SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)
[B19EE4101]
IV B. Tech I Semester (R19) Regular Examinations
SWITCHGEAR AND PROTECTION
ELECTRICAL & ELECTRONICS ENGINEERING
MODEL QUESTION PAPER

TIME: 3Hrs. **Max. Marks: 75 M**

Answer **ONE Question** from **EACH UNIT.**
All questions carry equal marks.
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			CO	KL	M
		UNIT-I			
1.	a).	**Classify** the different faults in power system. Which of these are more frequent?	1	3	8
	b).	**Explain** the phenomenon of current chopping and its effect on circuit interruption.	1	3	7
		OR			
2.	a).	**Distinguish** clearly between the recovery voltage and restriking voltage and explain the significance of RRRV in the operation of a circuit breaker by deriving necessary expression.	1	4	7
	b).	**What** is meant by circuit breaker? Discuss the phenomenon of arc formation in a CB.	1	3	8
		UNIT–II			
3.	a).	**Describe** with the aid of neat sketch the working of an air blast circuit breaker.	2	3	8
	b).	**Describe** the operational phenomena of a vacuum Circuit breaker	2	3	7
		OR			
4.	a).	**Explain** the operation of air circuit breaker with a neat diagram.	2	3	7
	b).	**Describe** the construction, operating principle and application of a SF6 circuit breaker	2	3	8
		UNIT–III			
5.	a).	The current rating of a relay is 5A and set at 150%, TMS=0.4, CT ratio is 400/5, the fault current is 6000A. Find the operating time of the relay. At TMS=1 the operating time at various PSMs are tabulated as:	3	4	8
	b).	With neat diagram **explain** the construction and operation of induction type directional over current relay.	3	4	7
		OR			
6.	a).	**Explain** in detail about the time current characteristics of IDMT relay.	3	3	7
	b).	**What** is universal torque equation? Using this equation derive the characteristics of mho relay.	3	3	8

PSM	2	4	5	8	10	20
Operating time(Sec)	10	5	4	3	2.6	2.2

		UNIT–IV			
7.	a).	**Discuss** about the protection of parallel feeders by using the directional relays	4	3	8
	b).	**Explain** the protection of a generator against (i)stator inter turn fault and(ii) over speeding	4	3	7
		OR			
8.	a).	**What** is the importance of bus-bar protection? What are the requirements of protection of lines?	4	3	7
	b).	With a neat diagram **explain** the operation of any one type of lightning arrester	4	3	8
		UNIT–V			
9.	a).	**List** the advantages and disadvantages of numerical relays	5	3	8
	b).	**Explain** the different components of static relay with a neat block diagram	5	3	7
		OR			
10.	a).	**Explain** clearly how a phase comparator is used in the protective relay.	5	3	7
	b).	**Explain** the operation of a numerical over current relay	5	3	8

CO-COURSE OUTCOME **KL-KNOWLEDGE LEVEL** **M-MARKS**

NOTE : Questions can be given as A,B splits or as a single Question for 15 marks

SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)
[B19EE4102]
IV B. Tech I Semester (R19) Regular Examinations
SOLAR AND WIND ENERGY SYSTEMS
ELECTRICAL & ELECTRONICS ENGINEERING
MODEL QUESTION PAPER

TIME: 3Hrs. **Max. Marks: 75 M**

Answer **ONE Question** from **EACH UNIT.**
All questions carry equal marks.
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			CO	KL	M
		UNIT - I			
1.	a).	**Draw** the equivalent circuit , I-V and P-V Characteristics of a PV cell and explain its parameters.	1	4	7
	b).	**Explain** the principle of operation of Pyrheliometer and Pyranometer.	1	4	8
		OR			
2.	a).	**Explain** how does the Shunt and Series resistance of a solar cell affect the Fill-Factor and efficiency of cell? What should be their ideal values?	1	3	7
	b).	What are the different losses in solar cell? Explain them.	1	3	8
		UNIT – II			
3.	a).	**Illustrate** the importance of bypass diode and blocking diode in a PV module.	2	4	7
	b).	**Illustrate the** Effect of Solar irradiation and Temperature on PV Modules	2	4	8
		OR			
4.	a).	**Explain** different mismatch losses in a PV module?	2	4	7
	b).	**Determine** the efficiency and peak power of a solar cell operating at 270^{o}C, with short circuit current of 2.2 A, and operating under standard illumination of 1000W/m^2. The area of the solar cell is about 100cm^2. Take reverse saturation current (I_0) = 10-12 A and Fill factor=75%.	2	4	8
		UNIT – III			
5.	a).	**Derive** the terminal resistance of a PV module when it is connected to Boost converter.	3	3	7
	b).	**Draw** the flow chart and explain the Incremental Conductance MPPT algorithm.	3	4	8
		OR			
6.	a).	**Illustrate** the Perturb and Observe (P&O) MPPT algorithm.	3	3	7
	b).	**Derive** the terminal resistance of a PV module when it is connected to Buck converter.	3	3	8
		UNIT – IV			
7.	a).	**Illustrate** the aerodynamics of wind turbine by blade elementary theory analysis	4	3	7
	b).	**Derive** an expression for the maximum power output of wind turbine	4	4	8
		OR			
8.	a).	**Explain** the basic principle of wind energy conversion system? Classify the wind energy conversion system.	4	4	8
	b).	**Explain** aerodynamic methods to control the capture of power for large	4	3	7

		wind turbines			
UNIT – V					
9.	a).	**Illustrate** Fixed-Speed WECS.	5	3	7
	b).	**Explain** Doubly Fed Induction Generator WECS with Reduced Capacity Power Converter	5	3	8
OR					
10.	a).	**Explain** SCIG Wind Energy System with Full-Capacity Power Converters	5	3	8
	b).	**Illustrate** Variable-Speed Synchronous Generator WECS Configuration with Distributed Converters for Multi winding Generators	5	3	7

CO-COURSE OUTCOME **KL-KNOWLEDGE LEVEL** **M-MARKS**

NOTE : Questions can be given as A,B splits or as a single Question for 15 marks

SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)
[B19EE4103]
IV B. Tech I Semester (R19) Regular Examinations
DIGITAL SIGNAL PROCESSING
ELECTRICAL & ELECTRONICS ENGINEERING
MODEL QUESTION PAPER

TIME: 3Hrs. **Max. Marks: 75 M**

Answer **ONE Question** from **EACH UNIT.**
All questions carry equal marks.
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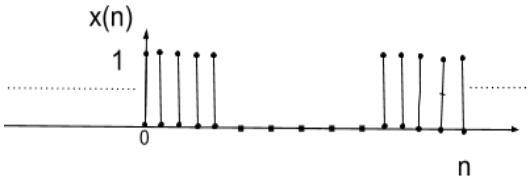
			CO	KL	M
		UNIT-I			
1.	a).	**Explain** Sampling Theorem and **Give** the importance of Nyquist rate with respect to aliasing effect.	1	3	8
	b).	Consider the discrete time causal linear causal system defined by the difference equation $y(n)-\frac{3}{4}y(n-1)+\frac{1}{8}y(n-2)=x(n)+\frac{1}{3}x(n-1)$, Find system function H(z) and comment on stability? **Implement** system using Cascade connection by taking simple first order systems	1	4	7
		OR			
2.	a).	**Write** Advantages and Applications of Digital Signal Processing	1	3	7
	b).	**Obtain** cascade realization of the following system $H(Z)=\frac{(1+\frac{3}{2}z^{-1}+\frac{1}{2}z^{-2})(1-\frac{3}{2}z^{-1}+z^{-2})}{(1+z^{-1}+\frac{1}{4}z^{-2})(1+\frac{1}{4}z^{-1}+\frac{1}{2}z^{-2})}$	1	4	8
		UNIT - II			
3.	a).	**Find** the frequency response of the system with unit sample response h(n)= 1, 0≤n≤N-1 and h(n)= 0, else where	2	4	8
	b).	**Find** the output of a filter whose impulse response is h(n)={1,1,1} and input signal x(n)={3,-1,0,1,3,2,0,1,2,1} using i)overlap-save method ii) overlap-add method	2	4	7
		OR			
4.	a).	**Obtain** Discrete Fourier series coefficient $\hat{X}(k)$ for the following periodic sequence x(n) 	2	4	7
	b).	**Determine** the output response y(n) if h(n) = {1,1,1}; x(n) ={1,2,3,1} by using **i)** linear convolution **ii)** circular convolution **iii)** linear convolution by using circular convolution.	2	4	8
		UNIT – III			
5.	a).	**Explain** radix-2 DIT FFT algorithm in detail by taking 8 points	3	3	8
	b).	**Compute** IDFT of the sequence X(K)={7, -0.707-j0.707,-j,0.707-j0.707,1,0.707+j0.707,j,-0.707+j0.707}	3	4	7

		OR			
6.	a).	**Explain** basic operations of DIT FFT and DIF FFT algorithms and draw their signal flow graphs.	3	3	7
	b).	**Find** the DFT of the sequence x(n)={1,2,2,1,1,2,2,1} using DIT F algorithm	3	4	8
		UNIT – IV			
7.	a).	**Explain** about IIR filter design using Bilinear transformation	4	4	8
	b).	**Design** a digital Butterworth filter satisfying the constraints $0.707 \le \lvert H(e^{jw}) \rvert \le 1$ for $0 \le w \le \frac{\Pi}{2}$ $\lvert H(e^{jw}) \rvert \le 0.2$ for $\frac{3\Pi}{2} \le w \le \Pi$ with T=1 sec using any IIR desi method	4	4	7
		OR			
8.	a).	**Convert** the single pole low pass filter with system function $H(z) = \frac{0.5(1+z^{-1})}{1-0.302z^{-2}}$ into bandpass filter with upper and lower cutoff frequencies ω_u and ω_l respectively. The lowpass filter has 3dB bandwidth $\omega_p = \frac{\Pi}{6}$ and $\omega_u = \frac{3\Pi}{4}\omega_l = \frac{\Pi}{4}$	4	4	7
	b).	**Design** a Third order Butterworth digital filter using impulse invarian technique. Assume sampling period T=1sec.	4	4	8
		UNIT – V			
9.	a).	**Compare** IIR filter and FIR filter	5	4	8
	b).	**Design** an ideal lowpass filter with frequency response $\lvert H(e^{j\omega}) \rvert = 1$ for $\frac{-\Pi}{2} \le \omega \le \frac{\Pi}{2}$ and $\lvert H(e^{j\omega}) \rvert = 0$ for $\frac{\Pi}{2} \le \lvert\omega\rvert \le \Pi$ **Find** the values o h(n) for N=11. **Find** H(z). Plot the magnitude response	5	4	7
		OR			
10.	a).	**Write** effects of finite word length in FIR filter design?	5	4	7
	b).	**Design** a filter with $\lvert H_d(e^{j\omega}) \rvert = e^{j3\omega}$ for $\frac{-\Pi}{4} \le \omega \le \frac{\Pi}{4}$ and $\lvert H_d(e^{j\omega}) \rvert = 0$ for $\frac{\Pi}{4} \le \lvert\omega\rvert \le \Pi$ Using Hamming window with N=7.	5	4	8

CO-COURSE OUTCOME **KL-KNOWLEDGE LEVEL** **M-MARKS**

NOTE : Questions can be given as A,B splits or as a single Question for 15 marks

SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)
[B19EE4104]
IV B. Tech I Semester (R19) Regular Examinations
ELECTRIC VEHICLES
ELECTRICAL & ELECTRONICS ENGINEERING
MODEL QUESTION PAPER

TIME: 3Hrs. **Max. Marks: 75 M**

Answer **ONE Question** from **EACH UNIT.**
All questions carry equal marks.
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			CO	KL	M
		UNIT-I			
1.	a).	**Illustrate** and derive Velocity profile when constant tractive force applied on the vehicle	1	4	8
	b).	**Describe** Vehicle dynamics state modelling.	1	4	7
		OR			
2.	a).	**Compare** EVs with ICE Engine Vehicles.	1	4	7
	b).	**Illustrate** Vehicle load forces, in detail.	1	4	8
		UNIT-II			
3.	a).	**Explain** in detail EV motor sizing	2	4	8
	b).	**Discuss** Various configurations of HEVs in detail	2	3	7
		OR			
4.	a).	**Discuss** in detail about power train components of EV.	2	3	7
	b).	**Explain** any Two Standard Drive Cycles used worldwide	2	4	8
		UNIT–III			
5.	a).	**Illustrate** Alternative Energy Sources used in EVs	3	4	8
	b).	**Describe** Battery Management System in EVs	3	4	7
		OR			
6.	a).	What are various battery performance parameters and **compare** various batteries by using the battery performance parameters	3	4	7
	b).	What are various Li ion batteries and **explain** their operation and how safety is important in handling the lithium-ion batteries	3	4	8
		UNIT–IV			
7.	a).	**Explain** the different types and operation of PM Synchronous Motor	4	4	8
	b).	**Explain** the different configurations and operation of SRM Drive	4	4	7
		OR			
8.	a).	**Explain** the working and operation of PM-BLDC and its Drive Control.	4	4	7
	b).	**Illustrate** Vector and flux weakening control of PMSM Drive	4	4	8
		UNIT–V			
9.	a).	**Illustrate** the Architecture of EV Charger with schematic.	5	3	8

	b).	**Explain** detail about the Charging standards used worldwide	5	4	7
		OR			
10.	a).	**Explain** in detail V2G and V2V Technology	5	4	7
	b).	**Illustrate** the functions of EV Charger	5	4	8

CO-COURSE OUTCOME **KL-KNOWLEDGE LEVEL** **M-MARKS**

NOTE : Questions can be given as A,B splits or as a single Question for 15 marks

SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)
[B19EE4105]
IV B. Tech I Semester (R19) Regular Examinations
COMPUTER ARCHITECTURE AND ORGANIZATION
ELECTRICAL & ELECTRONICS ENGINEERING
MODEL QUESTION PAPER

TIME: 3Hrs. **Max. Marks: 75 M**

Answer **ONE Question** from **EACH UNIT.**
All questions carry equal marks.
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			CO	KL	M
		UNIT-I			
1.	a).	**Construct** a bus system with three state bus buffer and explain it's operation.	1	3	8
	b).	**Explain** about selective set, selective clear and selective complement operations.	1	3	7
		OR			
2.	a).	**Design** a 4-bit combinational adder-Subtractor using full adder circuits.	1	3	7
	b).	**Illustrate** one stage of arithmetic logic shift unit with neat block diagram.	1	3	8
		UNIT-II			
3.	a).	**Explain** about stored program organization.	2	3	8
	b).	**Illustrate** common bus system with neat block diagram.	2	3	7
		OR			
4.	a).	**Explain** different types of memory reference instructions with its microoperations.	2	3	7
	b).	**Explain** instruction cycle with flow chart.	2	3	8
		UNIT-III			
5.	a).	**Show** how we can evaluate X=(A+B) * (C+D) using zero address instructions	3	3	8
	b).	**Explain** about addressing modes with example.	3	3	7
		OR			
6.	a).	**Explain** about program control instructions.	3	3	7
	b).	**Explain** about micro instruction format.	3	3	8
		UNIT-IV			
7.	a).	**Discuss** about match logic in associative memory.	4	3	8
	b).	**Explain** about set associative mapping in cache memory.	4	3	7
		OR			
8.	a).	**Explain** about addressing mapping using pages.	4	3	7
	b).	**Explain** about memory connection to CPU.	4	3	8
		UNIT-V			
9.	a).	**Explain** about source-initiated transfer using handshaking.	5	3	8

	b).	**Explain** about 4×4 FIFO buffer.	5	3	7
		OR			
10.	a).	What is mean by priority interrupt? **Explain** about Daisy-chain priority.	5	3	7
	b).	**Explain** about Direct Memory Access(DMA)	5	3	8

CO-COURSE OUTCOME **KL-KNOWLEDGE LEVEL** **M-MARKS**

NOTE : Questions can be given as A,B splits or as a single Question for 15 marks

SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)
[B19EE4106]
IV B. Tech I Semester (R19) Regular Examinations
POWER QUALITY
ELECTRICAL & ELECTRONICS ENGINEERING
MODEL QUESTION PAPER

TIME: 3Hrs. **Max. Marks: 75 M**

Answer **ONE Question** from **EACH UNIT.**
All questions carry equal marks.
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			CO	KL	M
		UNIT-I			
1.	a).	**Classify** the general power quality problems and explain	1	3	8
	b).	What is the impact of transient on power quality? **Classify** the transients that occur in power systems	1	3	7
		OR			
2.	a).	**Explain** the short-duration voltage variations. Compare short-duration voltage variations with long-duration voltage variations	1	3	7
	b).	Define voltage sag and voltage interruption. **Discuss** the sources of sags and interruptions.	1	3	8
		UNIT-II			
3.	a).	**Explain** the type of disturbance caused by capacitor switching	2	3	8
	b).	**Discuss** about Utility switching transient problems with loads	2	3	7
		OR			
4.	a).	**Discuss** about the long duration voltage variations in detail.	2	3	7
	b).	**Explain** about the various methods of voltage regulation	2	3	8
		UNIT-III			
5.	a).	**Explain** briefly about the phenomena of current distortion and the voltage distortion under the presence of harmonics.	3	4	8
	b).	**Explain** the effect of harmonics on power system quantities under non-sinusoidal conditions	3	4	7
		OR			
6.	a).	**Discuss** about the evaluation procedure for power quality assessment	3	4	7
	b).	**Explain** the devices used for controlling power quality problems.	3	4	8
		UNIT-IV			
7.	a).	**Discuss** how the capacitors are used for voltage regulation in power systems in shunt and series configuration	4	4	8
	b).	**Define** voltage regulation. Explain about devices used for voltage regulation	4	4	7
		OR			
8.	a).	**Explain** how end user capacitor application can deal with reduction in power system losses and line current	4	4	7
	b).	**Explain** about line drop compensator in utility voltage regulator application	4	4	8

		UNIT-V			
9.	a).	**Discuss** main power quality issues which affect distributed generation	5	3	8
	b).	**Explain** the following DG technologies i) Wind turbines ii) Photovoltaic systems	5	3	7
		OR			
10.	a).	**Discuss** briefly about the operating conflicts with distributed generation	5	3	7
	b).	**Explain** about Voltage regulation issues with DG installation	5	3	8

CO-COURSE OUTCOME **KL-KNOWLEDGE LEVEL** **M-MARKS**

NOTE : Questions can be given as A,B splits or as a single Question for 15 marks

SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)
[B19EE4107]
IV B. Tech I Semester (R19) Regular Examinations
SOFT COMPUTING TECHNIQUES
ELECTRICAL & ELECTRONICS ENGINEERING
MODEL QUESTION PAPER

TIME: 3Hrs. **Max. Marks: 75 M**

Answer **ONE Question** from **EACH UNIT.**
All questions carry equal marks.
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			CO	KL	M
		UNIT-I			
1.	a).	**Compare** conventional rule-based systems with expert systems and extract the merits of the soft computing.	1	3	8
	b).	**Illustrate** the role of artificial intelligence in engineering	1	3	7
		OR			
2.		For the given data, **apply** linear regression and find the regression coefficients. X: 1 2 3 4 5 6 7 Y: 9 8 10 12 11 13 14	1	3	15
		UNIT-II			
3.		**Explain** various membership functions used for fuzzy logic	2	3	15
		OR			
4.	a).	**Compare** crisp sets and fuzzy sets with suitable examples	2	4	7
	b).	**Discuss** how IF-THEN rules are framed in fuzzy logic theory and explain with an example	2	4	8
		UNIT-III			
5.	a).	**Explain** the simple single layer neural network architecture	3	3	7
	b).	**Discuss** various activation functions used in NN	3	4	8
		OR			
6.		**Demonstrate** how ANN is used for electrical load forecasting problem	3	4	15
		UNIT-IV			
7.	a).	**Explain** the concept of objective function and constraints	4	3	8
	b).	**Discuss** the crossover operation in GA	4	4	7
		OR			
8.		**Use** the flow chart of GA and explain various steps in GA	4	3	15
		UNIT–V			
9.		**Calculate** the minimum value of $f(x)=x^2+3$ within the limits of [-2 2] using PSO up to 2 iterations. Assume population size of 4, c1=2, c2=1 and w=0.7;	4	4	15
		OR			
10.		**Use** the flow chart of PSO and explain various steps in PSO	5	3	15

CO-COURSE OUTCOME **KL-KNOWLEDGE LEVEL** **M-MARKS**

SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)
[B19EE4201]
IV B. Tech II Semester (R19) Regular Examinations
POWER SYSTEM OPERATION AND CONTROL
ELECTICAL & ELECTRONICS ENGINEERING
MODEL QUESTION PAPER

TIME: 3Hrs. **Max. Marks: 75 M**

Answer **ONE Question** from **EACH UNIT.**
All questions carry equal marks.
*****

			CO	KL	M
		UNIT-I			
1.	a).	**Derive** the equation for optimal load sharing among n units in a power system by considering transmission losses.	1	3	8
	b).	A constant 30MW supplied by two 150MW generators, 1 and 2 for which the respective incremental fuel costs are dC1/dP1=0.1P1+20, dC2/dP2=0.2P2+25. With P in MW and C in Rs/h. **Calculate** (i) the most economical division of load between the generators (ii) the saving in Rs/day there by obtain compared to equal load sharing between the machines.	1	3	7
		OR			
2.	a).	**Derive** general transmission line loss formula and state assumptions made in calculating B- coefficients.	1	3	8
	b).	A power system consists of two 200MW units whose input cost data are represented by the equations: C1 = 0.03P1 2 + 21P1 + 750 Rs/hour, C2 = 0.5P2 2 + 18P2 + 980 Rs/hour. If the total received power PR = 350 MW, **compute** the load division between the units for the most economic operation.	1	3	7
		UNIT-II			
3.	a).	**Describe** the hydrothermal economic load scheduling. Derive the necessary equations?	2	3	8
	b).	Using dynamic programming method to **determine** the most economical units to be committed to supply a load of 6 MW. There are four units with the following data C1=0.8 P_1^2 +21 P_1, C2=0.6P_2^2 +22P_2, C3=0.5P_3^2 +21P_3 and C4=0.6P_4^2 +20P_4. The maximum and minimum limits for each unit are 6 MW and 1 MW respectively.	2	3	7
		OR			
4.	a).	With the help of flow chart, **explain** the solution of unit commitment problem using dynamic programming.	2	3	9
	b).	**Discuss** about different constraints considered in solving a unit commitment problem	2	3	6
		UNIT-III			
5.	a).	**Explain** the mathematical modelling of speed governing system and	3	4	8

		derive the transfer function of speed governor model. State the assumptions made			
	b).	A 200 MVA synchronous generator is operating at 3000 rpm, 50Hz. A load of 40MW is suddenly applied to the machine and the steam valve of the turbine opens only after 0.4 sec due to the time lag in the generator action. **Calculate** the frequency to which the generated voltage drops before the steam flow commences to increase to meet the new load. Given that the value of H of the generator is 5.5 kW-sec/KVA of the generator capacity.	3	4	7
		OR			
6.	a).	Draw the block diagram representation of a single area system and **derive** the expression for static and dynamic response of system under uncontrolled case.	3	4	7
	b).	Two generators are operating in parallel with 4% and 5% drop characteristics of their respective governors sharing a load of 600MW. **Compute** the load shared by the machines and the system for this load. The normal frequency of the system was 50Hz.	3	4	8
		UNIT-IV			
7.	a).	**Discuss** the importance of combined load frequency control and economic dispatch control with a neat block diagram.	4	3	8
	b).	**Obtain** the mathematical modelling of tie line power in an interconnected system and its block diagram	4	4	7
		OR			
8.	a).	**Explain** briefly the speed governor dead band and its effect on AGC	4	3	7
	b).	**Explain** briefly the Automatic Voltage regulator with a neat sketch and deduce its mathematical modeling.	4	4	8
		UNIT-V			
9.	a).	**Explain** briefly about the Stability Enhancement methods	5	3	8
	b).	**Derive** the centre of Inertia and explain about the average system frequency.	5	3	7
		OR			
10.	a).	**Explain** the concepts of coherent area dynamic with a detailed example.	5	3	7
	b).	**Explain** the four operating states of Power system with a neat sketch	5	3	8

CO-COURSE OUTCOME **KL-KNOWLEDGE LEVEL** **M-MARKS**

NOTE : Questions can be given as A,B splits or as a single Question for 15 marks

SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)

[B19EE4202]

IV B. Tech II Semester (R19) Regular Examinations

HIGH VOLTAGE ENGINEERING

ELECTICAL & ELECTRONICS ENGINEERING

MODEL QUESTION PAPER

TIME: 3Hrs. **Max. Marks: 75 M**

Answer **ONE Question** from **EACH UNIT.**

All questions carry equal marks.

*****

			CO	KL	M
		UNIT–I			
1.	a).	**Discuss** about the finite difference method for electric field computation.	1	3	8
	b).	**Describe** various methods implemented for protection against lightning over-voltages in an electrical power system.	1	3	7
		OR			
2.	a).	**Explain** how the electric stress can be estimated and controlled.	1	3	7
	b).	**What** are the sources of switching surges?	1	3	8
		UNIT–II			
3.	a).	**Explain** difference between photo-ionization and photo-electric emission?	2	3	8
	b).	**Explain** how treeing and tracking leads to breakdown in solid insulating materials.	2	3	7
		OR			
4.	a).	**What** is thermal breakdown in solid dielectrics, and how is it practically more significant than other mechanics?	2	3	7
	b).	**Explain** the various mechanisms of breakdown phenomenon in commercial liquids	2	3	8
		UNIT–III			
5.	a).	**Explain** with diagrams different types of rectifier circuits to produce high D.C Voltages.	3	3	8
	b).	**Describe** a modified multi-stage Marx circuit for generation of impulse voltages.	3	3	7
		OR			
6.	a).	**Describe** with a neat sketch the working of a Van de Graaff generator. What are the factors that limit the maximum voltage obtained?	3	3	7
	b).	**Derive** the equivalent impedance expression for the cascade transformer.	3	3	8
		UNIT–IV			
7.	a).	**What** are the different types of resistive shunts used for impulse current measurements? Discuss their characteristics and limitation	4	3	8
	b).	**Explain** the principle and construction of an Electrostatic Voltmeter for very high voltages. What are its merits and demerits for high voltage ac	4	3	7

		measurements?			
OR					
8.	a).	**Describe** generating voltmeter used for measuring high d.c voltages. How does it compare with a potential divider for measuring high dc currents	4	3	7
	b).	**Explain** the different methods of high A.C voltage measurements with their relative merits and demerits.	4	3	8
UNIT–V					
9.	a).	**How** partial discharges are measured using straight detectors?	5	4	8
	b).	**Explain** briefly about electro static precipitator.	5	3	7
OR					
10.	a).	**Define** "complex permittivity". What are the factors that govern the quantities "relative permittivity" and "loss factor".	5	4	7
	b).	**Explain** briefly about electro static separator.	5	3	8

CO-COURSE OUTCOME **KL-KNOWLEDGE LEVEL** **M-MARKS**

NOTE : Questions can be given as A,B splits or as a single Question for 15 marks

SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)
[B19EE4203]
IV B. Tech II Semester (R19) Regular Examinations
POWER ELECTRONICS FOR RENEWABLE ENERGY
ELECTICAL & ELECTRONICS ENGINEERING
MODEL QUESTION PAPER

TIME: 3Hrs. **Max. Marks: 75 M**

Answer **ONE Question** from **EACH UNIT.**
All questions carry equal marks.
*****

			CO	KL	M
		UNIT-I			
1.	a).	**Explain** the attributes of power electronics to Renewable energy systems.	1	3	8
	b).	**Illustrate** various Renewable Energy sources and their interconnections	1	3	7
		OR			
2.	a).	What are the various types of Renewable Energy technologies **explain** them in brief?	1	3	8
	b).	Highlight the importance of PV system among renewable?	1	3	7
		UNIT-II			
3.	a).	What is meant by mismatch losses in PV system? **Explain** Various topologies used to mitigate the mismatch losses?	2	3	8
	b).	**Illustrate** the output characteristics of a PV cell?	2	3	7
		OR			
4.	a).	**Explain** the Power electronic topologies and associated control techniques in Standalone and Grid connected systems?	2	3	8
	b).	**Explain** the Perturb and Observe MPPT algorithm with flowchart?	2	3	7
		UNIT-III			
5.	a).	**Explain** the operation of Back-to-Back PWM VSI for Full Converter Turbines	3	3	8
	b).	**Explain** the role of power electronics in wind energy systems	3	3	7
		OR			
6.	a).	**Classify** various types of Wind turbines?	3	3	8
	b).	**Explain** the operation and control of any one of the wind turbine.	3	3	7
		UNIT-IV			
7.	a).	**Explain** the principle of operation of PMSG?	4	3	8
	b).	**Classify** the types of PMSG used for wind turbines?	4	3	7
		OR			
8.	a).	**Explain** the power electronic controls for Three-Phase Generators Operating in Single-Phase Mode?	4	3	7
	b).	**Explain** the topologies for hydro power connection?	4	3	8

UNIT-V					
9.	a).	**Explain** basic configurations of power conversion system (PCS) for Fuel cells?	5	3	8
	b).	**Explain**difference between isolated and non-isolated DC-DC converters?	5	3	7
OR					
10.	a).	**Illustrate** the operation of Bidirectional Boost converter?	5	3	8
	b).	**Illustrate** the operation of Flyback converter?	5	3	7

CO-COURSE OUTCOME **KL-KNOWLEDGE LEVEL** **M-MARKS**

NOTE : Questions can be given as A,B splits or as a single Question for 15 marks

SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)
[B19EE4204]
IV B. Tech II Semester (R19) Regular Examinations
HVDC TRANSMISSION
ELECTICAL & ELECTRONICS ENGINEERING
MODEL QUESTION PAPER

TIME: 3Hrs. **Max. Marks: 75 M**

Answer **ONE Question** from **EACH UNIT.**
All questions carry equal marks.
*****

			CO	KL	M
		UNIT-I			
1.	a).	For a fixed power transmission **explain** how the economic choice of voltage level selected in dc transmission system.	1	3	8
	b).	**Explain** the technological development in control and protection, for better performance and reliability of dc transmission system.	1	3	7
		OR			
2.	a).	What are the different applications of dc transmission system? **Explain** them in detail?	1	3	7
	b).	With neat sketches **explain** the different kinds of dc link available?	1	3	8
		UNIT-II			
3.	a).	For a 3 phase 6 pulse gratez's circuit **draw** the timing diagram considering overlap angle is less than 60 degree and without overlap for the following a) Voltage across load b) Voltage across any two pair of conduction valves	2	3	8
	b).	**Explain** the individual characteristics of a rectifier and an inverter with sketches.	2	3	7
		OR			
4.	a).	**Explain** the effect of overlap angle on the performance of converter circuit.	2	3	7
	b).	**Draw** the schematic circuit diagram of a 6 pulse gratez's circuit and explain its principle of operation.	2	3	8
		UNIT-III			
5.	a).	**Explain** in detail about the converter control characteristics of HVDC system.	3	3	8
	b).	**Draw** and **explain** the inverter and rectifier compounding characteristics with constant voltage and current curve.	3	3	7
		OR			
6.	a).	**Explain** in detail about the starting and stopping of DC Link.	3	3	7
	b).	**Explain** in detail about the control system hierarchy.	3	3	8
		UNIT-IV			

7.	a).	**What** are the filter configuration that are employed for HVDC Converter station? Give design aspect of one such filter.	4	3	8
	b).	**Derive** an equation for harmonic voltage and current for single tuned filter and discuss the influence of network admittance.	4	3	7
		OR			
8.	a).	**Give** a detailed account of design aspects of following filters (a) Single tuned filter (b)Double tuned filter	4	3	7
	b).	**Explain** in detail about the Characteristics & Non-Characteristics Harmonics	4	3	8
		UNIT-V			
9.	a).	**List** out different types of multi-terminal DC links with suitable diagrams.	5	3	8
	b).	**Discuss** series-parallel multi-terminal HVDC system and its control?	5	3	7
		OR			
10.	a).	**Explain** about Modern Trends in HVDC Technology?	5	3	7
	b).	**Give** the comparison between series and parallel MTDC systems?	5	3	8

CO-COURSE OUTCOME **KL-KNOWLEDGE LEVEL** **M-MARKS**

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