

RGPV (Diploma Wing) Bhopal		SCHEME FOR LEARNING OUTCOME				Branch Code			Course Code			CO Code	LO Code	Format No. 4
						A	0	3	5	0	2	1	1	
COURSE NAME	Auto Electricals & Electronics													
CO Description	Student will be able to explain the theory, construction, working and main components of the starting system for the given vehicle													
LO Description	Student will be able to explain theory / circuit / construction / working / components of the starting system of given vehicle with help of 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.	Requirements of starting system, basic car starting circuit, , need of starting drive units, bendix, pr-engauged, permanent magnet, folothru and overrunning clutch drives	Traditional Lecture method	Teacher will organize lecture inside the class based on his/her session plan. Discuss the topics with students, provide quiz, assignment etc., conduct remedial and tutorials	07	03	Kholi.P.L “Automotive Electrical Equipment”, Tata McGraw- Hill Co., Ltd., New Delhi or its equivalent	Teacher will suggest more video links, LRs to assist in learning							
SCHEME OF ASSESSMENT														
S. No.	Method of Assessment	Description of Assessment	Max. Marks	Resources Required	External / Internal									
1.	Theory exam	One question related to the learned content will be asked in the university question paper	10	Question paper, Rating scale	External									
ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)														
NIL														

RGPV (Diploma Wing) Bhopal		SCHEME FOR LEARNING OUTCOME				Branch Code			Course Code			CO Code	LO Code	Format No. 4
						A	0	3	5	0	2	1	2	
COURSE NAME	Auto Electricals & Electronics													
CO Description	Student will be able to explain the theory, construction, working and main components of the starting system for the given vehicle													
LO Description	Student will be able to explain the construction, circuit and working of given starting motor													
SCHEME OF STUDY														
S. No.	Learning Content	Teaching – Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks							
1.	Requirements and characteristics of the starting motor, study of starting motor regarding theory, construction, working and major components, types of starting motors	Traditional Lecture method	Teacher will organize lecture inside the class based on his/her session plan. Discuss the topics with students, provide quiz, assignment etc., conduct remedial and tutorials	04	02	Khola.P.L “Automotive Electrical Equipment”, Tata McGraw- Hill Co., Ltd., New Delhi or its equivalent	Teacher will suggest more video links, LRs to assist in learning							
SCHEME OF ASSESSMENT														
S. No.	Method of Assessment	Description of Assessment	Max. Marks	Resources Required	External / Internal									
1.	Theory assignment	Two questions related to the learned content will be asked in the assignment	10	Test paper, Check list	Internal									
ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)														
NIL														

RGPV (Diploma Wing) Bhopal		SCHEME FOR LEARNING OUTCOME				Branch Code			Course Code			CO Code	LO Code	Format No. 4
						A	0	3	5	0	2	1	3	
COURSE NAME	Auto Electricals & Electronics													
CO Description	Student will be able to explain the theory, construction, working and main components of the starting system for the given vehicle													
LO Description	Student will be able to identify major components of the given car starting system													
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 major components of the common car starting systems regarding their location, purpose, construction and function	Lab demonstration method	Teacher will demonstrate major components inside the lab to students, students will practice, provide quiz, assignment etc., teacher will conduct remedial and tutorials	04	03	System/ components/ diagrams/ charts/ posters	Teacher will suggest more video links, LRs to assist in learning							
SCHEME OF ASSESSMENT														
S. No.	Method of Assessment	Description of Assessment	Max. Marks	Resources Required	External / Internal									
1.	Practical exam	The student will be asked to identify five components and state their purpose, function and location in the system	10	System/ components/ diagrams/ charts/ posters	External									
ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)														
NIL														

RGPV (Diploma Wing) Bhopal	SCHEME FOR LEARNING OUTCOME	Branch Code			Course Code			CO Code	LO Code	Format No. 4
		A	0	3	5	0	2	2	1	

COURSE NAME	Auto Electricals & Electronics
CO Description	Student will be able to explain the theory, construction, working and main components of the charging and auxiliary system for the given vehicle
LO Description	Student will be able to explain theory / circuit/ /construction / working components of the charging system of given vehicle with help of 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.	Need and requirements of charging system, basic charging system for the car, alternators and charging circuits, rectification of AC to DC, regulation of output voltage, theory, study of alternator regarding construction, working and components	Traditional Lecture method	Teacher will organize lecture inside the class based on his/her session plan. Discuss the topics with students, provide quiz, assignment etc., conduct remedial and tutorials	07	03	Kholi.P.L “Automotive Electrical Equipment”, Tata McGraw- Hill Co., Ltd., New Delhi or its equivalent	Teacher will suggest more video links, LRs to assist in learning

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Max. Marks	Resources Required	External / Internal
1.	Theory exam	Two questions related to the learned content will be asked in the university question paper	20	Question paper, Rating scale	External

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

NIL

RGPV (Diploma Wing) Bhopal		SCHEME FOR LEARNING OUTCOME				Branch Code			Course Code			CO Code	LO Code	Format No. 4
						A	0	3	5	0	2	2	2	
COURSE NAME	Auto Electricals & Electronics													
CO Description	Student will be able to explain the theory, construction, working and main components of the charging and auxiliary systems for the given vehicle													
LO Description	Student will be able to explain theory / circuit / construction / working and components of lighting / auxiliary system													
SCHEME OF STUDY														
S. No.	Learning Content	Teaching –Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks							
1.	Various types of lights in a car, their circuits, , functions of turn, stop, and hazard warning lights types of headlights, circuits and components used in operation of speedometer, horn, wiper system, types of fuel gauges, oil pressure gauges & engine temperature gauges etc.	Traditional Lecture method	Teacher will organize lecture inside the class based on his/her session plan. Discuss the topics with students, provide quiz, assignment etc., conduct remedial and tutorials	05	02	Young A.P. & Griffiths. L. “Auto. Electrical Equipment”, ELBS & New Press or its equivalent	Teacher will suggest more video links, LRs to assist in learning							
SCHEME OF ASSESSMENT														
S. No.	Method of Assessment	Description of Assessment	Max. Marks	Resources Required	External / Internal									
1.	Theory exam	One question related to the learned content will be asked in the university question paper	10	Question paper, Rating scale	External									
ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)														
NIL														

RGPV (Diploma Wing) Bhopal		SCHEME FOR LEARNING OUTCOME				Branch Code			Course Code			CO Code	LO Code	Format No. 4
						A	0	3	5	0	2	2	3	
COURSE NAME	Auto Electricals & Electronics													
CO Description	Student will be able to explain the theory, construction, working and main components of the charging and auxiliary systems for the given vehicle													
LO Description	Student will be able to identify major components of given charging system / voltage regulators / auxiliary systems													
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 major components of the charging system, voltage regulators and auxiliary systems of common car regarding their location, purpose, construction and function	Lab demonstration method	Teacher will demonstrate major components inside the lab to students, students will practice, provide quiz, assignment etc., teacher will conduct remedial and tutorials	04	03	Systems/ components/ diagrams/ charts/ posters	Teacher will suggest more video links, LRs to assist in learning							
SCHEME OF ASSESSMENT														
S. No.	Method of Assessment	Description of Assessment	Max. Marks	Resources Required	External / Internal									
1.	Practical exam	The student will be asked to identify five components and state their purpose, function and location in the system	10	Systems/ components/ diagrams/ charts/ posters	External									
ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)														
NIL														

RGPV (Diploma Wing) Bhopal	SCHEME FOR LEARNING OUTCOME	Branch Code			Course Code			CO Code	LO Code	Format No. 4
		A	0	3	5	0	2	3	1	

COURSE NAME	Auto Electricals & Electronics
CO Description	Student will be able to explain the theory, construction, working and main components of the ignition system for the given vehicle
LO Description	Student will be able to explain theory / circuit /construction / working / components of the ignition system of given vehicle

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 and requirements of ignition system, basic ignition circuit for car, construction and working of car ignition system, types of spark plugs, their construction, ignition coil, types of distributors, spark advance, types of spark advances, electronic ignition system, electronic spark control/ spark advance control, distributor-less ignition	Traditional Lecture method	Teacher will organize lecture inside the class based on his/her session plan. Discuss the topics with students, provide quiz, assignment etc., conduct remedial and tutorials	06	02	Kholi.P.L “Automotive Electrical Equipment”, Tata McGraw- Hill Co., Ltd., New Delhi or its equivalent	Teacher will suggest more video links, LRs to assist in learning

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Max. Marks	Resources Required	External / Internal
1.	Theory exam	One question related to the learned content will be asked in the university question paper	10	Question paper, Rating scale	External

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

NIL

RGPV (Diploma Wing) Bhopal		SCHEME FOR LEARNING OUTCOME				Branch Code			Course Code			CO Code	LO Code	Format No. 4
						A	0	3	5	0	2	3	2	
COURSE NAME	Auto Electricals & Electronics													
CO Description	Student will be able to explain the theory, circuit, construction, working and components of the ignition system for the given vehicle													
LO Description	Student will be able to identify the major components of the ignition system of given vehicle													
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 major components of the ignition system of common car regarding their location, purpose, construction and function	Lab demonstration method	Teacher will demonstrate major components inside the lab to students, students will practice, provide quiz, assignment etc., teacher will conduct remedial and tutorials	04	03	System/ components/ diagrams/ charts/ posters	Teacher will suggest more video links, LRs to assist in learning							
SCHEME OF ASSESSMENT														
S. No.	Method of Assessment	Description of Assessment	Max. Marks	Resources Required	External / Internal									
1.	Practical exam	The student will be asked to identify five components and state their purpose, function and location in the system	10	System/ components/ diagrams/ charts/ posters	External									
ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)														
NIL														

RGPV (Diploma Wing) Bhopal		SCHEME FOR LEARNING OUTCOME				Branch Code			Course Code			CO Code	LO Code	Format No. 4
						A	0	3	5	0	2	4	1	
COURSE NAME	Auto Electricals & Electronics													
CO Description	Student will be able to explain the theory, construction, working and components of the battery and wiring system for the given vehicle													
LO Description	Student will be able to explain theory, construction, working and components of the given automobile battery													
SCHEME OF STUDY														
S. No.	Learning Content	Teaching – Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks							
1.	Principle and construction of lead acid battery, principle and construction of batteries used in electric vehicles, characteristics of good battery, rating, capacity and efficiency of batteries, various tests on batteries, charging methods and equipments	Traditional Lecture method	Teacher will organize lecture inside the class based on his/her session plan. Discuss the topics with students, provide quiz, assignment etc., conduct remedial and tutorials	06	02	Khola.P.L “Automotive Electrical Equipment”, Tata McGraw- Hill Co., Ltd., New Delhi or its equivalent	Teacher will suggest more video links, LRs to assist in learning							
SCHEME OF ASSESSMENT														
S. No.	Method of Assessment	Description of Assessment			Max. Marks	Resources Required	External / Internal							
1.	Theory exam	One question related to the learned content will be asked in the university question paper			10	Question paper, Rating scale	External							
ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)														
NIL														

RGPV (Diploma Wing) Bhopal		SCHEME FOR LEARNING OUTCOME				Branch Code			Course Code			CO Code	LO Code	Format No. 4
						A	0	3	5	0	2	4	2	
COURSE NAME	Auto Electricals & Electronics													
CO Description	Student will be able to explain the theory, construction, working and components of the battery and wiring system for the given vehicle													
LO Description	Student will be able to perform tests on given battery for determining its condition													
SCHEME OF STUDY														
S. No.	Learning Content	Teaching –Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks							
1.	Fitting and removing the battery, charging of battery, measurement of cell voltage, test for serviceability by means of high rate discharge tester and hydrometer, measuring the battery capacity and comparing the results with its rated output	Lab demonstration method	Teacher will demonstrate procedures and tests to students, students will practice under guidance of teacher, teacher will improve their performance through feedback and suggestions, teacher will conduct remedial and tutorials	04	02	Battery/ charger/ fitting and testing instruments	Teacher will suggest more video links, LRs to assist in learning							
SCHEME OF ASSESSMENT														
S. No.	Method of Assessment	Description of Assessment	Max. Marks	Resources Required	External / Internal									
1.	Practical assignment	The student will be asked to perform any one activity either fitting or removing or charging the battery AND will perform any one asked test in front of teacher	10	Battery/ charger/ fitting and testing instruments	Internal									
ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)														
NIL														

RGPV (Diploma Wing) Bhopal	SCHEME FOR LEARNING OUTCOME	Branch Code			Course Code			CO Code	LO Code	Format No. 4
		A	0	3	5	0	2	4	3	

COURSE NAME	Auto Electricals & Electronics
CO Description	Student will be able to explain the theory, construction, working and components of the battery and wiring system for the given vehicle
LO Description	Student will be able to explain the wiring circuit diagram / wiring system / different components of the wiring system of the given vehicle

SCHEME OF STUDY

S. No.	Learning Content	Teaching – Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
1.	Wire strips, wiring harness, ribbon cables, specifications, color codes for circuits, circuit numbers printed circuits, relay controls, multi-pin plugs, rubber grommets, terminals, crimp connectors, special or multiple sleeve connectors, strip or cable connectors, fuses	Traditional Lecture method	Teacher will organize lecture inside the class based on his/her session plan. Discuss the topics with students, provide quiz, assignment etc., conduct remedial and tutorials	04	03	Kholi.P.L “Automotive Electrical Equipment”, Tata McGraw-Hill Co., Ltd., New Delhi or its equivalent	Teacher will suggest more video links, LR's to assist in learning

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Max. Marks	Resources Required	External / Internal
1.	Theory assignment	Two questions related to the learned content will be given in the assignment	10	Assignment questions, Rating scale	Internal

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

NIL

RGPV (Diploma Wing) Bhopal	SCHEME FOR LEARNING OUTCOME	Branch Code			Course Code			CO Code	LO Code	Format No. 4
		A	0	3	5	0	2	5	1	

COURSE NAME	Auto Electricals & Electronics
CO Description	Student will be able to explain the theory, circuit, construction and working of the electrical system for the given electric and hybrid vehicle
LO Description	Student will be able to explain theory, circuit, construction and working of the electrical system for the given electric / hybrid vehicle

SCHEME OF STUDY

S. No.	Learning Content	Teaching – Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
1.	Theory, circuit, construction and working of electrical drive system of common electric and electric-hybrid vehicles, major components, characteristics of electric traction motor, chopper control of motor, SRM drives	Traditional Lecture method	Teacher will organize lecture inside the class based on his/her session plan. Discuss the topics with students, provide quiz, assignment etc., conduct remedial and tutorials	07	02	M. Ehsani, Y. Gao, S. Gay and Ali Emadi, Modern Electric, Hybrid Electric, and Fuel Cell Vehicles: Fundamentals, Theory, and Design, CRC Press, 2005 or its equivalent	Teacher will suggest more video links, LRs to assist in learning

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Max. Marks	Resources Required	External / Internal
1.	Theory exam	One question related to the learned content will be asked in the university question paper	10	Question paper, Rating scale	External

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

NIL

RGPV (Diploma Wing) Bhopal		SCHEME FOR LEARNING OUTCOME			Branch Code			Course Code			CO Code	LO Code	Format No. 4
					A	0	3	5	0	2	5	2	
COURSE NAME	Auto Electrical & Electronics												
CO Description	Student will be able to explain theory, construction and working of electrical system of the electric and hybrid electric vehicle.												
LO Description	Student will be able to compare electric vehicle and electric hybrid vehicle regarding construction, working, merits and limitations												
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 electrical systems of electric vehicle and electric hybrid vehicle* regarding construction, working, merits and limitations	Lab demonstration	Teacher will demonstrate the contents to the students. Students will practice under the guidance of teacher	04	02	M. Ehsani, Y. Gao, S. Gay and Ali Emadi, Modern Electric, Hybrid Electric, and Fuel Cell Vehicles: Fundamentals, Theory, and Design, CRC Press, 2005 or its equivalent	If necessary teacher will suggest video link, learning resources *two and four wheelers						
SCHEME OF ASSESSMENT													
S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal								
1	Theory assignment	An assignment will be given to students to compare the electrical system of electric and electric hybrid vehicles	10	Assignment question, rating scale	Internal								
INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)													
NIL													

RGPV (Diploma Wing) Bhopal		SCHEME FOR LEARNING OUTCOME				Branch Code			Course Code			CO Code	LO Code	Format No. 4
						A	0	3	5	0	2	5	3	
COURSE NAME	Auto Electricals & Electronics													
CO Description	Student will be able to explain the theory, circuit, construction and working of the electrical system for the given electric and hybrid vehicle													
LO Description	Student will be able to identify major components of electrical system for the given electric / hybrid vehicle													
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 major components of the electrical systems of electric vehicles and electric hybrid vehicles regarding purpose, location and function	Lab demonstration method	Teacher will demonstrate major components inside the lab to students, students will practice, provide quiz, assignment etc., teacher will conduct remedial and tutorials	04	03	Systems/ components / diagrams/ charts/ posters	Teacher will suggest more video links, LRs to assist in learning							
SCHEME OF ASSESSMENT														
S. No.	Method of Assessment	Description of Assessment	Max. Marks	Resources Required	External / Internal									
1.	Practical assignment	The student will be asked to identify five components and state their purpose, function and location in the system	10	Systems/ components/ diagrams/ charts/ posters	Internal									
ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)														
NIL														