## **RGPV (Diploma Wing ) Bhopal**

## SCHEME FOR LEARNING OUTCOME

	LO Code	CO Code	de	urse Co	Co	le	ranch Cod	В
Format No. 4	1	1	1	0	4	3	0	Α

COURSE NAME AUTO ENGINES – II (DIESEL ENGINES)

CO Description | Student will be able to explain about theory, construction and components for given diesel engine

LO Description | Student will be able to explain theory/construction/components/working of diesel engine with help of a labeled line diagram

## **SCHEME OF STUDY**

S. No.	Learning Content	Teaching – Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
1	Introduction to diesel engine, dual combustion cycle, actual diesel and dual combustion cycles, Types of diesel engines, working principle, construction and operation, Valve timing diagram, significance of firing order, study of engine specifications for LCV, HCV, and SUV	Lecture method	Teacher will organize lecture inside the class based on his/her session plan. Discuss the topics with students, provide quiz, assignment etc.	08	04	<ul> <li>Automobile Engg. by R.B.Gupta SatyaPrakashan N. Delhi</li> <li>Automobile Engg. by K.K.Jain &amp; Asthana Tata McGraw-Hill Publisher</li> <li>W.H. Crouse "Automotive mechanics", Tata McGraw-Hill Publishing Co., N. Delhi.</li> </ul>	If necessary teacher will suggest more video link, learning resources which will help the students to solve quiz, prepare assignments etc.

#### **SCHEME OF ASSESSMENT**

		Marks	Resources Required	External / Internal
Theory exam	Two theory questions related to the learned content will be asked in the	10	Question paper, Check list	External
Th	eory exam	eory exam	learned content will be asked in the 10	learned content will be asked in the 10 Question paper, Check list

## INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

<b>RGPV</b>	(Dip	loma	Wing	) Bhopal
-------------	------	------	------	----------

# SCHEME FOR LEARNING OUTCOME

В	ranch Coo	le	Cc	ourse Co	de	CO Code	LO Code	_
4	0	3	4	0	1	1	2	Format No. 4

COURSE NAME	AUTO ENGINES – II (DIESEL ENGINES)												
CO Description Student will be able to explain about theory, construction and components for given diesel engine													
LO Description	Student will be able to compar	re the diesel engine with the 4S petro	ol eng	ine re	gardi	ng co	onstr	uctio	n, me	rits an	d limita	tions	

#### **SCHEME OF STUDY**

S. No.	Learning Content	Teaching – Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
1	Comparison of 4S petrol Engine & diesel Engine regarding their construction, merits and limitations.	Lecture method	Teacher will organize lecture inside the class based on his/her session plan. Discuss the topics with students, provide quiz, assignment etc.	04	03	<ul> <li>Automobile Engg. by R.B.Gupta SatyaPrakashan N. Delhi</li> <li>Automobile Engg. by K.K.Jain &amp; Asthana Tata McGraw-Hill Publisher</li> <li>W.H. Crouse "Automotive mechanics", Tata McGraw-Hill Publishing Co., N. Delhi.</li> </ul>	If necessary teacher will suggest more video link, learning resources which will help the students to solve quiz, prepare assignments etc.

## **SCHEME OF ASSESSMENT**

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal
1	Paper pen test	One theory question related to the learned content will be asked in the test paper	10	Test paper, Check list	Internal

## INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

<b>RGPV</b>	(Dip	loma	Wing	) Bhopal
-------------	------	------	------	----------

# SCHEME FOR LEARNING OUTCOME

В	ranch Cod	de	Co	ourse Co	de	CO Code	LO Code	
Α	0	3	4	0	1	1	3	Format No. 4

	COURSE NAME	AUTO ENGINES – II (DIESEL ENGINES)			
CO Description Student will be able to explain about theory, construction and components for given diesel engine					
	LO Description	Student will be able to identify various components of diesel engines			

#### **SCHEME OF STUDY**

S. No.	Learning Content	Teaching – Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
1	Study of locations, constructional features, functions of various components of diesel engines	Lab demonstration method	Teacher will demonstrate the contents to the students. Students will practice under the guidance of teacher.	04	03	Cut-sectioned/ working models, disassembled engines, different components and sub-assemblies	If necessary teacher will suggest more video link, learning resources which will help the students to solve quiz, prepare assignments etc.

#### **SCHEME OF ASSESSMENT**

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal
1.	Laboratory Test by Observation	Examiner will ask the student to identify five engine components	10	Cut-sectioned/ working models/ disassembled engines/ different components and sub-assemblies, Rating scale	External

## INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

## The assessment will be done on basis of following performance indicators:-

- 1- Correctness of identification of first component 2- Correctness of identification of second components 3- Correctness of identification of third component
- 4- Correctness of identification of fourth component 5- Correctness of identification of fifth component.

NOP V (Dipioilla vvillg) bilopai		OUTCOME	Α	0	3	4	0	1	1	4	Format No. 🛨
COURSE NAME AUTO ENGINES – II (DIESEL ENGINES)											
CO Description Student will be able to explain theory, construction and components about given diesel engine											
LO Description	Student will be able to lo	ocate the position of various compon	ents in r	elatio	n to d	other	com	pone	nts in	the g	iven diesel engine

**Branch Code** 

**Course Code** 

Code

Code

**SCHEME FOR LEARNING** 

#### **SCHEME OF STUDY**

S. No.	Learning Content	Teaching –Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
1	Location/ relative position of various components in diesel engine assembly	Lab demonstration	Teacher will demonstrate the contents to the students and provide observation tables. Students will complete given observation tables based on their observations.	03	04	Cut-section / working models of diesel engines	NIL

#### **SCHEME OF ASSESSMENT**

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal
1	Laboratory test by observation	Examiner will ask the students to locate the relative position of five different components in relation to other components in the given diesel engine during practical examination	10	Cut-section/ working model of diesel engines, Rating scale	External

## INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

## The assessment will be done on basis of following performance indicators:-

RGPV (Dinloma Wing) Rhonal

1- Correctness of locating the position of first component 2- Correctness of locating the position of second component 3- Correctness of locating the position of third component 4- Correctness of locating the position of fourth component 5- Correctness of locating the position of fifth component.

KGPV (Dipioma wing ) bhopai		OUTCOME	Α	0	3	4	0	1	2	1	Format No. 4
COURSE NAM	AUTO ENGINES – II (DIESEI	L ENGINES)									
CO Description	Student will be able to exp	plain combustion process, reasons and	reme	edies	for kr	ocki	ng in	diese	l engi	nes	
LO Description Student will be able to explain combustion process in diesel engines with help of line diagram											

**Branch Code** 

**SCHEME FOR LEARNING** 

PCDV (Diploma Wing ) Phonal

со

Code

Code

**Course Code** 

## **SCHEME OF STUDY**

S. No.	Learning Content	Teaching – Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
1	Combustion in CI engine, stages of combustion, factors affecting delay period, related line diagrams, Combustion chamber for diesel engines & its different types	Traditional Lecture method	Teacher will explain different concepts and descriptions related to contents. He will give assignments and organize quizzes to ascertain their learning. Students will prepare assignments and attempt quizzes. Teacher will identify their weaknesses and provide necessary remedial and tutorials	04	03	<ul> <li>Sharma &amp; Mathur         "Internal Combustion         Engines" Dhanpat Rai         and sons, N. Delhi</li> <li>Ganesan.V "Internal         Combustion         Engines", Tata         McGraw-Hill         Publishing Co., N.         Delhi.</li> </ul>	If necessary teacher will suggest video link, learning resources which will help the students to solve quiz, prepare assignments etc.

#### **SCHEME OF ASSESSMENT**

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal
1	Theory exam	One theory questions related to the learned content will be asked in the test paper	10	Question paper, Check list	External

## INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

RGPV (Diploma Wing )
Bhopal

# SCHEME FOR LEARNING OUTCOME

Branch Code		Co	urse Co	CO Code	LO Code		
Δ	0	3	4	0	1	2	2

Format No. **4** 

<b>COURSE NAME</b>	<b>AUTO ENGINES – II</b>	(DIESEL ENGINES)
--------------------	--------------------------	------------------

CO Description | Student will be able to explain combustion process, reasons and remedies for knocking in diesel engines

LO Description | Student will be able to explain reasons and remedies for the diesel knock in diesel engines

#### **SCHEME OF STUDY**

S. No.	Learning Content	Teaching – Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
1	Abnormal combustion in diesel engine, Various reasons for diesel knock, effect of engine variables on knocking, important properties of diesel, IS Code for diesel, Cetane number, Fuel additives, remedies for the diesel knock, comparison of detonation and diesel knock	Traditional Lecture method	Teacher will explain different concepts and descriptions related to contents. He will give assignments and organize quizzes to ascertain their learning. Students will prepare assignments and attempt quizzes. Teacher will identify their weaknesses and provide necessary remedial and tutorials	06	03	<ul> <li>Sharma &amp; Mathur         "Internal         Combustion         Engines" Dhanpat         Rai and sons, N.         Delhi</li> <li>Ganesan.V         "Internal         Combustion         Engines", Tata         McGraw-Hill         Publishing Co., N.         Delhi.</li> </ul>	If necessary teacher will suggest more video link, learning resources which will help the students to solve quiz, prepare assignments etc.

#### **SCHEME OF ASSESSMENT**

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal
1	Paper pen test	One theory question related to the learned content will be asked in the test paper	10	Test paper, Check list	Internal

## INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

DCDV/D:-I	anna Mina Nalaanal	SCHEME FOR LEARNING									
KGPV (DIPI	oma Wing ) Bhopal	OUTCOME A 0 3 4 0 1 3 1 Format									Format No. <b>4</b>
COURSE NAME	AUTO ENGINES – II (DIESEL	_ ENGINES)									
CO Description	Student will be able to exp diesel engines	udent will be able to explain theory, construction, working and components about fuel injection system used in the given esel engines									
LO Description	Student will be able to expendine with the help of a la	olain theory/construction/working/ co abeled line diagram	mpon	ents	of giv	ven f	uels	supply	and ir	ijectio	on system for diesel

S. No	Learning Content	Teaching – Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
1	Theory of Diesel fuel injection, Description and function of common rail system, different types of fuel injector, rotary pump, types of governors, Types of diesel filters, fuel feed pump.  Clean diesel technology, Common Rail Diesel Injection system, Hydraulically Actuated Electronically Controlled Unit Injector, Sensors, actuators and ECU.	Traditional Lecture method	Teacher will explain different concepts. He will give assignments and organize quizzes to ascertain their learning. Students will prepare assignments and attempt quizzes. Teacher will identify their weaknesses and provide necessary remedial and tutorials	08	03	<ul> <li>Automobile Engg. Vol.2 by Singh, Kripal Standard publishers New-Delhi</li> <li>Ramalingam, K.K. "I.C. Engines Theory &amp; Practice", Scitech Publisher Chennai</li> <li>W.H.Crouse "Automotive Mechanics" Tata McGraw-Hill Publishing co., New-Delhi</li> </ul>	If necessary teacher will suggest more video link, learning resources which will help the students to solve quiz, prepare assignments etc.

## **SCHEME OF ASSESSMENT**

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal
1	Theory exam	Two theory questions related to the learned content will be asked in the university question paper	10	Question paper, Check list	External

## INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

RGPV (Diploma Wing ) Bhopal		CCHENIE ECODIE A DNIINIC Rranch Code Course Code							Code	Code	<b>A</b>
KGPV (DIPIC	oma wing ) Bhopai	OUTCOME	A	0	3	4	0	1	3	2	Format No. <b>4</b>
COURSE NAME	AUTO ENGINES – II (DIESEI	JTO ENGINES – II (DIESEL ENGINES)									
CO Description	Student will be able to expendines	Student will be able to explain theory, construction and components about fuel injection system used in the given diesel engines									
LO Description	Student will be able to compare the two given fuel injection systems for their construction, merits and limitations										

S. No.	Learning Content	Teaching –Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
1	Comparison between (a) conventional fuel injection system and CRDI (b) mechanical & electronically controlled diesel injection system, (c) direct injection, multi-port injection and throttle body injection Regarding their construction, merits and limitations	Traditional Lecture method	Teacher will explain different concepts. He will give assignments and organize quizzes to ascertain their learning. Students will prepare assignments and attempt quizzes. Teacher will identify their weaknesses and provide necessary remedial and tutorials	6	3	<ul> <li>Automobile         Engg. by         R.B.Gupta,         SatyaPrakashan,         New Delhi</li> <li>Ganesan.V "I.C.         Engines", Tata         McGraw-Hill         Publishers.,         New Delhi,</li> </ul>	If necessary teacher will suggest more video link, learning resources which will help the students to solve quiz, prepare assignments etc.

## **SCHEME OF ASSESSMENT**

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal
1	Paper-Pen Test	One theory question related to the learned content will be asked in the test paper	10	Test paper, Check list	Internal

## INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

RGPV (D		iploma Wing	SCHEME	FOR LEARNING		Branch Coo	le	C	ourse Co	ode	Code	Code	<u>e</u>	1		
		Bhopal	Ol	JTCOME	A	0	3	4	0	1	3	3	Format No. <b>4</b>			
COURS	SE NAME	AUTO ENGINES -	- II (DIESEL ENGINES)													
CO Des	scription	Student will be a engines	ble to explain theory, co	enstruction and compor	ents	about 1	fuel ir	njectio	on sy	stem	used	in the	given di	esel		
LO Des	cription	Student will be a	ble to identify the diffe	rent components of giv	en fue	l suppl	y and	injec	tion	syste	m for	diesel	engine			
				SCHEME OF STUD	Υ											
S. No.		Contents	Teaching –Learning Method	Description of T-L F	roces	S	each Hrs.		ct. /T Hrs.	ut	LRs	s Requi	red	Remarks		
		location, ctional features,		Teacher will demonst	rate tl	ne						section	•			

LO

working models,

components and

sub-assemblies

NIL

different

## SCHEME OF ASSESSMENT

contents to the students.

the guidance of teacher.

Students will practice under

06

03

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal
1	Laboratory test by observation	Examiner will ask the student to identify five different components in the given diesel engine fuel injection system during practical examination	10	Cut-section / working models, different components and sub- assemblies, Rating scale	External

#### INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

#### The assessment will be done on basis of following performance indicators:-

functions of various

types of fuel injection

system.

components of different

1

- 1- Correctness of identification of first component 2- Correctness of identification of second component 3- Correctness of identification of third component
- 4- Correctness of identification of fourth component 5- Correctness of identification of fifth component.

Lab demonstration

method

<b>RGPV (Diploma Wing ) Bhopal</b>	<b>RGPV</b>	(Diplom	a Wing	) Bhopal
------------------------------------	-------------	---------	--------	----------

## SCHEME FOR LEARNING

В	ranch Cod	le	Co	ourse Co	de	CO Code	LO Code	_
	0	3	4	0	1	4	1	Format No. 4

		OOTCOIVIL	_ ^			_	•	_	•		
COURSE NAME	AUTO ENGINES – II (DIESEL EN	NGINES)									
CO Description	Student will be able to improdevices	tudent will be able to improve the IC engine performance through performance measurement and suggesting additional evices									
LO Description	Student will be able to calculation given test data	ate specific fuel consumption, volume	tric e	fficier	ncy, i	ndica	ited	powe	r and	dissip	ation of heat from

## **SCHEME OF STUDY**

S. No.	Learning Content	Teaching – Learning Method	Description of T-L Process	Teach Hrs.	Pract/Tut Hrs.	LRs Required	Remarks
1	Specific Fuel Consumption, Volumetric Efficiency, Heat balance sheet, Indicated Power, Dynamometer and its types, study of various tests conducted on dynamometer, methods of calculating various engine performance indicators from given data, simple numerical problems based on use of formula	Traditional Lecture method	Teacher will explain different concepts. He will give assignments and organize quizzes to ascertain their learning. Students will prepare assignments and attempt quizzes. Teacher will identify their weaknesses and provide necessary remedial and tutorials	06	02	<ul> <li>Ganeshan V.         <ul> <li>I.C. Engines</li> </ul> </li> <li>Tata Mc-Graw Hill         <ul> <li>Publishing Co. Ltd.</li> </ul> </li> <li>R. K. Rajput         <ul> <li>A Textbook of</li> </ul> </li> <li>Internal Combustion             <ul> <li>Engines</li> <li>Laxmi Publication</li> <li>Ltd.</li> </ul> </li> </ul>	If necessary teacher will suggest more video link, learning resources which will help the students to solve quiz, prepare assignments etc.

## **SCHEME OF ASSESSMENT**

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal
1	Theory paper	One simple numerical question will be asked in theory paper to calculate the value of engine performance indicator from the given engine test data using the formula	10	Question Paper	External

## INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

RGPV (Diploma	Wing)	Bhopal
---------------	-------	--------

# SCHEME FOR LEARNING OUTCOME

В	Branch Code Course		urse Co	de	CO Code	LO Code		
Α	0	3	4	0	1	4	2	

Format No. **4** 

COURSE NAME	AUTO ENGINES – II (DIESEL ENGINES)
<b>CO Description</b>	Student will be able to improve the IC engine performance through performance measurement and suggesting additional devices
LO Description	Student will be able toexplain the purpose, theory, construction and working of turbocharger and supercharger with the help diagrams

## **SCHEME OF STUDY**

S. No.	Learning Content	Teaching – Learning Method	Description of T-L Process	Teach Hrs.	Pract/Tut Hrs.	LRs Required	Remarks
1	Need, purpose of supercharging, turbo-charging, construction & Working of supercharger and turbocharger, types of superchargers and Turbo-chargers, Intercoolers.	Traditional Lecture method	Teacher will explain different concepts. He will give assignments and organize quizzes to ascertain their learning. Students will prepare assignments and attempt quizzes. Teacher will identify their weaknesses and provide necessary remedial and tutorials	04	02	<ul> <li>S. Srinivasan         "Automotive         Mechanics" Tata         McGraw-Hill         Education</li> <li>W.H.Crouse"Autom         otive         Mechanics"Tata         Mc-Graw Hill         Publishing Co. Ltd</li> </ul>	If necessary teacher will suggest more video link, learning resources which will help the students to solve quiz, prepare assignments etc.

#### **SCHEME OF ASSESSMENT**

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal
1	Paper-pen test	One theory question related to the learned content will be asked in the test paper	10	Test paper, Check list	Internal

## INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

ome Wing \ Dhenel	SCHEME FOR LEARNING  Branch Code						Course Code			Л
oma wing j Bnopai	OUTCOME		0	3	4	0	1	4	3	Format No. <b>4</b>
AUTO ENGINES – II (DIESEL ENGINES)										
Student will be able to improve the IC engine performance through performance measurement and suggesting additional										
							ations			
	Student will be able to imp devices	OUTCOME  AUTO ENGINES – II (DIESEL ENGINES)  Student will be able to improve the IC engine performance throu devices	OUTCOME  AUTO ENGINES – II (DIESEL ENGINES)  Student will be able to improve the IC engine performance through performance thr	OUTCOME  A 0  AUTO ENGINES – II (DIESEL ENGINES)  Student will be able to improve the IC engine performance through performances	OUTCOME  A 0 3  AUTO ENGINES – II (DIESEL ENGINES)  Student will be able to improve the IC engine performance through performance devices	OUTCOME  A 0 3 4  AUTO ENGINES – II (DIESEL ENGINES)  Student will be able to improve the IC engine performance through performance meadevices	OUTCOME  A 0 3 4 0  AUTO ENGINES – II (DIESEL ENGINES)  Student will be able to improve the IC engine performance through performance measure devices	OUTCOME  A 0 3 4 0 1  AUTO ENGINES – II (DIESEL ENGINES)  Student will be able to improve the IC engine performance through performance measurement devices	SCHEME FOR LEARNING OUTCOME  A 0 3 4 0 1 4  AUTO ENGINES – II (DIESEL ENGINES)  Student will be able to improve the IC engine performance through performance measurement and s devices	OUTCOME  A 0 3 4 0 1 4 3  AUTO ENGINES – II (DIESEL ENGINES)  Student will be able to improve the IC engine performance through performance measurement and suggestions.

S. No.	Learning Content	Teaching – Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
1	Comparison between various types of supercharger, between supercharger and turbo-charger, for their construction, merits and limitations	Traditional Lecture method	Teacher will explain different concepts. He will give assignments and organize quizzes to ascertain their learning. Students will prepare assignments and attempt quizzes. Teacher will identify their weaknesses and provide necessary remedial and tutorials	04	02	<ul> <li>Anil         Chhikara"Automobile         Engineering vol-1 "         SatyaPrakashan, New         Delhi</li> <li>W.H.Crouse&amp; D.L.         Anglin "Automotive         Mechanics" Tata Mc-         Graw Hill Publishing         Co. Ltd.</li> </ul>	If necessary teacher will suggest more video link, learning resources which will help the students to solve quiz, prepare assignments etc.

## **SCHEME OF ASSESSMENT**

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal
1	Theory exam	One theory question will be asked in the question paper	10	Question paper	External

## INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

RGPV (Diploma Wing ) Bhopal		SCHEME FOR LEARNING OUTCOME		Branch Code			Course Code			CO Code	LO Code	4
				Α	0	3	4	0	1	5	1	Format No. <b>4</b>
COURSE NAME	COURSE NAME AUTO ENGINES – II (DIESEL ENGINES)											
CO Description	Student will be able to explain the requirements and characteristics of alternative fuels, lubricants and coolants used i								d coolants used in			
LO Description	Student will be able to exp	olain the importa	nt characteristics of g	iven a	ltern	ative	fuel	for IC	engi	nes		
			SCHEME OF STUDY	,								
S	Te	aching –		Tea	ch	Pra	rt					

S. No.	Learning Content	Teaching – Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
1	Need of alternative fuels, Fuel properties, Classification of alternative fuels.  Fuels for SI engines such as Compressed Natural Gas (CNG), Liquefied Petroleum Gas (LPG), Biogas and Methanol  Fuels for CI engines such as Di-Methyl Ether(DME), Di-Ethyl Ether, bio-diesel, Hydrogen (H2)	Traditional Lecture method	Teacher will explain different concepts. He will give assignments and organize quizzes to ascertain their learning. Students will prepare assignments and attempt quizzes. Teacher will identify their weaknesses and provide necessary	06	03	<ul> <li>S.S.Thipse "         Alternative Fuels"         Jaico Publisher     </li> <li>Ramalingam, K.K.         "I.C. Engines         Theory &amp;         Practice", Scitech         Publisher Chennai     </li> </ul>	If necessary teacher will suggest more video link, learning resources which will help the students to solve quiz, prepare assignments etc.

## **SCHEME OF ASSESSMENT**

remedial and tutorials

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal
1	Theory exam	Two theory questions related to the learned content will be asked in the university question paper	10	Question paper, Check list	External

## INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

RGPV (Diploma Wing ) Bhopal		SCHEME FOR LEARNING  Branch Code				С	Course Code		Code		Д
		OUTCOME	Α	0	3	4	0	1	5	2	Format No. <b>4</b>
COURSE NAME	AUTO ENGINES – II (DIESEL ENGINES)										
CO Description	Student will be able to explain the requirements and characteristics of alternative fuels, lubricants and coolants used in										
	IC engines										
LO Description	Student will be able to explain the important characteristics of given lubricant for the IC Engines										

S. No.	Learning Content	Teaching – Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
1	Need of lubricants, Function of lubricating oil, Properties of lubricants, Types of lubricants, Study of important characteristics of main commercially available lubricants, nomenclature /SAE codes for commercial lubricants	Traditional Lecture method	Teacher will explain different concepts. He will give assignments and organize quizzes to ascertain their learning. Students will prepare assignments and attempt quizzes. Teacher will identify their weaknesses and provide necessary remedial and tutorials	04	02	<ul> <li>Ramalingam, K.K.</li> <li>"I.C. Engines Theory &amp; Practice", Scitech Publisher Chennai</li> <li>Jain K.K., Asthana R.B.Automobile EngineeringTata McGraw Hill Publishing Co. Ltd.</li> </ul>	If necessary teacher will suggest more video link, learning resources which will help the students to solve quiz, prepare assignments etc.

## **SCHEME OF ASSESSMENT**

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal
1	Theory exam	Two theory questions related to the learned content will be asked in the university question paper	10	Question paper, Check list	External

## INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

## **RGPV (Diploma Wing ) Bhopal**

# SCHEME FOR LEARNING OUTCOME

В	ranch Coc	le	Co	Course Code Code C		ode	
Α	0	3	4	0	1	5	3

Format No. **4** 

COURSE NAME	AUTO ENGINES – II (DIESEL ENGINES)
CO Description	Student will be able to explain the requirements and characteristics of alternative fuels, lubricants and coolants used in IC engines
LO Description	Student will be able to explain the important characteristics of the given coolant for the IC engines

## **SCHEME OF STUDY**

S. No.	Learning Content	Teaching – Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
1	Requirement of coolant, Functions of coolant, Types & Characteristics of Coolant, and their effect on engine cooling, additives, study of characteristics of main commercially available coolants, nomenclature of main commercially available coolants	Traditional Lecture method	Teacher will explain different concepts. He will give assignments and organize quizzes to ascertain their learning. Students will prepare assignments and attempt quizzes. Teacher will identify their weaknesses and provide necessary remedial and tutorials	05	02	<ul> <li>Ramalingam, K.K.</li> <li>"I.C. Engines Theory &amp; Practice", Scitech Publisher Chennai</li> <li>S. Srinivasan</li> <li>"Automotive Mechanics" Tata McGraw-Hill Education</li> </ul>	If necessary teacher will suggest more video link, learning resources which will help the students to solve quiz, prepare assignments etc.

## **SCHEME OF ASSESSMENT**

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal
1	Paper-pen Test	Two theory questions related to the learned content will be asked in the university question paper	10	Test paper, Check list	Internal

## INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)