical examination for Driving License.
- Sizable improvement in the Trial modality.
- Different modality for trial and written exam for issuance of Professional Driving license to operate Public Vehicles.

Engineering Factors.....

- DOTM has established a Vehicle Fitness Test Centre to make effective inspection of the public vehicles so that old not duly repaired and unfit vehicles may not ply on the road. This centre will be operable in near future. The standard setting for brakes, suspensions, lights etc... which are very much connected with the emission is under process.
- Plan to set up adequate Centers through out the country wherever is needed.

General scenario

- There are more than 40 thousands public vehicles plying in the Valley.
- They have to get tested two times a year. That means DOTM has to check **80,000 vehicles per year**
- The existing Fitness Center at Teku in Kathmandu has capacity of $3+3=6$ vehicles per hour.
- This shows that 42 vehicles could be tested per day, if worked 7 hrs a day and little more than **12 thousands per year** if done 300 days per year.
- Dotm needs at least 6 centers in the valley as per the existing rules.

Vehicle Fitness Test

1. **Vehicle Fitness Test** is test done by the DOTM certifying that a public motor vehicle has passed a compulsory periodic inspection of safety and roadworthiness.
2. All the public vehicles seeking route permit to ply on the roads are required to undergo this test in each 6 months period
3. Tourists vehicles and vehicles used in Corporation also fall under this category.

Types of TESTS

- **Automobile Brake Tester:** The automobile brake tester is one of the main items as automobile safety performance. The tester can test two wheels' brake force of one axle at the same time and show the maximum brake force of two wheels. This test is mainly for wheel loading of automobile and motorcycles also to find out whether the tested vehicles' brake force is qualified or not.

Automobile Chassis Clearance Tester

This tester is to test wheel steering, clearance and hidden danger of suspension system, exposing the breakdown of components to make the driving safe. It can test up to an axle load of 10 tons.

Head Light Tester

This test is carried out to test the intensity of the light as well as the angle the head light makes on the road.

Horn Tester

This test is carried out to test the intensity of the sound of horn to avoid unnecessary noise on the

Automobile Sideslip Tester

This test is used in testing front wheel alignment. When an automobile passes on the tester at low speed, the tester can judge whether the front wheel alignment is right or not through testing sideslip value of front wheel.

Automobile Suspension Tester

The function of automobile suspension is to reduce vibration caused by rough roads and to make sure the automobiles will be driven steadily. The tester can display, Static wheel load, minimum absorptivity of dynamic load, dynamic load exciting frequency, count and display evaluation standard of suspension and display and print vibration curve.

Automobile Wheel Load Tester

- This test shows the load on each axle and very much associated with the brake test. This test does not give result of pass fail but gives the data of the load distribution on each axle.

Nepal Transport Management Act 2049

- **89. Requirement of road test:**

(1) In order to obtain a route permit for any public motor vehicle, such a motor vehicle shall have to undergo a road test pursuant to this Act.

(2) No route permit shall be issued for a public motor vehicle unless and until the vehicle undergoes the road test pursuant to Sub-section (1)

- **90. Application for road test:** The owner or manager of a public motor vehicle who intends to obtain the road test of the vehicle shall have to make an application, in the prescribed format, accompanied by the prescribed fees, to the competent authority for the road test.

- **91. Road test certificate to be issued:** (1) If an application is made pursuant to Section 90, the competent authority shall cause to conduct the test of such a public motor vehicle and shall issue the certificate of road test in the prescribed format if the mechanical condition and features of such a motor vehicle is found to be in order.
- (2) The validity of the certificate of road test to be issued pursuant to Sub-section (1) shall be for up to six months.

- **92. Repetition of road test:** (1) An application has to be made to the competent authority for re-road test no later than seven days of the expiration of the period set forth in Sub-section (2) of Section 91, and such road test has to be obtained.
- (2) In the event of the failure to obtain the re-road test within the period set forth in Sub-section (1), and a request for re-road test of such a motor vehicle is made within thirty five days of the expiration of that period, the re-road test of such a motor vehicle shall be made by collecting cent percent additional fees, in addition to the fees chargeable for the road test.

- (3) In the event of the failure to obtain the re-road test even within the period set forth in Subsection (2), the certificate of such road test shall ipso facto be revoked. If the public motor vehicle of which the certificate of road test has been so revoked is produced for re-road test, such a motor vehicle shall be tested again and the certificate of road test issued, by realizing a fine of up to Five Thousand Rupees, in addition to the fees referred to in Sub37 section (2), from the manager or owner of that motor vehicle.

Nepal Transport Vehicle Rules 2054

- **39. Application for road test certificate: (1)**
The owner or manager of motor vehicle who intends to obtain the road test certificate pursuant to Section 90 of the Act shall make an application to the concerned Office in the format as referred to in Schedule-40 and accompanied by the fees as referred to in Schedule-3, for the road test pursuant to Section 90 of the Act, prior to operating the motor vehicle.

- (2) If an application is made pursuant to Sub-rule (1), the Office shall cause the concerned technician to carry out necessary test of the concerned motor vehicle in accordance with the road test description format as referred to in Schedule-41, and if the details as referred to in the road test description form appears to be correct, the Office shall issue the road test certificate in the format as referred to in Schedule-42, subject to the Act and the other provisions set forth in these Rules.

- (3) If, during the validity of the road test certificate issued pursuant to Sub-rule (2), any motor vehicle is not found to be in order upon testing it by the competent authority, transport inspector or concerned traffic police, such authority or inspector or police may give a time limit of Fifteen days for the necessary repair and maintenance of that motor vehicle and may give a time limit of an additional Fifteen days if that time limit is not sufficient for the repair and maintenance of the motor vehicle, and it shall be the duty of the owner or manager of motor vehicle concerned to carry out repair and maintenance within that time limit.

- (4) Such a motor vehicle must not be plied without carrying out its required repair and maintenance within the time limit given pursuant to Sub rule (3).

- **40. Requirement of re-road test:** (1) The owner or manager of motor vehicle shall, pursuant to Section 92 of the Act, make an application to the Office which has issued the road test certificate, in the format as referred to in Schedule-43, for re-road test after the expiry of the period set forth in the road test certificate issued pursuant to Section 90 of the Act.

- (2) If an application is made pursuant to Sub-rule (1) for re-road test, the Office shall cause necessary test to be conducted pursuant to Sub-rule (2) of rule 39 and issue the re-road test certificate, subject to the Act and the other provisions set forth in these Rules.

- (2) If an application is made pursuant to Sub-rule (1) for re-road test, the Office shall cause necessary test to be conducted pursuant to Sub-rule (2) of rule 39 and issue the re-road test certificate, subject to the Act and the other provisions set forth in these Rules.

- **41. Suspension of road test certificate:** (1) The owner or manager of motor vehicle concerned shall make an application, specifying the reason why the motor vehicle is not capable of being plied, to the concerned Office, in the format as referred to in Schedule-44, for the suspension of the road test certificate, prior to the expiry of the period set forth in the road test certificate issued pursuant to Sections 91 and 92 of the Act.

- (2) If an application is made pursuant to Sub-rule (1) for the suspension of the road test certificate, the Office shall, if it considers appropriate to suspend the road test certificate upon making necessary examination, suspend it.

Items to be checked manually while testing the vehicles for fitness:

1. License plate
2. Vehicle type and brand
3. Vehicle's color.
4. Chassis Number
5. Engine number
6. Bumper
7. Mirrors
8. Window glass
9. Vehicle's Appearance and paint surface
10. All lights,
11. Horn
12. All components of engine
13. Battery and its terminal wires
14. All electrical wires
15. Brakes
16. Door lock and hinges
17. Driver's seat / seat belt
18. Wipers
19. All gazettes and meters

20 Ignition/ Start 21. Idle , Acceleration
22.Oil pressure/water temperature
23.Leakage 24.Door lights/cabin lights
25.Fire extinguisher 26 Emergency exit
27.Passenger way/door way
28.Fuel tank/Fuel tank cover
29. Leaf Springs/shock absorber
30 Tyre type/specification/tread

- 31. Tyre bolt/axle shaft bolt
- 32. Spare tyre/its secure placing
- 33. Maximum steering angle of steering wheel
- 34. Steering force 35. Clutch 36. Gear box
- 37. Gear box shaft/chain / bracket
- 38. Transfer box bracket
- 39. Transmission 40. Drive axle
- 41. All components of steering
- 42. Emission test**

Proposed Nepalese Standards for Vehicle Fitness Test: these are automatic tests

SN	Test	Light vehicles up to 5000kg GVW	Heavy vehicles more than 5000kg GVW
1	Brake Test		
	Foot Brake	60% of the total vehicle weight in Kg	60% of the total vehicle weight in Kg
	Hand Brake	20% of the total vehicle weight in Kg	20% of the total vehicle weight in Kg
2	Sideslip Test	± 05mm/10 meters	± 10mm/10meters
3	Head Light Test		
	Luminosity of the Light	High :50000cd Low:40000 cd	High :75000cd Low:50000 cd
4	Horn	70 db to 100 db	70 db to 100 db
6	Suspension Test	Suspension Efficiency : > 45%	NA
7	Pollution Test	Petrol: CO: 3.0 gm/Km (% by volume). HC: 1000 ppm Diesel (Opacity Test) : 2.44/meter	Motorcycles : CO 4.5 gm/Km% by volume. HC: 7800 ppm



Thank you