RGPV (DIPLOMA WING) BHOPAL	OBE CURRICULUM FOR THE COURSE	FORMAT-3	Sheet No. 1/5

Branch	Electrical Engineering	Semester	4
Course Code	402	Course Name	Generation, Transmission & Distribution

Course Outcome 1	Comprehend conventional and non-conventional sources of Energy.	Teach Hrs	Marks
Learning Outcome E0140211	**Describe various sources of Energy. [Cognitive Domain]**	08	10
Contents	➢ Classification of energy sources: Renewable and non-renewable, Conventional and non-conventional, Commercial and non commercial. ➢ Constructional features, operating principle and working of wind, solar, geo-thermal, fuel-cell, bio-gas, MHD and tidal power plants.		
Method of Assessment	Internal: Mid semester-I theory examination (Pen paper test)		
Learning Outcome E0140212	**Elaborate the concept of conventional power plants. [Cognitive Domain]**	08	10
Contents	➢ Schematic diagram of Thermal, Hydro, Nuclear and Diesel power plants. ➢ Site selection, advantages and disadvantages of above mentioned plants. ➢ Comparative analysis of all the above mentioned plants.		
Method of Assessment	External: End semester theory examination (Pen paper test)		
Learning Outcome E0140213	**Connect solar panels for different output requirements. [Psychomotor domain]**	8	10
Contents	➢ To connect PV modules in series and measure resultant output (voltage & current). ➢ To connect PV modules in parallel and measure resultant output (voltage & current).		
Method of Assessment	External: Performance of given task and viva voce		
Learning Outcome E0140214	**Identify various electrical devices installed at generating station. [Affective & Psychomotor domain]**	8	10
Contents	➢ To conduct a visit of any conventional or non conventional generating station.		
Method of Assessment	Internal: Viva voce & report submission.		

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Branch	Electrical Engineering	Semester	4

Course Code	402	Course Name	Generation, Transmission & Distribution

Course Outcome 2	Illustrate the concept of Load, Economics of power generation and Tariff.	Teach Hrs	Marks
Learning Outcome E0140221	**Describe the concept of load and economics of power generation. [Cognitive Domain]**	12	15
Contents	➢ Types of loads: Domestic, Industrial, Commercial, Agricultural loads ➢ Technical terminology regarding load: connected load, firm power, average load, maximum demand, reserve capacity, hot reserve, cold reserve, spinning reserve, load curve, load duration curve, demand factor, load factor, diversity factor, plant capacity factor, plant use factor & Numerical problems. ➢ Various terms regarding economics of generation: interest, depreciation, fixed cost, semi fixed cost, operating cost, cost of per unit energy generation & Numerical problems.		
Method of Assessment	External: End semester theory examination (Pen paper test)		
Learning Outcome E0140222	**Practice modern and conventional aspects of electricity tariff. [Cognitive Domain]**	08	10
Contents	➢ Desirable characteristics of tariff for domestic, commercial and industrial applications. ➢ Types of conventional & renewable energy tariff: Block rate, Flat rate, Two part, Power factor, Time of day, Net metering tariff & Numerical problems. ➢ LV and HV tariff: Brief description only. ➢ Provision of incentives & Rebate in tariff.		
Method of Assessment	Internal: Quiz & Assignment.		
Learning Outcome E0140223	**Execute load survey for different analysis. [Psychomotor Domain]**	08	10
Contents	➢ To carry out load survey and plot load curve, load duration curve of a domestic load. ➢ To carry out load survey and plot load curve, load duration curve of a commercial load. ➢ To calculate normal energy bill of a domestic consumer and verify it with original bill. ➢ To calculate net metering bill of a commercial consumer and verify it with original bill.		
Method of Assessment	Internal: Performance of given task and viva voce		

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Branch	Electrical Engineering	Semester	4

Course Code	402	Course Name	Generation, Transmission & Distribution

Course Outcome 3	Describe various aspects of overhead transmission lines and underground cables.	Teach Hrs	Marks
Learning Outcome E0140231	**Identify various elements while installing overhead transmission lines & underground cables. [Cognitive Domain]**	08	10
Contents	➢ Line conductor – materials, types and their trade name. ➢ Line supports – requirements, types and specification of different tower structures: RCC poles, Steel poles, Lattice steel towers. ➢ Ground clearance, Sag calculation (for level supports only), effect of ice, wind and temperature on Sag, Sag template, Stringing chart. ➢ Numerical problems on Sag. ➢ Methods of laying underground cable. ➢ Comparison between overhead transmission lines & underground cables.		
Method of Assessment	External: End semester theory examination (Pen paper test)		
Learning Outcome E0140232	**Carry out the study of line insulators. [Cognitive Domain]**	08	10
Contents	➢ Types of insulators and their applications. ➢ Potential distribution over a string of suspension insulator. ➢ Determination of String efficiency of a string of 3 units & Numerical problems. ➢ Methods of improving string efficiency. ➢ Testing of insulators for determining puncture strength and flashover		
Method of Assessment	Internal: Mid semester-II theory examination (Pen paper test)		

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Branch	Electrical Engineering	Semester	4
Course Code	402	Course Name	Generation, Transmission & Distribution

Course Outcome 4	Determine Electrical performance of transmission lines.	Teach Hrs	Marks
Learning Outcome E0140241	**Explain electrical aspects of overhead transmission lines. [Cognitive Domain]**	04	05
Contents	➢ Classification of transmission lines: On the basis of voltage and line length. ➢ Introductory concept of electrical parameters R, L and C of transmission line (no derivations). ➢ Concept of high voltage DC (HVDC) transmission with the help of block diagram. ➢ Types of HVDC links: Monopolar & Bipolar. ➢ Comparison of HVDC system with HVAC		
Method of Assessment	External: End semester theory examination (Pen paper test)		
Learning Outcome E0140242	**Present various phenomena associated with transmission lines. [Cognitive Domain]**	08	10
Contents	➢ Transposition, Skin effect, Ferranti effect and Proximity effect. ➢ Performance evaluation of short and medium transmission lines (π & T Model): sending end voltage, sending end current, sending end power factor, voltage regulation, transmission efficiency & Numerical problems ➢ Overview of Corona – power loss, advantages and disadvantages, methods of reducing corona in brief.		
Method of Assessment	External: End semester theory examination (Pen paper test)		
Learning Outcome E0140243	**Evaluate performance of transmission lines. [Psychomotor Domain]**	08	10
Contents	➢ To determine V_R, I_R, Cos φ_R , voltage regulation and transmission efficiency of short transmission line. ➢ To determine V_R, I_R, Cos φ_R , voltage regulation and transmission efficiency of medium transmission line (T Model). ➢ To determine V_R, I_R, Cos φ_R , voltage regulation and transmission efficiency of medium transmission line (π Model).		
Method of Assessment	External: Performance of given task and viva voce		

RGPV (DIPLOMA WING) BHOPAL	OBE CURRICULUM FOR THE COURSE	FORMAT-3	Sheet No. 5/5

Branch	Electrical Engineering	Semester	4

Course Code	402	Course Name	Generation, Transmission & Distribution

Course Outcome 5	Explore AC Distribution system and Distribution sub-station.	Teach Hrs	Marks
Learning Outcome E0140251	**Give details of AC distribution system. [Cognitive Domain]**	12	15
Contents	➢ Characteristics of an ideal distribution system. ➢ Components – feeder, distributor and service mains. ➢ Classification on the basis of voltage (primary and secondary) and configuration (radial and ring-main). ➢ Concept of radial, ring-main and micro-grid distribution system. ➢ Voltage and current distribution in different sections of radial and ring-main distribution system. Numerical problems. ➢ Comparison of radial and ring-main distribution system.		
Method of Assessment	External: End semester theory examination (Pen paper test)		
Learning Outcome E0140252	**Outline the overview of distribution sub-station. [Cognitive Domain]**	04	05
Contents	➢ Requirement of distribution substation. ➢ Classification of Distribution substation. ➢ Site selection, advantages and disadvantages. ➢ Concept of GIS (Gas Insulated Substation): Difference with normal substation, advantages.		
Method of Assessment	External: End semester theory examination (Pen paper test)		
Learning Outcome E0140253	**Calculate voltage and current in different sections of Distributors. [Psychomotor Domain]**	08	10
Contents	➢ To determine voltage drop and current in different sections of radial distributors for concentrated loading. ➢ To determine voltage drop and current in different sections of ring-main distributors for concentrated loading.		
Method of Assessment	External: Performance of given task and viva voce.		

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