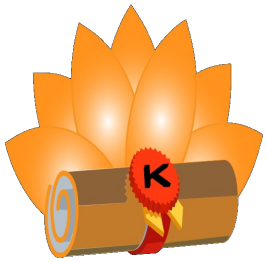
www.kamaldnp.com



KAMALDNP

kamaldnp.com

PDF created by Raj Kamal using AI

Automobile Maintenance Servicing & Repair — Complete Syllabus

BTEUP Diploma in Mechanical Engineering (Automobile) • 5th Semester • Session 2026–27

Subject 5.5 (Practicum) • Total 100 Marks • 4 Credits

KAMALDNP

About this document: Automobile Maintenance Servicing & Repair is subject 5.5 (Program Specific Subject, Practicum) of the 5th semester of the Diploma in Mechanical Engineering (Automobile). It is a practicum subject with a 60-mark external theory paper in 3 hours and 40 internal practical marks. (The Production sub-branch takes Advanced Manufacturing Processes as its 5.5 subject instead.) This document gives the complete unit-wise syllabus, the list of practicals, the examination scheme and the reference books from the official curriculum.

Examination Scheme

Code	Paper	Type	L – P	Credits	Internal	External	Total
5.5	Automobile Maintenance Servicing & Repair	Practicum	3 – 3	4	Practical 40	Theory 60 (3 hrs)	100
Automobile Maintenance Servicing & Repair Total				**4**	**40**	**60**	**100**

www.kamaldnp.com

What This Subject Aims To Do

To give diploma students the knowledge of automobile technology that the development of the automobile industry and society's dependence on its products has made imperative: the maintenance, servicing and repair of automotive systems other than the power unit, from engine overhauling to vehicle air conditioning.

Unit-Wise Complete Topic List

Unit	Topic	Periods	Marks
1	Engine Maintenance & Repairing	6	12
2	Engine Repairing Processes	6	12
3	Repair and Maintenance of Lubricating System and Radiator	10	12
4	Electrical System Repair and Maintenance	10	12
5	Repair and Maintenance of Vehicle Air Conditioning System	10	12

Total: 42 periods, 60 marks (external theory). Each unit carries 12 marks in the external theory paper, as per the suggested distribution of marks in the official syllabus.

Unit 1 — Engine Maintenance & Repairing (6 Periods, 12 Marks)

Topics: Maintenance, Maintenance schedule, Routine Maintenance schedule for petrol engine and diesel engine, lubricating chart, cleaning and adjustment, preventive maintenance, trouble shooting for faults in engine. Overhauling of engines, Adjusting the engine timing, Maintenance and adjustment of carburetor, fuel injection pump, Multi Point Fuel Injection (MPFI) System and Anti-lock braking system. Checking the valve clearance and adjustment, valve grinding and lapping, engine tuning, detection and rectification of faults using compression gauge and vacuum gauge.

In simple words: Keeping an engine healthy: maintenance schedules, preventive care, overhauling, timing, and finding faults with compression and vacuum gauges.

Unit 2 — Engine Repairing Processes (6 Periods, 12 Marks)

Topics: Cylinder re-boring and re-sleeving, Removal of liners and fitting, inspection; Repair and fitting of valve and valve guides, checking the connecting rod for bending and connecting rod alignment, inspection of crank shaft for ovality and regrinding, Phasing and calibration of fuel injection pump, nozzle testing, cleaning and grinding.

In simple words: The workshop repair jobs: re-boring cylinders, fitting liners and valves, straightening connecting rods, regrinding crankshafts, and phasing and calibrating the fuel injection pump.

www.kamaldnp.com

Unit 3 — Repair and Maintenance of Lubricating System and Radiator (10 Periods, 12 Marks)

Topics: Principle of lubrication on multi cylinder engine, Types of Lubrication system: Splash, Pressure, Combined, Types of Lubrication pumps and pump drive, Maintenance of Lubricating system, Flushing the lubricating system, Change of used lubricating oils, cleaning and fitting of oil filter, lubrication of water pump, grades of oils, multi grade oil, additives for improving the quality of oil, Radiator repair and maintenance.

In simple words: How oil reaches every moving part, which oil to use and when to change it, and how the radiator is kept working.

Unit 4 — Electrical System Repair and Maintenance (10 Periods, 12 Marks)

Topics: Problems related to Starter, Starter troubleshooting and suggesting remedies, removal of starter from engine, repairing the starter, bushes and bushes replacement, checking of armature for short circuit, cleaning of commutators, checking, repairing of starter drive, reassembly and testing of starter, dynamo, lubricating the dynamo, changing the bushes, checking and tuning the electrical horn.

In simple words: Finding and fixing starter faults, checking the armature and commutator, servicing the dynamo, and tuning the horn.

Unit 5 — Repair and Maintenance of Vehicle Air Conditioning System (10 Periods, 12 Marks)

Topics: Testing and Charging of Air Conditioner, care and maintenance of electrical components, noise level system, fresh air allowance, primary and secondary circuit, heat exchanger, cooling and dehumidifying coil. Care and servicing: Air control unit, temperature control unit, magnet clutch, condenser, fan assembly, Evaporator, relays, expansion valve, filters and three way solenoid valve. Checking of harness of air conditioning.

In simple words: Testing and charging the air conditioner, and servicing every part of it: clutch, condenser, fan, evaporator, valves, filters and wiring.

List of Practicals (as listed in the syllabus)

1. Fault and their remedies in Battery Ignition system.
2. Adjustment of Head Light Beam, Wiper and Indicators.
3. Dismantling and inspection of (i) AC Pump (ii) SU Pump.
4. Dismantle (i) rear axle (ii) differential and find out the gear ratio of crown wheel and driven sun gear and planet pinion.

www.kamaldnp.com

5. Fault finding practices on an automobile: four wheeler (petrol/diesel vehicles).
6. Servicing/Tuning of a 2 wheeler/4 wheeler.
7. Servicing of hydraulic brakes: adjustment of brakes, bleeding of brakes, fitting of leather pads.
8. Tuning of an automobile engine.
9. Testing and Charging of an automobile battery and measuring cell voltage and specific gravity of electrolyte.
10. Changing of wheels and inflation of tyre, balancing of wheels.
11. Measuring spark gap, valve clearance and ring clearance; carrying out cleaning operations for adjustment.

Course Outcomes

- CO1: Explain the principles of engine maintenance for petrol and diesel engines.
- CO2: Identify, analyze, and troubleshoot faults in engines using standard diagnostic tools.
- CO3: Perform engine overhauling operations including timing adjustment, valve clearance checking, and MPFI system servicing.
- CO4: Apply standard repair processes and nozzle testing using appropriate tools.
- CO5: Carry out maintenance and repair of auxiliary vehicle systems and vehicle air conditioning systems considering safety and environmental aspects.
- CO6: Work effectively as an individual or in a team, and follow professional ethics while performing repair and servicing operations.

Reference Books (as listed in the syllabus)

- A Textbook of Automobile Engineering by R. K. Rajput; Laxmi Publications Pvt Ltd.
- Vehicle Maintenance and Garage Practice by J. A. Doshi, D. M. Panchal and J. P. Maniar; PHI Learning.
- E-books/e-tools/relevant software to be used as recommended by AICTE.

KAMALDNP • kamaldnp.com • support@kamaldnp.com

Source: IRDT Kanpur NEP-2020 curriculum for the Diploma in Mechanical Engineering (Automobile), effective session 2026-27, approved by the Board of Technical Education, U.P. Lucknow in the C.D.C. meeting held on 16.07.2026. Topic lists follow the official syllabus; short explanations are the author's own plain-English summaries, not syllabus text. Please confirm with your own polytechnic for any local changes.