

RGPV (Diploma Wing) Bhopal		SCHEME FOR LEARNING OUTCOME			Branch Code			Course Code			CO Code	LO Code	Format
					C	0	3	4	0	4	1	1	No. 4
COURSE NAME	Transportation Engineering												
CO Description	To identify components of roads ,their dimensions, functions and IRC recommendations of different types of Roads.												
LO Description	Classify various types of Roads and State importance of Highway network and Road development plan.												
SCHEME OF STUDY													
S. No.	Learning Content	Method of teaching	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks							
	Modes of transportation system- Road, Railways, airways, waterways and importance of each mode. Comparison relative merits and demerits of each mode. Importance of road in India. Classification of roads according to Nagpur plan (Location and function) and third road development plan. Traffic and tonnage, Classification of urban roads. Different road yojana ,like pradhan mantri gram sadak yojana ,Mukhya mantri sadak yojna.	Interactive classroom teaching, assignments, quiz, presentation	04		Handouts, chalk board, PPT, text book, charts, video film.								
SCHEME OF ASSESSMENT													
S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Passing Criteria	Resources Required	External / Internal							
	Theory exam	Students will be asked to explain Transportation mode , their marits & demerits, Classification of Roads, Road development plan & different Road Yojnas.	06	Question paper + Rating scale	Handouts, chalk board, PPT, text book, charts, video film.	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
					<i>C</i>	<i>0</i>	<i>3</i>	<i>4</i>	<i>0</i>	<i>4</i>	
COURSE NAME	Transportation Engineering										
CO Description	To identify components of roads ,their dimensions, functions and IRC recommendations of different types of Roads.										
LO Description	Describe Investigations required for Road alignment, factors affecting Road alignment and list of drawings required for different Roads and recognize various latest software related to Highway.										
SCHEME OF STUDY											
S. No.	Learning Content	Method of teaching	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks					
	Reconnaissance survey, Preliminary survey and Location survey for a road project. Detailed survey for cross drainage- L-section and C/S sections. Fixing the alignment of road, factors affecting alignment of road . Drawings required for road project- Key map, index map, Preliminary survey plan and detailed location survey plan, L section and C/S sections cross drainage work, land acquisition plan. Survey for availability of construction material, location plan of quarries	Interactive classroom teaching, assignments, quiz, presentation	12		Handouts, chalk board, PPT, text book, charts, video film						
SCHEME OF ASSESSMENT											
S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Passing Criteria	Resources Required	External / Internal					

	Theory exam	Students will be asked to explain different types of survey required for a Road project, different types of plan & maps, Road alignment, CD works, L/S & C/S and highway related latest software.	08	Question paper + Rating scale	Handouts, chalk board, PPT, text book, charts, video film	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
					C	O	3	4	0	4	1	3	
COURSE NAME	Transportation Engineering												
CO Description	To identify components of roads ,their dimensions, functions and IRC recommendations of different types of Roads.												
LO Description	Design the Road Geometry, Sight distances, super elevation and gradient.												
SCHEME OF STUDY													
S. No.	Learning Content	Method of teaching	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks							
	Camber- definition, purpose, types, IRC – specifications. Kerbs, road margin, road formation, right of way. Design speed- IRC – specifications. Gradient – definition, types, IRC specification. Sight distances–definition, types, IRC specification. Curves–Necessity, types– horizontal, vertical and transition curves. Widening of roads on curves. Super Elevation – definition, formula for calculating super elevation, minimum and maximum values of super elevation, and methods of providing super elevation. Sketching of standard C/S of national highway in embankment and cutting. Simple problems on geometric design of road	Interactive classroom teaching, assignments, quiz, presentation	12		Handouts, chalk board, PPT, text book, charts, video film.								

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Passing Criteria	Resources Required	External / Internal
	Paper pen test	Students will be asked to explain Camber, Design speed, Super elevation, Sight Distances, Gradient & Its IRC specifications, Curves- its Types & widening of Roads on Curves	10	Test paper + Rating scale	Handouts, chalk board, PPT, text book, charts, video film	Internal

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

Part of Progressive Test

RGPV (Diploma Wing) Bhopal		SCHEME FOR LEARNING OUTCOME			Branch Code			Course Code			CO Code	LO Code	Format No. 4
					C	0	3	4	0	4	2	1	
COURSE NAME	Transportation Engineering												
CO Description	Identify different road materials and explain construction procedure of different kind of roads.												
LO Description	Study Tests on Road materials and Visit to a road under construction / constructed.												
SCHEME OF STUDY													
S. No.	Learning Content	Method of teaching	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks							
	<ul style="list-style-type: none"> ➤ Study of Los Angeles Abrasion Value of Aggregate. ➤ Study of Impact Value of Aggregate. ➤ Study of Flakiness Index , Elongation Index and Angularity Number of Aggregate. ➤ Study of Ductility and Penetration value of Bitumen. ➤ Study of Softening Point, Flash and Fire point of Bitumen. 	Teacher will conduct lab assignments to make students practice their knowledge. Teacher will demonstrate the procedure of lab experiments.		16	Handouts, chalk board, PPT, text book, charts, video film								
SCHEME OF ASSESSMENT													
S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Passing Criteria	Resources Required	External / Internal							

	Laboratory test by observation	<p>Students will be asked to explain Los Angeles Abrasion Value ,Impact value, Flakiness Index, Elongation Index and Angularity number of Aggregate, Ductility, Penetration value, Softening point, Flash and Fire point of Bitumen. Students will be asked to Prepare a visit report, which should consist of (a) List of various defects observed b) Suggestions regarding the possible remedial measure</p>		Rubrics/Rating scale	Handouts, chalk board, PPT, text book, charts, video film	Internal
ADDITIONAL INSTRUCTIONS FOR THE HOD / FACULTY (IF ANY)						
Part of Lab work						

RGPV (Diploma Wing) Bhopal		SCHEME FOR LEARNING OUTCOME			Branch Code			Course Code			CO Code	LO Code	Format No. 4
					C	0	3	4	0	4	2	2	
COURSE NAME	Transportation Engineering												
CO Description	Identify different road materials and explain construction procedure of different kind of roads.												
LO Description	Describe the Construction Procedure of Bitumen and Concrete Roads.												
SCHEME OF STUDY													
S. No.	Learning Content	Method of teaching	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks							
	Pavement – objective of pavement, structure of pavement, function of pavement components, types of pavement. General terms used in Earthwork. Construction procedure. Soil stabilized roads - necessity and brief details of mechanical soil stabilization. Introduction to Water bound macadam roads – Construction procedure including precautions in rolling. Construction of bituminous roads. Terms used– bitumen, asphalt, cutback, tar, common grades adopted for construction. Types of bituminous surface – prime coat, tack coat , seal coat. Surface dressing . – procedure of construction bituminous penetration macadam. Bitumen/Tar carpets – procedure of construction.	Interactive classroom teaching, assignments, quiz, presentation	15		Handouts, chalk board, PPT, text book, charts, video film.								

Cement concrete pavements- Construction procedure and equipments. Construction joints, joint filler, joint sealer					
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SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Passing Criteria	Resources Required	External / Internal
	Theory exam	Students will be asked to explain Pavement and its types, Construction Procedure of different types of Roads, Bitumen & its types, Bituminous surface and surface dressing, Construction of Cement Concrete Pavement.	12	Question paper + Rating scale	Handouts, chalk board, PPT, text book, charts, video film.	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
					C	0	3	4	0	4	2	3	
COURSE NAME	Transportation Engineering												
CO Description	Identify different road materials and explain construction procedure of different kind of roads.												
LO Description	Recognize the types and location for Traffic signs and signals.												
SCHEME OF STUDY													
S. No.	Learning Content	Method of teaching	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks							
	Traffic volume study, Traffic control devices-road signs, marking, signals, Traffic Island. Road intersections-intersections at grade and grade separator intersections. Road accident. Building code IS:1904.	Interactive classroom teaching, assignments, quiz, presentation	10		Handouts, chalk board, PPT, text book, charts, video film.								
SCHEME OF ASSESSMENT													
S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Passing Criteria	Resources Required	External / Internal							
	Theory exam	Students will be asked to explain different types of Traffic Studies, Traffic Control Devices, Intersections, Road accidents.	08	Question paper + Rating scale	Handouts, chalk board, PPT, text book, charts, video film.	External							
ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)													

RGPV (Diploma Wing) Bhopal		SCHEME FOR LEARNING OUTCOME			Branch Code		Course Code		CO Code	LO Code	Format No. 4
					C	0	3	4	0	4	
COURSE NAME	Transportation Engineering										
CO Description	Select maintenance and repair techniques of roads and highway drainage arrangement.										
LO Description	Identify Components of Hill Roads and state causes and preventions of Landslides										
SCHEME OF STUDY											
S. No.	Learning Content	Method of teaching	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks					
	Parts and functions of hill road components, Hill road formation Land slides- causes and prevention. Structures- drainage structures. Surface drainage – side gutter, catch water drains, Subsurface drainage- Longitudinal drains and cross drains.	Interactive classroom teaching, assignments, quiz, presentation	08		Handouts, chalk board, PPT, text book, charts, video film.						
SCHEME OF ASSESSMENT											
S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Passing Criteria	Resources Required	External / Internal					
	Theory exam	Students will be asked to explain parts, functions, components & formation of Hill Roads, landslides, drainage structures.	06	Question paper + Rating scale	Handouts, chalk board, PPT, text book, charts, video film.	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
						C	0	3	4	0	4	3	2	
COURSE NAME	Transportation Engineering													
CO Description	Select maintenance and repair techniques of roads and highway drainage arrangement.													
LO Description	Describe various road maintenance procedures and necessity of arboriculture.													
SCHEME OF STUDY														
S. No.	Learning Content				Method of teaching			Teach Hrs.	Pract. /Tut Hrs.	LRs Required			Remarks	
	Necessity of maintenance of roads, Classification of maintenance operation –ordinary, routine and periodic maintenance. Maintenance of W.B.M., bituminous and cement concrete roads. Road side arboriculture, necessity, planning of plantation of trees selection of types of threes and development of nursery considering the environment aspects.				Interactive classroom teaching, assignments, quiz, presentation			09		Handouts, chalk board, PPT, text book, charts, video film.				
SCHEME OF ASSESSMENT														
S. No.	Method of Assessment	Description of Assessment			Maximum Marks	Passing Criteria			Resources Required			External / Internal		
	Theory exam	Students will be asked to explain about maintenance of Roads & its Classification, maintenance of different types of Roads, Arboriculture its necessity & planning.			06	Question paper + Rating scale			Handouts, chalk board, PPT, text book, charts, video film.			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
					C	0	3	4	0	4	4	1	
COURSE NAME	Transportation Engineering												
CO Description	Identify gauges and component parts of railways												
LO Description	Classify zones in Indian Railways and Explain factors affecting selection of alignment and gauge.												
SCHEME OF STUDY													
S. No.	Learning Content	Method of teaching	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks							
	Railway Alignment-Factors governing rail alignment, Rail gauges – types, factors affecting selection of gauges Necessity and importance of uniform gauges. Rail track cross sections – standard cross section of Broad Gauge and Meter Gauge. Railway Line- single & double line in cutting and embankment.	Interactive classroom teaching, assignments, quiz, presentation	07		Handouts, chalk board, PPT, text book, charts, video film.								
SCHEME OF ASSESSMENT													
S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Passing Criteria	Resources Required	External / Internal							
	Theory exam	Students will be asked to explain Railway alignment, Rail Gauges-its types, importance & necessity, Rail track cross-sections & Railway line.	05	Question paper + Rating scale	Handouts, chalk board, PPT, text book, charts, video film.	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
					C	0	3	4	0	4	4	2	
COURSE NAME	Transportation Engineering												
CO Description	Identify gauges and component parts of railways												
LO Description	State types of rails and explain Creep in Rails.												
SCHEME OF STUDY													
S. No.	Learning Content	Method of teaching	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks							
	Rails- Types, functions dimension weight per meter Length, Idle Joints, Creep and causes of Creep, Welding of rails and its advantage. Ballast – function & different types their properties, relative merits and demerits. Sleepers – functions & requirement, types – wooden, metal, concrete sleepers & their suitability, sleeper density. Rail fixtures & fastenings – fish plate, bearing plates, spikes, bolts, keys, anchors & anti creepers.	Interactive classroom teaching, assignments, quiz, presentation	10		Handouts, chalk board, PPT, text book, charts, video film								
SCHEME OF ASSESSMENT													
S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Passing Criteria	Resources Required	External / Internal							

	Pen Paper Test	Students will be asked to explain Rails, their types, functions & dimensions, Rail joints, welding of rails, Ballast – types & its functions, Sleepers –its types, functions & density, Rail fixtures & Fastenings	10	Test paper + Rating scale	Handouts, chalk board, PPT, text book, charts, video film	Internal
ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)						
Part of Progressive Test						

RGPV (Diploma Wing) Bhopal		SCHEME FOR LEARNING OUTCOME			Branch Code			Course Code			CO Code	LO Code	Format No. 4
					C	0	3	4	0	4	4	3	
COURSE NAME	Transportation Engineering												
CO Description	Identify gauges and component parts of railways												
LO Description	Explain different gradient, Coning of wheels, canting of rails and cant deficiency. Prepare reports on Visit to different maintenance and operations related to Railway Track.												
SCHEME OF STUDY													
S. No.	Learning Content	Method of teaching	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks							
	Coning of Wheels, Tilting Of Rails, Gradient & Its Types, Super Elevation On Curves, Cant Deficiency, Negative Cant, Grade Compensation On Curves. Points & Crossing, A Simple Split Switch Turnout, Line Sketches Of Track Junctions Crossovers-Scissor, Diamond Crossing. Site selection for railway stations , Requirements of railway station, types of stations - way side, crossing, junction & terminal. Station yards, types of station yard, passenger yards, goods yard, locomotive yard- its requirement, Marshalling yard. Purpose of laying of railway track, different method of laying Maintenance of Railway- necessity,	Interactive classroom teaching, assignments, quiz, presentation	10		Handouts, chalk board, PPT, text book, charts, video film.								

types, tools required organization required for maintenance. Duties of of Permanent way Inspector, Gang man, Key man. Prepare reports on Visit to different maintenance and operations related to Railway Track.					
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SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Passing Criteria	Resources Required	External / Internal
	Theory exam	Students will be asked to explain Coning of wheels, Tilting of rails, gradient & super elevation, Points & Crossings, Railway station & Railway Yards. Students will be asked to prepare reports on various operations and maintenance work related to railway Track.	09	Question paper + Rating scale	Handouts, chalk board, PPT, text book, charts, video film.	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
						C	0	3	4	0	4	5	1	
COURSE NAME	Transportation Engineering													
CO Description	Identify Bridge types , Components of Bridge and methods of Tunneling.													
LO Description	Classify different types of bridges and describe factors affecting selection of site of a bridge.													
SCHEME OF STUDY														
S. No.	Learning Content	Method of teaching	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks								
	Factors affecting selection of site of a bridge. bridge alignment, collection of design data. Classification of bridges according to function, material, span, size, alignment, position of HFL Permanent bridges – Culverts ,causeways, Steel bridges, RCC girder bridge, pre stressed girder bridge, cantilever, suspension bridge, flyover bridge. Temporary bridge – timber, flying, floating bridge. Plan & sectional elevation of typical bridge showing component	Interactive classroom teaching, assignments, quiz, presentation	10		Handouts, chalk board, PPT, text book, charts, video film									

parts of substructure & super structure. Different terminology such as effective span, clear span, economical span, waterway, afflux, scour, HFL, freeboard etc.,						
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SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Passing Criteria	Resources Required	External / Internal
	Pen Paper Test	Students will be asked to describe Bridge – its components, classification based on function, material, span size etc. & they are asked to prepare plan & sectional elevation showing different component of Bridge.	10	Test paper + Rating scale	Handouts, chalk board, PPT, text book, charts, video film	Internal

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

Part of Progressive Test

RGPV (Diploma Wing) Bhopal		SCHEME FOR LEARNING OUTCOME				Branch Code		Course Code		CO Code	LO Code	Format No. 4
						C	0	3	4	0	4	
COURSE NAME	Transportation Engineering											
CO Description	Identify Bridge types , Components of Bridge and methods of Tunneling.											
LO Description	Draw layout of bridge super structure and discuss the functions of Bearings.											
SCHEME OF STUDY												
S. No.	Learning Content	Method of teaching	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks						
	Foundation –piers-function & types., abutment – function, types. Wing walls – functions and types, Bearing – functions, types of bearing for RCC & steel bridges, Approaches – Functions & types Bridge flooring- open and solid floors Inspection of bridges and checklist of Bridge Inspection. Inspection & maintenance of bridges- routine and special maintenance.	Interactive classroom teaching, assignments, quiz, presentation	06		Handouts, chalk board, PPT, text book, charts, video film.							
SCHEME OF ASSESSMENT												
S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Passing Criteria	Resources Required	External / Internal						

	Theory exam	Students will be asked to explain about Bridge Foundation, abutments, wing wall, bearings, bridge flooring, Bridge inspection & maintenance.	05	Question paper + Rating scale	Handouts, chalk board, PPT, text book, charts, video film.	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
						C	0	3	4	0	4	5	3	
COURSE NAME	Transportation Engineering													
CO Description	Identify Bridge types , Components of Bridge and methods of Tunneling.													
LO Description	To know various definitions of Tunnel Engineering and Classification, Shape, Size, Investigation and survey.													
SCHEME OF STUDY														
S. No.	Learning Content	Method of teaching	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks								
	Definition, necessity, advantages, disadvantages. Classification of Tunnels. Shape and Size of Tunnels Tunnel Cross sections for highway and railways. Tunnel investigation and surveying- locating Centre line on ground, transferring center line inside the tunnel. Shaft - its purpose and Construction Methods of tunneling in Soft rock needle beam method, fore poling method. Line plate method Shield method Methods of tunneling in Hard rock- Full-face heading method, Heading	Interactive classroom teaching, assignments, quiz, presentation	06		Handouts, chalk board, PPT, text book, charts, video film.									

and bench method, drift method. Precautions in construction of tunnels Tunnel lining and ventilation-Purpose and method					
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SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Passing Criteria	Resources Required	External / Internal
	Theory exam	Students will be asked to describe Tunnels, its classification, shape, size etc. Different methods of Tunnelling & its ventilation.	05	Question paper + Rating scale	Handouts, chalk board, PPT, text book, charts, video film.	External

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

Nil