



# PM POLYTECHNIC

A Unit of Puran Murti Educational Society  
Approved by AICTE, Ministry of HRD, Govt. of India,  
Affiliated to State Board of Technical Education, Panchkula, Haryana

## SCHEME FOR FIFTH SEMESTER (AUTOMOBILE ENGINEERING)

| OSr. No.  | Subject                                 | Study Scheme |          |           | EVALUATION SCHEME   |            |                                  |          |            |          | Total Marks |
|---|---|--------------|----------|-----------|---------------------|------------|----------------------------------|----------|------------|----------|-------------|
|   |   |              |          |           | INTERNAL ASSESSMENT |            | EXTERNAL ASSESMENT (EXAMINATION) |          |            |          |             |
|   |   |              |          |           | Theory              | Practical  | Written Paper                    |          | Practical  |          |             |
|   |   |              |          |           | Max. Marks          | Max. Marks | Max. Marks                       | Hrs.     | Max. Marks | Hrs.     |             |
|   | Industrial Training                     | -            | -        | -         | -                   | 50         | -                                | -        | 50         | 3        | 100         |
| 5.1   | Auto Engines – II                       | 3            | -        | 6         | 25                  | 25         | 100                              | 3        | 50         | 2        | 200         |
| 5.2   | Chassis, Body and Transmission – II     | 3            | -        | 6         | 25                  | 25         | 100                              | 3        | 50         | 2        | 200         |
| 5.3   | Garage Equipment                        | 3            | -        | -         | 25                  | -          | 100                              | 3        | -          | -        | 125         |
| 5.4   | Auto Electrical and Electronics Systems | 3            | -        | -         | 25                  | -          | 100                              | 3        | -          | -        | 125         |
| 5.5*  | Environment Education                   | 3            | -        | -         | 25                  | -          | 100                              | 3        | -          | -        | 125         |
| 5.6*  | Employability Skills – I                | -            | -        | 2         | -                   | 25         | -                                | -        | 50         | 3        | 75          |
| 5.7   | Driving Practice – I                    | -            | -        | 6         | -                   | 50         | -                                | -        | 50         | 3        | 100         |
| # Student Centred Activities including Personality Development Camp |   | -            | -        | 5         | -                   | 25         | -                                | -        | -          | -        | 25          |
| <b>Total</b>  |   | <b>15</b>    | <b>-</b> | <b>25</b> | <b>125</b>          | <b>200</b> | <b>500</b>                       | <b>-</b> | <b>250</b> | <b>-</b> | <b>1075</b> |

\* Common with other diploma programmes

+ Includes 25 marks for Viva-voce

# Student Centered Activities will comprise of co-curricular activities like extension lectures, library studies, games, Hobby clubs e.g. photography, painting, singing, seminars, declamation contests, educational field visits, N.C.C.,NSS, Cultural Activities, Civil Defense/Disaster Management activities etc.



## SYLLABUS: Polytechnic (AE)

Department: Automobile Engineering – 5<sup>th</sup> Semester

Subject: Auto Engine-II (Theory)

Subject Code: 120351

### Detailed Contents

#### Unit No. 1 High Speed Diesel Engine

Topic No.1: Theory of diesel engine operation. Difference between petrol & diesel engine. Advantages and disadvantages.

Topic No.2: Fuel filters-primary and secondary; Fuel injection pumps- plunger and barrel type, Distributor type; priming of fuel feed pumps

Topic No.3: Common rail direct Injection (CRDI). Type of nozzles, Governing and type of Governors

#### Unit No. 2 Combustion

Topic No.4: Phenomenon of combustion in C.I engines and S.I engines

Topic No.5: Methods producing turbulence. Various types of combustion chambers, for petrol and diesel engines

Topic No.6: Detonation and knocking, octane and cetane number, swirl and squish.

#### Unit No. 3 Different Types of Engine

Topic No.7: Super charged engines. Location of super charger, Power absorbed by super charger

Topic No.8: Turbo charged engines

Topic No.9: Wankel engine

Topic No.10: Different Types of Engine

Topic No.11: Gas turbines and jet propulsion

Topic No.12: Alternate fuels operated engines like L.P.G, C.N.G operated, Hydrogen

Topic No.13: Working principle of Hybrid car, fuel cell car/dual fuel operated engines

#### Unit No. 4 Performance of Engine

Topic No.14: Effect on engine performance due to atmospheric temperature, pressure

Topic No.15: Engine speed, working conditions, dirt, desert, hills, injection timing

Topic No.16: Air fuel ratio. Their remedial measures. Two stroke engine scavenging

#### Unit No. 5 Engine Pollutants and its control

Topic No.17: Sources of engine pollutants of S.I and C.I engine. Effect of pollutants on human and environment

Topic No.18: Methods of Control – Crank case ventilation, fuel tank ventilation

Topic No.19: Redesigning of various engine system

Topic No.20: Catalytic converters. Close loop feedback Emission rules and regulations. Bharat

#### Unit no. 6 Modern Vehicles

Topic No.21: Brief description of constructional features of engine

Topic No.22: like Hero, Honda, Maruti Suzuki, Tata

| STUDY SCHEME |   |   | EVALUATION SCHEME   |            |               |                                   |            |     | Total Marks |
|--------------|---|---|---------------------|------------|---------------|-----------------------------------|------------|-----|-------------|
|              |   |   | Internal Assessment |            |               | External Assessment (Examination) |            |     |             |
| Hrs/week     |   |   | Theory              | Practical  | Written Paper |                                   | Practical  |     |             |
| L            | T | P | Max. Marks          | Max. Marks | Max. Marks    | Hrs                               | Max. Marks | Hrs |             |
| 4            | - | - | 25                  | -          | 100           | 3                                 | -          | -   | 125         |

#### RECOMMENDED BOOKS

1. Automobile Engineering by Dr. Kirpal Singh; Standard Publishers Distributors
2. Automobile Engineering by R.B. Gupta; Satya Parkash, New Delhi
3. I.C. Engines by M.L. Mathur and Sharma; Dhanpat Rai and Sons, Delhi
4. Auto Engines by Halderman and Mitchell; Pearson Publications



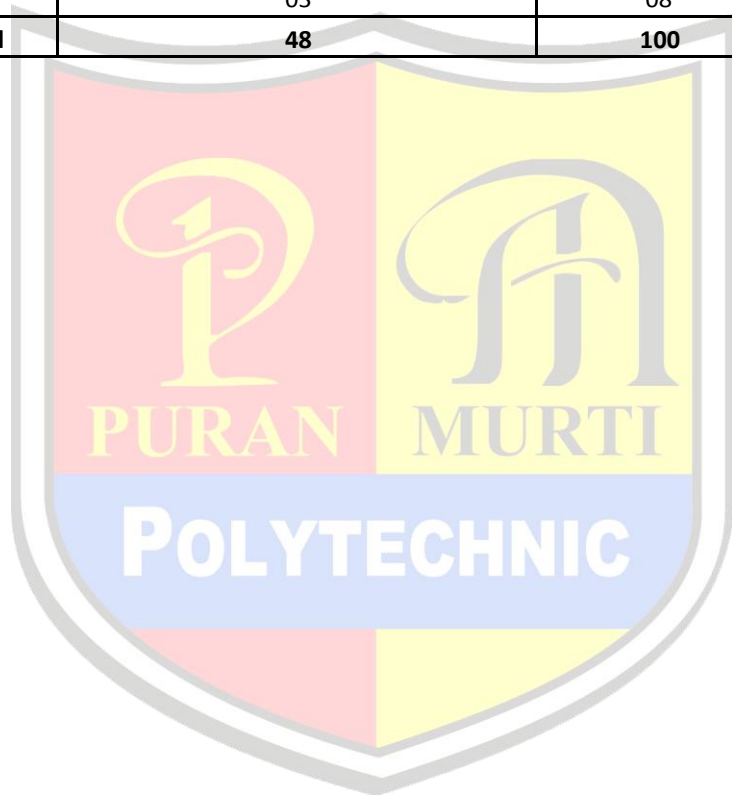
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### SUGGESTED DISTRIBUTION OF MARKS

| Unit No.     | Time Allotted for Lectures (Periods) | Marks Allotted (%) |
|--------------|--------------------------------------|--------------------|
| 1            | 10                                   | 20                 |
| 2            | 08                                   | 16                 |
| 3            | 11                                   | 24                 |
| 4            | 06                                   | 12                 |
| 5            | 10                                   | 20                 |
| 6            | 03                                   | 08                 |
| <b>Total</b> | <b>48</b>                            | <b>100</b>         |





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**Subject: Auto Engine - II (Practical)**

**Subject Code: 120351(P)**

### List of Practicals

- 1: Dismantling, inspection and assembling of fuel injection pump
- 2: Dismantling, inspection and assembling of fuel injector.
- 3: Dismantling, inspection and assembling of alternator.
- 4: Dismantling, inspection and assembling of starter motor.
- 5: Phasing and calibration of fuel injection pump on calibration machine.
- 6: Gasoline engine Emission test using exhaust gas analyser.
- 7: Diesel engine Emission test using smokemeter.
- 8: Study of CRDT engine
- 9: Servicing of valves and valve-mechanism
- 10: Identify various electrical components on the mock up wiring board.
- 11: Removing and refitting head light assembly, head light beam setting.
- 12: Checking and setting of horn, relay, dipper switch, flasher unit and indicator circuits.

| STUDY SCHEME |   |   | EVALUATION SCHEME   |            |                                   |     |            |     | Total Marks |
|--------------|---|---|---------------------|------------|-----------------------------------|-----|------------|-----|-------------|
|              |   |   | Internal Assessment |            | External Assessment (Examination) |     |            |     |             |
| Hrs/week     |   |   | Theory              | Practical  | Written Paper                     |     | Practical  |     |             |
| L            | T | P | Max. Marks          | Max. Marks | Max. Marks                        | Hrs | Max. Marks | Hrs |             |
| -            | - | 6 | -                   | 25         | -                                 | -   | 50         | 2   | 75          |



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**Subject: Chassis Body & Transmission-II (Theory)**

**Subject Code: 30352**

## Detailed Contents

### **Unit No.1 Suspension System**

- Topic No.1: Introduction
- Topic No.2: Types of suspension system
- Topic No.3: Suspension Spring
- Topic No.4: Types of leaf Spring
- Topic No.5: Shock Absorber
- Topic No.6: Telescopic Shock Absorber

### **Unit No.2 Wheels and Tyres**

- Topic No.7: Introduction
- Topic No.8: Types of Wheel
- Topic No.9 : Tyres
- Topic No.10: Classification of tyres
- Topic No.11: Tyre Material
- Topic No.12: Tyre Dimension and Specification
- Topic No.13: Tyre wear
- Topic No.14: Balancing

### **Unit No.3 Braking System**

- Topic No.15: Introduction
- Topic No.16: layout of braking system,
- Topic No.17: Types of brakes
- Topic No.18: Self applying and self releasing action
- Topic No.19: Anti-skid devices
- Topic No.20: Pedal travel
- Topic No.21: Heat generation and dissipation
- Topic No.22: Drum brakes
- Topic No.23: Disc brakes
- Topic No.24: Hand brakes

### **Unit No. 4 Power Brakes**

- Topic No.25: Air, air-hydraulic, hydro-vac brakes
- Topic No.26: Brake fluid and its characteristics
- Topic No.27: Antilock brake systems.
- Topic No.28: Brake tests

### **Unit No. 5 Body fabrication:**

- Topic No.29: Classification of vehicles according to body.
- Topic No.30: Car body
- Topic No.31: Unitized body
- Topic No.32: Body panels
- Topic No.33: Body materials,
- Topic No.34: Body painting process.

### **Unit No. 6 Automotive Safety Systems**

- Topic No.35: Preventive design
- Topic No.36: Designing for minimum injury in accident,
- Topic No.37: Electronic vehicle stability and occupant protection systems
- Topic No.38: Pedestrian protection.

### **Unit No. 7 Miscellaneous**

- Topic No.39: History
- Topic No.40: Leading manufacturers
- Topic No.41: Recent developments
- Topic No.42: Specifications of Chassis and transmission system



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| STUDY SCHEME |   |   | EVALUATION SCHEME   |            |                                   |     |            |     | Total Marks |
|--------------|---|---|---------------------|------------|-----------------------------------|-----|------------|-----|-------------|
|              |   |   | Internal Assessment |            | External Assessment (Examination) |     |            |     |             |
| Hrs/week     |   |   | Theory              | Practical  | Written Paper                     |     | Practical  |     |             |
| L            | T | P | Max. Marks          | Max. Marks | Max. Marks                        | Hrs | Max. Marks | Hrs |             |
| 4            | - | - | 25                  | -          | 100                               | 3   | -          | -   | 125         |

#### TEXT BOOKS:

1. CHASSIS BODY TRANSMISSION by Vijay Singh, Ishan Publication.

#### RECOMMENDED BOOKS

1. Automobile Engineering, Vol. I – II by Dr. Kirpal Singh, Standard Publishers, Delhi
2. Automobile Engineering by GBS Narang, Khanna Publishers, Delhi
3. Chassis, Body and Transmission by Vijay Singh & Raj Kumar, Ishan Publications, Jalandhar.
4. Chassis, Body and Transmission-II by G.S.Aulakh, Eagle Prakashan, Jalandhar.
5. Automobile Engineering by R.B. Gupta, Satya Prakashan, New Delhi.
6. Automobile Engineering by Vijay Singh & Raj Kumar ; Ishan Publications, Jalandhar.

#### SUGGESTED DISTRIBUTION OF MARKS

| Topic No.    | Time allotted (Hrs) | Marks Allotted (%) |
|--------------|---------------------|--------------------|
| 1            | 10                  | 20                 |
| 2            | 08                  | 16                 |
| 3            | 08                  | 16                 |
| 4            | 06                  | 12                 |
| 5            | 08                  | 16                 |
| 6            | 04                  | 10                 |
| 7            | 04                  | 10                 |
| <b>Total</b> | <b>48</b>           | <b>100</b>         |



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**Subject: Chassis, Body And Transmission-II (Practical)**

**Subject Code: 120352(P)**

### List of Practicals

1. Study and servicing of coil spring type suspension
2. Study and servicing of leaf spring type suspension system
3. Servicing and testing shock absorber
4. Tyre changing practice
5. Retreading of tyres (visit to auto-market)
6. Servicing and overhauling of mechanical brakes.
7. Brake shoe changing practice, brake adjustment.
8. Servicing of hydraulic brakes, bleeding of brakes
9. Wheel balancing – static and dynamic
10. Study of hand brakes
11. Disc pad changing in disc brakes, lubrication of disc brakes.
12. Removing and refitting body parts such as bonnet, front bumper, doors and seats.
13. Practice on body repair.

| STUDY SCHEME |   |   | EVALUATION SCHEME   |            |                                   |     |            |     | Total Marks |
|--------------|---|---|---------------------|------------|-----------------------------------|-----|------------|-----|-------------|
|              |   |   | Internal Assessment |            | External Assessment (Examination) |     |            |     |             |
| Hrs/week     |   |   | Theory              | Practical  | Written Paper                     |     | Practical  |     |             |
| L            | T | P | Max. Marks          | Max. Marks | Max. Marks                        | Hrs | Max. Marks | Hrs |             |
| -            | - | 6 | -                   | 25         | -                                 | -   | 50         | 2   | 75          |



### Detailed Contents

#### **Unit No. 1 Hand Tools/Measuring Tools**

Topic No.1 Classification and Use of Screw drivers, Spanners and wrenches, Pliers, Hammers  
Topic No.2: Chisels, Files, Hacksaw, Taps and dies, Reamers, Feeler gauge, Cylinder dial gauge

#### **Unit No. 2 General Equipment**

Topic No.3: Construction, working and application /use of Bench grinder, Air compressor  
Topic No.4: Hydraulic and electric hoists, High pressure washing equipment, Oil sprayers, Grease Guns-manual bucket type, pneumatic  
Topic No.5: Tyre inflation gauge (Manual and Digital type automatic), Fire extinguisher, Contents of First aid box

#### **Unit No. 3 Turning and Testing Equipment**

Topic No.6: Construction, working and application Vacuum Gauge, Compression Gauge (Pressure Gauge)  
Topic No.7: Distributor Tester; cam (dwell) angle tester, r.p.m. tester  
Topic No.8: Spark plug cleaner and tester, Ignition timing light, Fuel injector tester

#### **Unit No. 4 Engine Repair Tools/Measuring and Testing Equipment**

Topic No.9: Construction and use of Torque wrench, pneumatic wrench, Piston ring compressor,  
Topic No.10: Valve lifter and valve spring tester, Piston ring files, groove cleaner, Scrappers  
Topic No.11: Piston ring remover, Smokemeter

#### **Unit No. 5 Reconditioning/Testing Equipment for Chassis, Body**

Topic No.12: Brake Efficiency Tester (Chassis Dynamometer) or brake testing equipment  
Topic No.13 Jacks – mechanical, hydraulic, trolley type,: Creeper  
Topic No.14 Paint chamber, Paint Spray Gun, Paint Drying Equipment

#### **Unit No. 6 Special Tools**

Topic No.15: Construction and use of Ridge cutter, Crank shaft cutter, Tools for tubes flaring  
Topic No.16: Soldering tool, Nipple forming tool, Decarbonising kit,

#### **Unit No. 7 Body Repair Tool Kit**

Topic No.17: Assorted hammers, assorted dollies, body spoons, sanders, pick tools, adjustable file  
Topic No.18: Drip moulding pliers, assorted wrenches, assorted screw drivers,  
Topic No.19: cold chisels, fender beading tools, power tools.

| STUDY SCHEME |   |   | EVALUATION SCHEME   |            |                                   |     |            |     | Total Marks |
|--------------|---|---|---------------------|------------|-----------------------------------|-----|------------|-----|-------------|
|              |   |   | Internal Assessment |            | External Assessment (Examination) |     |            |     |             |
| Hrs/week     |   |   | Theory              | Practical  | Written Paper                     |     | Practical  |     |             |
| L            | T | P | Max. Marks          | Max. Marks | Max. Marks                        | Hrs | Max. Marks | Hrs |             |
| 3            | - | - | -                   | 50         | 100                               | 3   | -          | -   | 150         |

#### **RECOMMENDED BOOKS**

1. Automotive Mechanics by WH Crouse and Donald Anglin; and Tata McGraw Hill Publishing Co. Ltd., Delhi.
2. Auto Mechanics Fundamentals by MW Stockel, Goodheart Wilcox Publishers.
3. Automobile Engineering Vol. I and II by Dr. Kirpal Singh; Standard Publishers, Delhi.
4. Garage Equipment by G.S. Aulakh, Eagle Prakashan, Jalandhar.
5. Garage Equipment by Raj Kumar, Ishan Publication, Jalandhar





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## SUGGESTED DISTRIBUTION OF MARKS

| Unit No.     | Time Allotted for Lectures (Periods) | Marks Allotted (%) |
|--------------|--------------------------------------|--------------------|
| 1            | 08                                   | 18                 |
| 2            | 08                                   | 18                 |
| 3            | 06                                   | 18                 |
| 4            | 08                                   | 18                 |
| 5            | 06                                   | 10                 |
| 6            | 06                                   | 18                 |
| <b>Total</b> | <b>42</b>                            | <b>100</b>         |





## Detailed Contents

### Unit No.1 Introduction

- Topic No.1: Need of Electricity in Automobiles
- Topic No.2: Automotive Electrical System
- Topic No.3: Basic Circuit
- Topic No.4: Electronic Equipments
- Topic No.5: Earthing

### Unit No.2 Batteries

- Topic No.6: Vehicle Batteries
- Topic No.7: Lead-acid batteries
- Topic No.8: Battery Testing
- Topic No.9: Battery Charging
- Topic No.10: Battery Defect
- Topic No.11: Alkaline Battery
- Topic No.12: Li-Fe Battery
- Topic No.13: Fuel Cells

### Unit No. 3 Charging System

- Topic No.14: Introduction
- Topic No.15: Dynamo
- Topic No.16: Alternators
- Topic No.17: Regulators

### Unit No. 4 Starting System

- Topic No.18: Introduction
- Topic No.19: Starter Motors, Switches, Drivers.

### Unit No. 5 Lightning System

- Topic No.20: Lightning Circuit & its Components
- Topic No.21: Wiring

### Unit No. 6 Auto Electronics System

- Topic No.22: ECU
- Topic No.23: Sensors used in Automobile

### Unit No. 7 Electrical Accessories

- Topic No.24: Accessories used in Automobile

| STUDY SCHEME |   |   | EVALUATION SCHEME   |            |                                   |     |            |     | Total Marks |
|--------------|---|---|---------------------|------------|-----------------------------------|-----|------------|-----|-------------|
|              |   |   | Internal Assessment |            | External Assessment (Examination) |     |            |     |             |
| Hrs/week     |   |   | Theory              | Practical  | Written Paper                     |     | Practical  |     |             |
| L            | T | P | Max. Marks          | Max. Marks | Max. Marks                        | Hrs | Max. Marks | Hrs |             |
| 4            | - | - | 25                  | -          | 100                               | 3   | -          | -   | 125         |

### TEXT BOOKS:

1. Auto Electrical & Electronics System by Raj Kumar Chauhan
2. Automotive Electrical System by R.B. Gupta

### RECOMMENDED BOOKS

1. Automobile Engineering by Dr. Kirpal Singh, Standard Publishers, Delhi
2. Automotive Electrical Equipment by P.L. Kohli, Tata McGraw Hill, Delhi
3. Automotive Electrical Equipment by William H. Crouse, Tata McGraw Hill, Delhi
4. Automobile Engineering by Dr. R.B. Gupta, Satya Prakashan, New Delhi
5. Auto Electrical and Electronics Equipments by Ishan Publication, Jalandhar



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### SUGGESTED DISTRIBUTION OF MARKS

| Topic No.    | Time Allotted (Hrs) | Marks Allotted (%) |
|--------------|---------------------|--------------------|
| 1            | 04                  | 08                 |
| 2            | 10                  | 22                 |
| 3            | 10                  | 22                 |
| 4            | 06                  | 12                 |
| 5            | 08                  | 16                 |
| 6            | 05                  | 10                 |
| 7            | 05                  | 10                 |
| <b>Total</b> | <b>48</b>           | <b>100</b>         |





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**Subject: Environmental Education (Theory)**

**Subject Code: 120151**

### Detailed Contents

#### Unit No. 1 Introduction

- Topic No.1: Definition
- Topic No.2: Scope
- Topic No.3: Importance of Environmental Education

#### Unit No. 2

- Topic No.4: Basics of ecology, Biodiversity
- Topic No.5: Eco system and Sustainable development

#### Unit No. 3

- Topic No.6: Sources of pollution - natural and manmade, Causes
- Topic No.7: Effects and control measures of air pollution and their units of measurement
- Topic No.8: Effects and control measures of water pollution and their units of measurement
- Topic No.9: Effects and control measures of noise pollution and their units of measurement
- Topic No.10: Effects and control measures of soil pollution and their units of measurement
- Topic No.11: Effects and control measures of radioactive pollution and their units of measurement
- Topic No.12: Effects and control measures of nuclear pollution and their units of measurement

#### Unit No. 4

- Topic No.13: Solid waste management, Causes, Effects
- Topic No.14: Control measures of urban and industrial waste

#### Unit No. 5

- Topic No.15: Mining - Causes, effects and control measures
- Topic No.16: Deforestation – Causes, effects and control measures

#### Unit No. 6

- Topic No.17: Environmental Legislation - Water (prevention and control of Pollution) Act 1974
- Topic No.18: Air (Prevention and Control of Pollution) Act 1981
- Topic No.19: Environmental Protection Act 1986
- Topic No.20: Role and Function of State Pollution Control Board,
- Topic No.21: Environmental Impact Assessment (EIA)

#### Unit No. 7

- Topic No.22: Role of Non-conventional Energy Resources-Solar Energy
- Topic No.23: Wind Energy, Bio Energy, Hydro Energy

#### Unit No. 8

- Topic No.24: Current Issues in Environmental Pollution – Global Warming
- Topic No.25: Green House Effect, Depletion of Ozone Layer
- Topic No.26: Recycling of Material, Environmental Ethics
- Topic No.27: Rain Water Harvesting, Maintenance of Groundwater
- Topic No.28: Acid Rain, Carbon Credits

| STUDY SCHEME |   |   | EVALUATION SCHEME   |            |               |                                   |            |     | Total Marks |
|--------------|---|---|---------------------|------------|---------------|-----------------------------------|------------|-----|-------------|
|              |   |   | Internal Assessment |            |               | External Assessment (Examination) |            |     |             |
| Hrs/week     |   |   | Theory              | Practical  | Written Paper |                                   | Practical  |     |             |
| L            | T | P | Max. Marks          | Max. Marks | Max. Marks    | Hrs                               | Max. Marks | Hrs |             |
| 3            | - | - | 50                  | -          | 100           | 3                                 | -          | -   |             |

#### Text BOOKS

1. Environmental Engineering and Management by Eagle Publication
2. Environmental Science by North Publication.
3. Environmental and Pollution Awareness by D.S.Sharma



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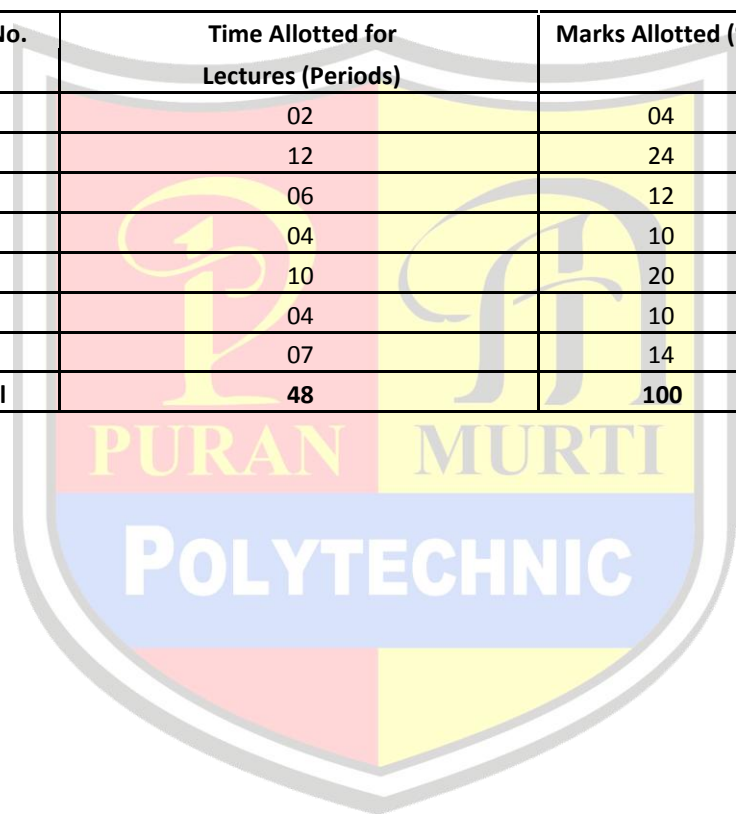
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## RECOMMENDED BOOKS

1. Environmental Engineering and Management by Suresh K Dhameja; SK Kataria and Sons, New Delhi.
2. Environmental Science by Dr. Suresh K Dhameja; SK Kataria and Sons, New Delhi.
3. Environmental and Pollution Awareness by Sharma BR; Satya Prakashan, New Delhi.
4. Environmental Protection Law and Policy in India by Thakur Kailash; Deep and Deep Publications, New Delhi.
5. Environmental Science by Deswal and Deswal; Dhanpat Rai and Co. (P) Ltd. Delhi.
6. Engineering Chemistry by Jain and Jain; Dhanpat Rai and Co. (P) Ltd. Delhi.
7. Environmental Studies by Erach Bharucha; UGC University Press

## SUGGESTED DISTRIBUTION OF MARKS

| Unit No.     | Time Allotted for Lectures (Periods) | Marks Allotted (%) |
|--------------|--------------------------------------|--------------------|
| 1            | 02                                   | 04                 |
| 3            | 12                                   | 24                 |
| 4            | 06                                   | 12                 |
| 5            | 04                                   | 10                 |
| 6            | 10                                   | 20                 |
| 7            | 04                                   | 10                 |
| 8            | 07                                   | 14                 |
| <b>Total</b> | <b>48</b>                            | <b>100</b>         |





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**Subject: Driving Practice – I (Practical)**

**Subject Code: Driving Practice (P)**

## List of Practicals

- 1: Identification of various controls of vehicle.
- 2: Knowledge of general road safety, personal safety, traffic rules and driving regulations.
- 3: Pre-driving checks:- before sitting on the driver seats, after sitting on the driver's seat.
- 4: Starting the engine and warming up,
- 5: Precautions before and after moving the vehicle.
- 6: Operation of engaging and disengaging the clutch.
- 7: Gear changing from low to high and high to low.
- 8: Braking and use of brakes on the road, stopping distance and following distance.
- 9: Road and traffic signals.
- 10: Driving practice on road for steering control.
- 11: Inside and outside inspection/checking of vehicle
- 12: Checking of engine oil, horn, starter, coolant and battery
- 13: Driving practice inside the institution or nearby.

| STUDY SCHEME |   |   | EVALUATION SCHEME   |            |                                   |     |            |     | Total Marks |
|--------------|---|---|---------------------|------------|-----------------------------------|-----|------------|-----|-------------|
|              |   |   | Internal Assessment |            | External Assessment (Examination) |     |            |     |             |
| Hrs/week     |   |   | Theory              | Practical  | Written Paper                     |     | Practical  |     |             |
| L            | T | P | Max. Marks          | Max. Marks | Max. Marks                        | Hrs | Max. Marks | Hrs |             |
| -            | - | 6 | -                   | 50         | -                                 | -   | 50         | 3   | 100         |