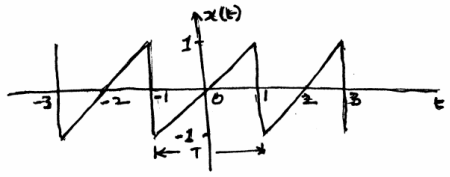
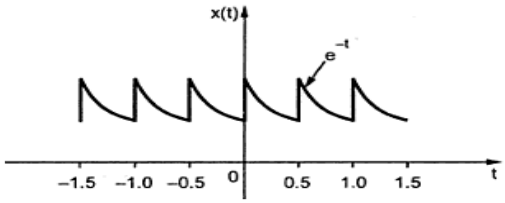
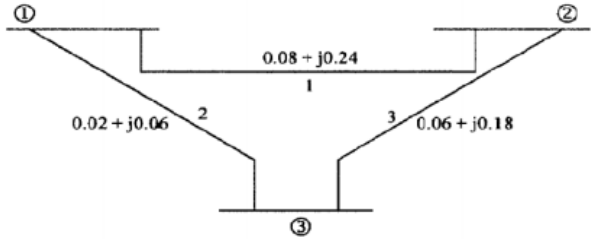
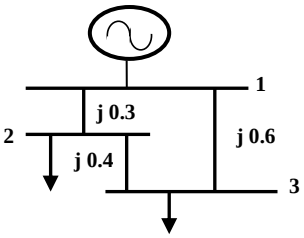
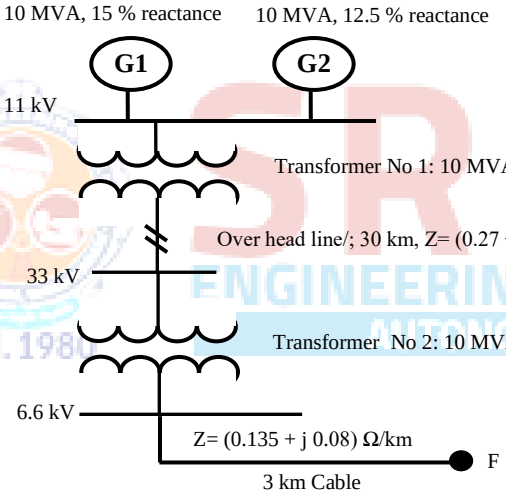
		Course Code: B20EE3101			
		SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)			**R20**
		III B.Tech. I Semester MODEL QUESTION PAPER			
		SIGNALS AND SYSTEMS			
		Electrical and Electronics Engineering			
Time: 3 Hrs.					**Max. Marks: 70 M**
		Answer **ONE Question** from **EACH UNIT**			
		All questions carry equal marks			
		Assume suitable data if necessary			
			CO	**KL**	**M**
		UNIT-I			
1.	**a).**	**Define** signal power and signal energy. **Check** whether $x(n) = -0.5\ ^{n}(n)$ is a power signal or energy signal.	**1**	**3**	**7**
	b).	**Test** whether the following signals are periodic or not. If periodic **Determine** the fundamental period. (i) $x(t) = 3\cos 10\pi t + \sin 20\pi t$ (ii) $x[n] = \cos(\frac{8\pi}{31})$ n	**1**	**3**	**7**
		OR			
2.	**a).**	**Determine** are the basic transformations for the following signal? Given x(t) = u(t)-u(t-3), plot x(t) and x(2t).	**1**	**3**	**7**
	b).	**Explain** the system properties Linearity, Time-Invariance, Stability and Causality by giving examples.	**1**	**3**	**7**
		UNIT-II			
3.	**a).**	**Determine** the Convolution between the two Signals $x(t) = e^{-3t}u(t)$ and $h(t) = tu(t)$	**2**	**3**	**7**
	b).	An LTI system is described by the difference equation: $y[n] + 2y[n-1] = x[n]$. **Find** the output y[n] when input x[n] = u[n]. Assume initial rest.	**2**	**3**	**7**
		OR			
4.	**a).**	**Draw** the block diagram representation of an LTI system in direct form-I realization for the system described by the difference equation y(n) -14 y(n-1) -18 y(n-2) = x(n) + 3x(n-1) + 2x(n-2)	**2**	**3**	**7**
	b).	**Explain** about the singularity functions and **prove that** $x(t) * \delta(t - t_0) = x(t - t_0)$	**2**	**3**	**7**
		UNIT-III			
5.	**a).**	Determine the trigonometric Fourier series for the given signal shown below.	**3**	**4**	**7**

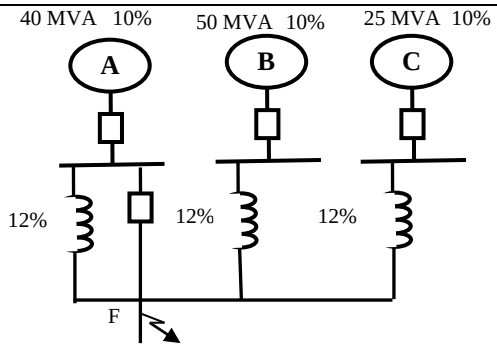
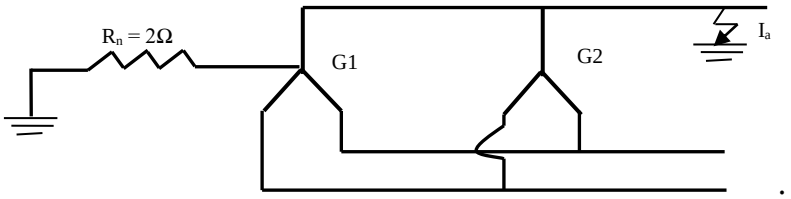
					
	b).	**Obtain** the exponential Fourier series for x[n]=Sin 0.1Πn	**3**	**4**	**7**
		OR			
6.	**a).**	**Obtain** the Exponential Fourier series for the periodic signal $x(t) = e^{-t}$ shown below. 	**3**	**4**	**7**
	b).	**Determine** the best approximation of signal x(t) = t in terms of y(t)=Sin t over an interval ($-\Pi \le t \le \Pi$).	**3**	**4**	**7**
		UNIT-IV			
7.	**a).**	**Determine** the Fourier Transform of $x(t)=e^{-2\|t\|}$	**4**	**3**	**7**
	b).	**Derive** the convolution property of the Continuous time Fourier transform.	**4**	**4**	**7**
		OR			
8.	**a).**	**Determine** the inverse DTFT of $X(e^{j\omega}) = \frac{1}{(1-ae^{-j\omega})^2} \quad \|a\|<1$	**4**	**3**	**7**
	b).	**Obtain** the step response of the system described by the following difference equation using DTFT. $y[n]-ay[n-1]=x[n] \qquad \|a\|<1$	**4**	**4**	**7**
		UNIT-V			
9.	**a).**	**Determine** the Z-transform of $x[n]=n\,a^n\,u[n]$	**5**	**3**	**7**
	b).	**State** and **Explain** about the Sampling theorem. What is "Aliasing" and **how** it can be avoided?	**5**	**4**	**7**
		OR			
10.	**a).**	**Obtain** the inverse Z-transform $X(z) = \frac{z}{2Z^2-3Z+1} \qquad ROC: \|Z\| < \frac{1}{2}$	**5**	**3**	**7**
	b).	A signal x(t) = cos5πt + 0.5cos10πt is instantaneously sampled. **Determine** the maximum interval of sampling from which the signal can be recovered.	**5**	**4**	**7**

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

NOTE : Questions can be given as A,B splits or as a single Question for 14 marks

		Course Code: B20EE3102			
		SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)			**R20**
		III B.Tech. I Semester MODEL QUESTION PAPER			
		POWER SYSTEM ANALYSIS AND STABILITY			
		Electrical and Electronics Engineering			
Time: 3 Hrs.					**Max. Marks: 70 M**
		Answer **ONE Question** from **EACH UNIT**			
		All questions carry equal marks			
		Assume suitable data if necessary			
			CO	**KL**	**M**
		UNIT-I			
1.	**a).**	**Show** that the per unit reactance of a transformer is same on either side of the transformer	**1**	**3**	**7**
	b).	**Obtain** the P.U reactance diagram of the power system shown in the Fig. Choose the base quantities as 25MVA and 33kV in transmission line section. Ratings are: Generator G1: 30MVA, 22kV, X ^{11} =2Ω. Generator G2: 25MVA, 11kV, X ^{11} =1.2Ω Transformers T1: 15MVA, 33/22kV, X=15Ω referred to HV Transformers T2: 15MVA, 33/11kV, X=16Ω referred to HV Transmission line: 21Ω/phase 	**1**	**3**	**7**
		OR			
2.	**a).**	**Obtain** the equivalent circuit of three winding transformer	**1**	**3**	**7**
	b).	**Show** that $$X_{PU(NEW)} = (X_{PU(OLD)}) * \frac{MVA_{BASE(NEW)}}{MVA_{BASE(OLD)}} * \frac{KV^2_{BASE(OLD)}}{KV^2_{BASE(NEW)}}$$	**1**	**3**	**7**
		UNIT-II			
3.	**a).**	For the 3-bus system shown in the figure, **Calculate** Y-bus? 	**2**	**4**	**7**
	b).	**Explain** the GS algorithm for load flow problem	**2**	**3**	**7**
		OR			

4.	**a).**	**Compare** Gauss-Seidel and Newton Raphson load flow methods	**2**	**3**	**7**
	b).	For the power system shown below, **compute** the voltages at the buses 2 and 3, at the end of the two iterations by Gauss-seidel method. Other relevant data given in the table.  Bus | P (p.u) | Q (p.u) | V (p.u) | Remarks 1 | - | - | 1.03 ∟0 | Slack bus 2 | 0.4 | 0.3 | - | Load bus 3 | 0.65 | 0.35 | - | Load bus	**2**	**4**	**7**
		UNIT-III			
5.	**a).**	**Derive** the expression for maximum momentary current under short circuit of a transmission line.	**3**	**3**	**7**
	b).	For the radial network shown in figure, a three-phase fault occurs at F. **Determine** the fault current and the line voltages at 11 kV bus under fault conditions.  	**3**	**4**	**7**
		OR			
6.	**a).**	**Explain** how a synchronous generator is represented in short circuit condition.	**3**	**3**	**7**
	b).	Three 6.6 kV generators A,B and C, each of 10% leakage reactance and MVA ratings 40, 50 and 25 respectively are interconnected electrically, as shown in figure., by a tie bar through current limiting reactor, each of 12% reactance based upon the rating of the machine to which it is connected. A three-phase feeder is supplied from the bus bar of generator A at a line voltage of 6.6 kV. The feeder resistance of 0.06 Ω/phase and an inductive reactance of 0.12 Ω/phase. **Estimate** the maximum MVA that can be fed into a symmetrical short circuit at the far end of the feeder.	**3**	**4**	**7**

					
		UNIT-IV			
7.	**a).**	**Derive** the expression for fault current for a line to ground fault at the terminals of an unloaded alternator. Show the interconnection of sequence networks	**4**	**3**	**7**
	b).	A 400V, star connected, neutral grounded three phase generator is subjected to various types of faults. The fault currents for various types of faults are i) 120A for 3-phase fault ii) 250A for line to ground fault. iii) 150A for line to line fault If the resistances are neglected **determine** the three sequence impedances.	**4**	**4**	**7**
		OR			
8.	**a).**	**Derive** the expression for average power in terms of symmetrical components.	**4**	**3**	**7**
	b).	Two 11 kV, 20 MVA, three phase, star connected generators operate in parallel as shown in figure. The positive, negative and zero sequence reactance of each being, respectively, j0.18, j0.15, 0.10 p.u. The star point of one of the generator is isolated and that of the other is earthed through a 2.0 ohm resistor. A single line to groung fault occurs at the terminals of one of the generators. **Estimate**. (i) the fault current, (ii) current in grounding resistor, and (iii) the voltage across grounding resistor 	**4**	**4**	**7**
		UNIT-V			
9.	**a).**	**Explain** equal area criteria.	**5**	**3**	**7**
	b).	A50Hz, 4 pole turbo generators rated 100MVA, 11kV has an inertia constant of 8 MJ/MVA. **a) Find** the stored energy in the rotor at synchronous speed **b)** If the mechanical input is suddenly raised to 80MW for an electrical load	**5**	**4**	**7**

		of 50MW, **find** rotor acceleration **c)** Suppose the above acceleration is maintained for 10 cycles, **calculate** the change in rotor angle and rotor speed at the end of this period.			
		OR			
10.	**a).**	**Explain** the methods of improving transient stability.	**5**	**3**	**7**
	b).	**Explain** critical clearing time and critical clearing angle, derive the expression for critical clearing time	**5**	**4**	**7**

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

NOTE : Questions can be given as A,B splits or as a single Question for 14 marks

		Course Code: B20EE3103			
		SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)			**R20**
		III B.Tech. I Semester MODEL QUESTION PAPER			
		POWER ELECTRONICS			
		Electrical and Electronics Engineering			
Time: 3 Hrs.					**Max. Marks: 70 M**
		Answer **ONE Question** from **EACH UNIT**			
		All questions carry equal marks			
		Assume suitable data if necessary			
			CO	**KL**	**M**
		UNIT-I			
1.	**a).**	**Sketch** the static V-I characteristics of an SCR and **explain**.	**1**	**3**	**7**
	b).	**Draw** the two-transistor model of an SCR and **explain** how such model can be used to describe the working of a SCR.	**1**	**3**	**7**
		OR			
2.	**a).**	**Illustrate** various turn on methods of a thyristor.	**1**	**3**	**7**
	b).	**Sketch** the V-I characteristics of MOSFET and **explain**.	**1**	**3**	**7**
		UNIT-II			
3.	**a).**	Discuss in detail about the operation of single-phase half wave-controlled rectifier with RL with freewheeling diode and **draw** its waveforms.	**2**	**3**	**7**
	b).	**Explain** about single phase full converter with RLE load and **derive** the average voltage expression.	**2**	**3**	**7**
		OR			
4.	**a).**	**Explain** about single phase semi converter with RL load and **draw** the related waveforms.	**2**	**3**	**7**
	b).	A single-phase full converter is supplied with 230V, 50Hz input is feeding a load R=10Ω in series with a large inductance that makes the load current ripple free. For firing angle of $\alpha = \frac{\pi}{3}$, **calculate** average output voltage.	**2**	**3**	**7**
		UNIT-III			
5.	**a).**	**Illustrate** various control strategies for varying duty cycle in choppers.	**3**	**3**	**7**
	b).	Discuss about step down chopper and **derive** the relation between input and output voltage.	**3**	**3**	**7**
		OR			
6.	**a).**	**Illustrate** the operation of step-up/step-down chopper and **derive** the relation between input and output voltage.	**3**	**3**	**7**
	b).	A step-up chopper has input voltage of 220V and output voltage of 660 V. If the conducting time of thyristor-chopper is 100 μs, **compute** the	**3**	**4**	**7**

		pulse width of output voltage.			
		UNIT-IV			
7.	**a).**	**Draw** the circuit of single phase to single phase step up cycloconverter and **explain** its operation with related waveforms.	**4**	**3**	**7**
	b).	**Explain** about single phase to single phase step down cycloconverter with discontinuous load current.	**4**	**3**	**7**
		OR			
8.	**a).**	With the help of circuit diagram and waveforms **explain** the operation of AC voltage controller with RL load and **derive** an output rms voltage expression for an AC voltage controller with RL load.	**4**	**3**	**7**
	b).	A single-phase bridge type cycloconverter has input voltage of 230V,50Hz and load of R=10Ω. Output frequency is one—third of input frequency. For a firing angle delay of 30^0, **calculate** rms value of output voltage.	**4**	**3**	**7**
		UNIT-V			
9.	**a).**	Describe the operation of single-phase full bridge inverter with RL load and **draw** its related waveforms.	**5**	**3**	**7**
	b).	**Explain** about Total harmonic distortion and Distortion factor in inverters.	**5**	**3**	**7**
		OR			
10.	**a).**	**Demonstrate** the three phase 180^0 mode of operation of voltage source inverter with related waveforms.	**5**	**3**	**7**
	b).	**Illustrate** the operation of current source inverter.	**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 14 marks

		Course Code: B20EE3104			
		SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)			**R20**
		III B.Tech. I Semester MODEL QUESTION PAPER			
		SOLAR AND WIND ENERGY SYSTEMS			
		Electrical and Electronics Engineering			
Time: 3 Hrs.				**Max. Marks: 70 M**	
		Answer **ONE Question** from **EACH UNIT**			
		All questions carry equal marks			
		Assume suitable data if necessary			
			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**	**7**
		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**	**7**
		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**	**7**
		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**	**7**
		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**	**7**
		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**	**7**

		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**	**7**
		OR			
8.	**a).**	**Explain** the basic principle of wind energy conversion system? Classify the wind energy conversion system.	**4**	**4**	**7**
	b).	**Explain** aerodynamic methods to control the capture of power for large wind turbines	**4**	**3**	**7**
		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**	**7**
		OR			
10.	**a).**	**Explain** SCIG Wind Energy System with Full-Capacity Power Converters	**5**	**3**	**7**
	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 14 marks

					Course Code: B20EE3105
		SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)			**R 20**
		III B. Tech I Semester MODEL QUESTION PAPER			
		SENSORS AND TRANSDUCERS			
		Electrical & Electronics Engineering			
Time: 3 Hrs.					**Max. Marks: 70 M**
		Answer any one Question from Each Unit			
		All questions carry equal Marks			
		Assume suitable data if necessary			
			CO	**KL**	**M**
		UNIT-I			
1	**a).**	**Classify** Sensors based on their Parameters.	**1**	**3**	**7**
	b).	**Define the** Sensor with a block diagram and Obtain the Biological sensing process.	**1**	**3**	**7**
		OR			
2	**a).**	**Discuss** the methods of sensor characterization. How is a sensor electrically characterized?	**1**	**3**	**7**
	b).	**Explain** the Static characteristics of sensors.	**1**	**3**	**7**
		UNIT-II			
3	**a).**	**Explain** Ferromagnetic Plunger Type Transducers with a neat sketch.	**2**	**3**	**7**
	b).	**Illustrate** the operation of a potentiometric type accelerometer.	**2**	**3**	**7**
		OR			
4	**a).**	**Explain** the operation of the Parallel Plate Capacitive Sensor.	**2**	**3**	**7**
	b).	**Summarize** the concepts of Photoconductive Cell-The LDR.	**2**	**3**	**7**
		UNIT-III			
5	**a).**	**Demonstrate** about Acoustic Temperature Sensor in detail.	**3**	**3**	**7**
	b).	**Explain** in detail about Detectors.	**3**	**3**	**7**
		OR			
6	**a).**	**Compute** Heat Flux Sensors with a neat sketch.	**3**	**3**	**7**
	b).	**Illustrate** Thermal Radiation Sensors in detail.	**3**	**3**	**7**
		UNIT-IV			
7	**a).**	**Summarize** the concepts of Hall Effect and Sensors.	**4**	**3**	**7**
	b).	**Examine** the concepts of Electromagnetic Flowmeter.	**4**	**3**	**7**

		OR			
8	**a).**	**Summarize** the concepts of Inductance and Eddy Current Sensors	**4**	**3**	**7**
	b).	**Describe** in detail Switching Magnetic Sensors.	**4**	**3**	**7**
		UNIT-V			
9	**a).**	**Illustrate** the concepts of Film Sensors.	**5**	**3**	**7**
	b).	**Explain** the application of Sensors for Environmental Monitoring.	**5**	**3**	**7**
		OR			
10	**a).**	**Illustate** in detail Microelectromechanical Systems (MEMS).	**5**	**3**	**7**
	b).	**Explain** the application of Sensors for Medical Diagnostic.	**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 14 marks

				Course Code: B20EE3106	
		SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)			**R20**
		III B.Tech. I Semester MODEL QUESTION PAPER			
		SPECIAL ELECTRICAL MACHINES			
		Electrical & Electronics Engineering			
Time: 3 Hrs.				**Max. Marks: 70 M**	
		Answer **ONE Question** from **EACH UNIT**			
		All questions carry equal marks			
		Assume suitable data if necessary			
			CO	**KL**	**M**
		UNIT-I			
1.	**a).**	**Explain** in detail the construction and working of variable reluctance stepper motor.	**1**	**3**	**7**
	b).	**Explain** briefly closed loop control of stepper motor.	**1**	**3**	**7**
		OR			
2.	**a).**	**Explain** the principle of operation of permanent magnet stepper motor with torque Vs angle characteristics.	**1**	**3**	**7**
	b).	**Enumerate** the various applications of stepper motor.	**1**	**3**	**7**
		UNIT-II			
3.	**a).**	**Explain** the construction PMBLDC also compare conventional DC motor and PMBLDC motor.	**2**	**3**	**7**
	b).	**Explain** the speed-torque characteristics of PMBLDC motor.	**2**	**3**	**7**
		OR			
4.	**a).**	**Explain** in detail about power controllers used for PMBLDC motor.	**2**	**3**	**7**
	b).	**Explain** the closed loop control scheme of a PMBLDC motor drive with a suitable schematic diagram.	**2**	**3**	**7**
		UNIT-III			
5.	**a).**	**Explain** the construction and working principle of operation of PMSM.	**3**	**3**	**7**
	b).	**Derive** the expression for power input and torque of a PMSM. Explain how its torque speed characteristics are obtained.	**3**	**3**	**7**
		OR			
6.	**a).**	**Enumerate** the applications of PMSM.	**3**	**3**	**7**
	b).	With necessary diagrams, **discuss** about various power controllers used for PMSM.	**3**	**3**	**7**
		UNIT-IV			
7.	**a).**	**Explain** the principle of operation and the advantages of switched reluctance motor.	**4**	**3**	**7**
	b).	**Describe** with a neat circuit any two configuration of power converters	**4**	**3**	**7**

		used for the control of switched reluctance motor.			
		OR			
8.	**a).**	**Explain** the torque-speed characteristics of switched reluctance motors.	**4**	**3**	**7**
	b).	**Derive** the expressions for voltage and torque of Switched Reluctance machine	**4**	**3**	**7**
		UNIT-V			
9.	**a).**	Illustrate with neat diagram, the construction, working principle of radial type synchronous reluctance motor	**5**	**3**	**7**
	b).	Discuss the main advantages and disadvantages of synchronous reluctance motor.	**5**	**3**	**7**
		OR			
10.	**a).**	Illustrate the performance of the synchronous reluctance motor with neat phasor diagram.	**5**	**3**	**7**
	b).	Discuss the various applications of synchronous reluctance motor.	**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 14 marks

			Course Code: B20EE3107		
SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)					**R20**
III B.Tech. I Semester MODEL QUESTION PAPER					
POWER QUALITY					
Electrical and Electronics Engineering					
Time: 3 Hrs.					**Max. Marks: 70 M**
Answer **ONE Question** from **EACH UNIT**					
All questions carry equal marks					
Assume suitable data if necessary					
			CO	**KL**	**M**
		UNIT-I			
1.	**a).**	**Classify** the general power quality problems and explain	**1**	**3**	**7**
	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**	**7**
		UNIT-II			
3.	**a).**	**Explain** the type of disturbance caused by capacitor switching	**2**	**3**	**7**
	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**	**7**
		UNIT-III			
5.	**a).**	**Explain** briefly about the phenomena of current distortion and the voltage distortion under the presence of harmonics.	**3**	**4**	**7**
	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** about the devices used for controlling power quality problems**.**	**3**	**4**	**7**
		UNIT-IV			
7.	**a).**	**Illustrate** how the capacitors are used for voltage regulation in power systems in shunt and series configuration	**4**	**4**	**7**
	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**	**7**
		UNIT-V			
9.	**a).**	**Discuss** main power quality issues which affect distributed generation	**5**	**3**	**7**
	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**	**7**

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

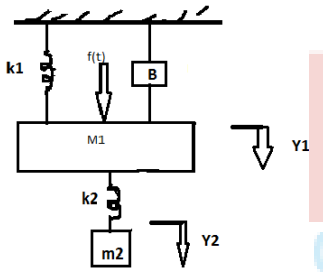
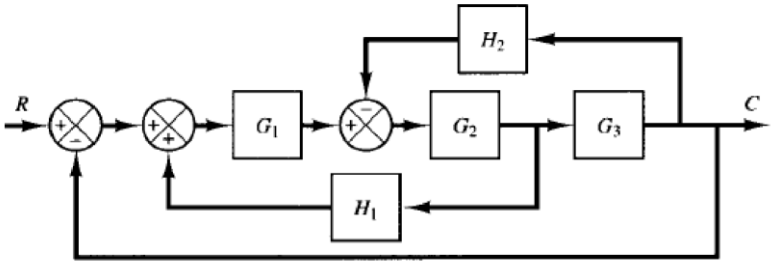
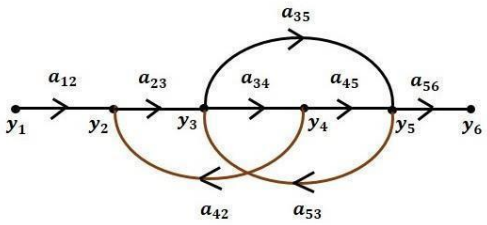
NOTE : Questions can be given as A,B splits or as a single Question for 14 marks

		Course Code: B20EE3201			
		SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)			**R20**
		III B.Tech. II Semester MODEL QUESTION PAPER			
		LOGIC DESIGN AND MICROPROCESSOR			
		Electrical and Electronics Engineering			
Time: 3 Hrs.					**Max. Marks: 70 M**
		Answer **ONE Question** from **EACH UNIT**			
		All questions carry equal marks			
		Assume suitable data if necessary			
			CO	**KL**	**M**
		UNIT-I			
1.	**a).**	Given the binary numbers. A=1010.1; B=101.01; C=1001.1; **Compute** the i) A+C ii) A-B iii) B.C iv) A/B	**1**	**3**	**7**
	b).	Write the comparison between 1's complement and 2's complement. **Compute** the subtraction using 2's complement of (a) $(1011.1001)_2 - (10001.1110)_2$,	**1**	**3**	**7**
		OR			
2.	**a).**	**Solve** the Boolean expressions using Boolean algebra (i) Show: AB'C+B+BD'+ABD'+A'C=B+C (ii) Simplify A (BC)` + B (CA)` +C (AB)` + ABC	**1**	**3**	**7**
	b).	**Convert** the following number system into indicated system i) $(256.625)_{10}$ = (……..) $_2$ ii) $(F32C)_{16}$ = (…….) $_8$ iii) $(2345)_8$ = (……..) $_{10}$	**1**	**3**	**7**
		UNIT-II			
3.	**a).**	**Deduce** the expression F = ∑m (1,5,6,12,13,14) + d (2,4) in POS &SOP and implement the real minimal expression in universal logic gates.	**2**	**4**	**7**
	b).	**Draw** and explain the 8×1 MUX.	**2**	**4**	**7**
		OR			
4.	**a).**	Explain and **Design** the Full adder circuit using half adders.	**2**	**4**	**7**
	b).	**Design** a circuit using NAND and NOR function for the given Boolean expression to **Y =** $\overline{((A+B)C)D}$	**2**	**4**	**7**
		UNIT-III			
5.	**a).**	Draw a neat circuit diagram of an edge triggered JK flip-flop and **explain** its operation.	**3**	**4**	**7**
	b).	**Convert** the JK Flip-flop into RS flip-flop.	**3**	**4**	**7**
		OR			
6.	**a).**	**Design** a synchronous counter Mod-6 counter using T flip-flop.	**3**	**4**	**7**
	b).	**Explain** the operating modes of universal shift register with a neat sketch.	**3**	**4**	**7**

		UNIT-IV			
7.	**a).**	Draw the functional block diagram of 8085 microprocessor and **explain** each block function.	**4**	**3**	**7**
	b).	**Explain** the different addressing modes of 8085 microprocessor with suitable examples.	**4**	**3**	**7**
		OR			
8.	**a).**	**Discuss** about each group of instruction set of 8085 microprocessor with examples	**4**	**3**	**7**
	b).	With the help of a timing diagram **explain** the operation of a MVI B, 65H	**4**	**3**	**7**
		UNIT-V			
9.	**a).**	**Explain** the functional block diagram of interfacing IC 8251(USART) with neat sketch.	**5**	**4**	**7**
	b).	**Explain** the operating modes of interfacing IC 8255A PPI with neat sketch	**5**	**4**	**7**
		OR			
10.	**a).**	**Explain** the operating modes of interfacing IC 8253 Programmable interval timer	**5**	**4**	**7**
	b).	**Explain** the block diagram of interfacing IC 8279 Keyboard /Display Interface with neat sketch	**5**	**4**	**7**

CO-COURSE OUTCOME KL-KNOWLEDGE LEVEL M-MARKS

NOTE : Questions can be given as A,B splits or as a single Question for 14 marks

		Course Code: B20EE3202			
		SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)			**R20**
		III B.Tech. II Semester MODEL QUESTION PAPER			
		CONTROL SYSTEMS			
		Electrical and Electronics Engineering			
Time: 3 Hrs.					**Max. Marks: 70 M**
		Answer **ONE Question** from **EACH UNIT**			
		All questions carry equal marks			
		Assume suitable data if necessary			
			CO	**KL**	**M**
		UNIT-I			
1.	**a).**	Differentiate open-loop and closed loop control systems with examples.	**1**	**3**	**7**
	b).	For the given mechanical system, obtain the transfer function, $Y_1(s)/F(s)$ and draw its electrical analog based on f-i analogy. 	**1**	**4**	**7**
		OR			
2.	**a).**	Find the transfer function C/R for the following system by using block diagram reduction technique 	**1**	**3**	**7**
	b).	Obtain the transfer function y_6/y_1 for the given SFG using Mason's gain rule. 	**1**	**3**	**7**

		UNIT-II			
3.	**a).**	Distinguish between type and order of a system. What are the various error constants and how they are related to the type of the system?	**2**	**3**	**7**
	b).	Derive the expression for unit-step response of a standard second-order system which is under-damped. Also, describe the transient response specifications	**2**	**4**	**7**
		OR			
4.	**a).**	Discuss the standard input signals used to test control systems. Which one is used mostly and why?	**2**	**3**	**7**
	b).	A unity feedback system is characterized by an open-loop transfer function G(s) = K/S(S+10). Determine the value of gain K such that the system has a damping ratio of 0.5. With this value of K, find the settling time, percent overshoot and steady state error for a unit-ramp input.	**2**	**4**	**7**
		UNIT-III			
5.	**a).**	Explain why all the poles of a closed loop system must lie in the left-half of the s-plane for the system to be stable.	**3**	**3**	**7**
	b).	Using R-H criterion, find the range of K for the closed loop system to be stable. The open loop transfer function of the system is $G(S)H(S)=\frac{K}{S(S+1)(S+2)}$	**3**	**4**	**7**
		OR			
6.	**a).**	Explain how 'Relative stability' of a system can be assessed using RH criterion?	**3**	**3**	**7**
	b).	Obtain the Root-locus for the system with $G(S)H(S)=\frac{K}{S(S+4)(S^2+4S+8)}$ What value of K makes the closed loop system marginally stable?	**3**	**4**	**7**
		UNIT-IV			
7.	**a).**	What are the frequency domain specifications? A second order system step response shows 25% overshoot. What is its resonant peak in frequency response?	**4**	**3**	**7**
	b).	Obtain the Bode plots for the system having OL transfer function $G(S)H(S)=\frac{2500}{S(S+5)(S+50)}$ Determine the Gain Margin and Phase Margin.	**4**	**3**	**7**
		OR			
8.	**a).**	The open loop transfer function of a unity feedback system is given by $G(S)=\frac{1}{S(1+S)(1+2S)}$ Sketch the polar plot.	**4**	**4**	**7**

	b).	Draw Nyquist diagram and determine the stability of a closed loop control system with open-loop transfer function $G(S)H(S) = \frac{3}{S(S+1)^2}$	**4**	**3**	**7**
		UNIT-V			
9.	**a).**	Construct the SS model for the following transfer function. $G(s) = \frac{2S+1}{S^2+7S+9}$	**5**	**4**	**7**
	b).	Obtain the transfer function model for the following system $\dot{x} = \begin{bmatrix} -4 & -1.5 \\ 4 & 0 \end{bmatrix} x + \begin{bmatrix} 2 \\ 0 \end{bmatrix} u$ $y = [1.5 \quad 0.625] x$	**5**	**3**	**7**
		OR			
10.	**a).**	Find the state transition matrix for the given system. $\begin{bmatrix} \dot{x}_1(t) \\ \dot{x}_2(t) \end{bmatrix} = \begin{bmatrix} 0 & 1 \\ -2 & -3 \end{bmatrix} \begin{bmatrix} x_1(t) \\ x_2(t) \end{bmatrix} + \begin{bmatrix} 0 \\ 2 \end{bmatrix} u$	**5**	**3**	**7**
	b).	Test the controllability and observability for the following SS model $\begin{bmatrix} \dot{x}_1(t) \\ \dot{x}_2(t) \\ \dot{x}_3(t) \end{bmatrix} = \begin{bmatrix} 0 & 1 & 0 \\ 0 & 0 & 1 \\ 0 & -2 & -3 \end{bmatrix} \begin{bmatrix} x_1(t) \\ x_2(t) \\ x_3(t) \end{bmatrix} + \begin{bmatrix} 1 \\ 0 \\ 0 \end{bmatrix} u(t) \qquad y = [3 \quad 4 \quad 1] x$	**5**	**4**	**7**

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

NOTE : Questions can be given as A,B splits or as a single Question for 14 marks

					Course Code: B20HS3202
		SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)			**R20**
		III B.Tech. II Semester MODEL QUESTION PAPER			
		UNIVERSAL HUMAN VALUES-2 : UNDERSTANDING HARMONY			
		(Common to CIVIL, ECE, EEE)			
Time: 3 Hrs.					**Max. Marks: 70 M**
		Answer **ONE Question** from **EACH UNIT**			
		All questions carry equal marks			
		Assume suitable data if necessary			
			CO	**KL**	**M**
		UNIT - I			
1.	**a).**	Discuss natural acceptance	**1**	**2**	**7**
	b).	Differentiate prosperity and deprivation	**1**	**2**	**7**
		OR			
2.	**a).**	Write a note on physical facilities.	**1**	**2**	**7**
	b).	Deliberate the right understanding in perspective to self exploration.	**1**	**2**	**7**
		UNIT – II			
3.	**a).**	Illustrate coexistence of "I" and "Body ".	**1**	**2**	**7**
	b).	Explain doer, seer and enjoyer.	**1**	**2**	**7**
		OR			
4.	**a).**	Discuss Characteristic activities of Harmony with "I".	**1**	**2**	**7**
	b).	Explain Sanyam and Health.	**1**	**2**	**7**
		UNIT – III			
5.	**a).**	Write a note on human-human relationship as regarding harmony.	**2**	**2**	**7**
	b).	Differentiate intention and competence.	**2**	**2**	**7**
		OR			
6.	**a).**	Discuss salient values in relationship.	**3**	**2**	**7**
	b).	Illustrate universal Harmonious Society - an Undivided society.	**3**	**2**	**7**
		UNIT – IV			
7.		Discuss orders of life in nature and its significance self-regulation of individual	**4**	**2**	**14**
		OR			
8.		Illustrate existence of human being as coexistence with universe in perspective of space	**4**	**2**	**14**
		UNIT – V			
9.		Discuss importance of professional competence for augmenting universal human order.	**5**	**3**	**14**

		OR			
10.	**a).**	Case study of typical holistic technologies.	**5**	**3**	**7**
	b).	Role of engineer in promoting harmony in society	**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 14 marks

			Course Code: B20EE3203		
		SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)			**R20**
		III B.Tech. II Semester MODEL QUESTION PAPER			
		POWER ELECTRONIC DRIVES			
		Electrical & Electronics Engineering			
Time: 3 Hrs.				**Max. Marks: 70 M**	
		Answer **ONE Question** from **EACH UNIT**			
		All questions carry equal marks			
		Assume suitable data if necessary			
			CO	**KL**	**M**
		UNIT-I			
1.	**a).**	Define Electric drive and **explore** the components of electric drive system	**1**	**3**	**7**
	b).	State the advantages of drive system. **Illustrate** some applications with suitable drive system.	**1**	**3**	**7**
		OR			
2.	**a).**	**Selection** of suitable drive for various applications.	**1**	**4**	**7**
	b).	**Classify** different types of Electric braking methods.	**1**	**3**	**7**
		UNIT-II			
3.	**a).**	**Demonstrate** the four-quadrant operation of drive with neat sketches.	**2**	**3**	**7**
	b).	A Motor drives two loads. One has rotational motion. It is coupled to the motor through a reduction gear with a=0.1and efficiency of 90%. The load has a moment of inertia of 10 kg-m^2 and torque of 10 N-m. Other load has translational motion and consists of 1000kg weight to be lifted up at a uniform speed of 1.5 m/sec. Coupling between this load and the motor has an efficiency of 85%. Motor has an inertia of 0.2 kg-m^2 and runs at a constant speed of 1420 rpm. **Calculate** equivalent inertia referred the motor shaft and power developed by the motor.	**2**	**3**	**7**
		OR			
4.	**a).**	**Analyze** the steady state stability of Electric drive?	**2**	**4**	**7**
	b).	**Explain** the load equalization concept.	**2**	**4**	**7**
		UNIT-III			
5.	**a).**	**Demonstrate** single phase Fully controlled converter fed separately excited DC Drives for continuous operation with avg. output voltage equation, Speed-Torque relation & voltage and current waveforms.	**3**	**3**	**7**
	b).	A 200V,875RPM,150A separately excited DC motor has an armature resistance of 0.06 ohms. It is fed from a single phase fully controlled rectifier with an ac source voltage of 220V, 50Hz Assuming	**3**	**3**	**7**

		continuous conduction, **Calculate** (i) Firing angle for rated motor torque and 750 rpm (ii) Firing angle for rated motor torque and (-500) rpm (iii) Motor speed for $\alpha = 160^0$			
		OR			
6.	**a).**	**Derive** the Speed-Torque relation for DC Separately excited motor with different speed control approaches.	**3**	**3**	**7**
	b).	**Explain** rectifier fed DC series motor in continues mode operation with equations and speed-torque characteristics.	**3**	**4**	**7**
		UNIT-IV			
7.	**a).**	**Explain** the chopper-controlled DC series motor in continues mode operation with necessary equations and speed-torque characteristics.	**4**	**4**	**7**
	b).	**Investigate** Closed loop speed control scheme of DC Drive for control above and below base speed.	**4**	**4**	**7**
		OR			
8.	**a).**	**Demonstrate** the chopper-controlled separately excited DC motor in continues mode operation with equations and speed-torque characteristics.	**4**	**3**	**7**
	b).	A 230V, 900RPM and 180A separately excited DC motor has an armature resistance of 0.02 ohms. The motor is fed from chopper which provides both motoring and braking operations. The source has a voltage of 230V. Assuming continues conduction. (i) **Calculate** duty ratio of chopper for motoring operation at rated torque & 380 rpm. (ii) **Calculate** duty ratio of chopper for braking operation at rated torque & 300 rpm.	**4**	**3**	**7**
		UNIT-V			
9.	**a).**	**Explain** with equations and torque-speed characteristics of Induction motor. How can we control speed of an induction motor by AC voltage controller? Why this voltage control method is inefficient?	**5**	**4**	**7**
	b).	What is meant by slip power and how can we extract it? **Demonstrate** Static scherbius drive with equations and characteristics?	**5**	**3**	**7**
		OR			
10.	**a).**	**Sketch** the speed-torque characteristics for an induction motor with Variable Frequency Control using cycloconverter.	**5**	**3**	**7**
	b).	**Explain** about slip power recovery? **Discriminate** Static Kramer's Drive with circuit diagram.	**5**	**4**	**7**

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

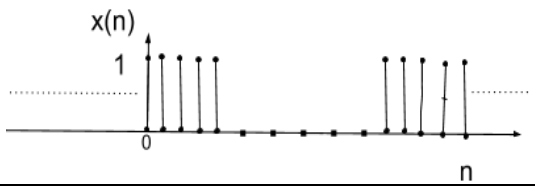
NOTE : Questions can be given as A,B splits or as a single Question for 14 marks

		Course Code: B20EE3204			
		SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)			**R20**
		III B.Tech. II Semester MODEL QUESTION PAPER			
		ELECTRICAL DISTRIBUTION SYSTEMS			
		Electrical & Electronics Engineering			
Time: 3 Hrs.				**Max. Marks: 70 M**	
		Answer **ONE Question** from **EACH UNIT**			
		All questions carry equal marks			
		Assume suitable data if necessary			
			CO	**KL**	**M**
		UNIT-I			
1.	**a).**	**Illustrate** the following terms with suitable examples: (i) Load factor, (ii) Loss factor, (iii) Contribution factor and (iv) Diversity factor.	**1**	**3**	**7**
	b).	**Classify** the Loads and give its characteristics.	**1**	**3**	**7**
		OR			
2.	**a).**	**Derive** the relation between Load factor and Loss factor.	**1**	**3**	**7**
	b).	A feeder supplies 2MW to an area. The total losses at peak are 100kW and units supplied to that area during a year are 5.61 million. **Calculate** the Loss factor.	**1**	**3**	**7**
		UNIT-II			
3.	**a).**	**Draw** a neat sketch of typical primary distribution feeder and write the various factors that are to be considered in selecting primary feeder rating.	**2**	**4**	**7**
	b).	**Derive** the voltage drop in feeder lines with uniformly distributed load.	**2**	**4**	**7**
		OR			
4.	**a).**	**Classify** the basic distribution system basing on scheme of connection.	**2**	**4**	**7**
	b).	**Draw** the single line diagram of radial type primary feeder and mention the factors that influence the selection of primary feeder.	**2**	**4**	**7**
		UNIT-III			
5.	**a).**	**Demonstrate** how the economical p.f arrived at for a given distribution system with different loads.	**3**	**3**	**7**
	b).	**Determine** the best values of capacitor banks to improve the load p.f. from 0.75 to 0.9 from the following data: Load 800 KVA, operating voltage 3.3 kV (i) Star connection and (ii) Delta connection.	**3**	**3**	**7**
		OR			
6.	**a).**	**Express** the necessity of voltage control and p.f. correction in distribution systems.	**3**	**3**	**7**
	b).	**Demonstrate** the practical procedure to determine the best capacitor location.	**3**	**3**	**7**

		UNIT-IV			
7.	**a).**	**Examine** the factors that need to be considered for selecting an ideal location of Substation.	**4**	**3**	**7**
	b).	**Draw** the single line diagram of 33-kV / 11-kV substation and explain the purpose of each component.	**4**	**3**	**7**
8.	**a).**	**Classify** the cables and explain their construction.	**4**	**3**	**7**
	b).	**Examine** the advantages and disadvantages of underground cables over overhead lines?	**4**	**3**	**7**
		UNIT-V			
9.	**a).**	**Demonstrate** the main objectives of distribution system protection.	**5**	**3**	**7**
	b).	**Illustrate** the coordination among the Protective devices used in Distribution system.	**5**	**3**	**7**
		OR			
10.	**a).**	**Illustrate** the co-ordination procedure between fuse and a circuit breaker.	**5**	**3**	**7**
	b).	**Demonstrate** the over voltage protection in distribution systems.	**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 14 marks

				Course Code: B20EE3205	
		SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)			**R20**
		III B.Tech. II Semester MODEL QUESTION PAPER			
		DIGITAL SIGNAL PROCESSING			
		Electrical and Electronics Engineering			
Time: 3 Hrs.				**Max. Marks: 70 M**	
		Answer **ONE Question** from **EACH UNIT**			
		All questions carry equal marks			
		Assume suitable data if necessary			
			CO	**KL**	**M**
		UNIT-I			
1.	**a).**	**Explain** Sampling Theorem and Give the importance of Nyquist rate with respect to aliasing effect.	**1**	**3**	**7**
	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**	**7**
		UNIT-II			
3.	**a).**	**Find** the frequency response of the system with unit sample response h(n)= 1, $0\le n\le N-1$ and h(n)= 0, else where	**2**	**4**	**7**
	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 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**	**7**

		UNIT-III			
5.	**a).**	**Explain** radix-2 DIT FFT algorithm in detail by taking 8 points	**3**	**3**	**7**
	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 FFT algorithm	**3**	**4**	**7**
		UNIT-IV			
7.	**a).**	**Explain** about IIR filter design using Bilinear transformation	**4**	**4**	**7**
	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 design method	**4**	**4**	**7**
		OR			
8.	**a).**	**Convert** the single pole low pass filter with system function $H(z) = \frac{0.5(1+z^{-1})}{1-0.302\,z^{-2}}$ 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 invariant technique. Assume sampling period T=1sec.	**4**	**4**	**7**
		UNIT-V			
9.	**a).**	**Compare** IIR filter and FIR filter	**5**	**4**	**7**
	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**	**7**

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

NOTE : Questions can be given as A,B splits or as a single Question for 14 marks

Course Code: B20EE3206

SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A) **R20**

III B.Tech. II Semester MODEL QUESTION PAPER

SOFT COMPUTING TECHNIQUES

Electrical and Electronics Engineering

Time: 3 Hrs. **Max. Marks: 70 M**

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

All questions carry equal marks

Assume suitable data if necessary

			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**	**7**
	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**	**14**
		UNIT-II			
3.		**Explain** various membership functions used for fuzzy logic	**2**	**3**	**14**
		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**	**7**
		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**	**7**
		OR			
6.		**Demonstrate** how ANN is used for electrical load forecasting problem	**3**	**4**	**14**
		UNIT-IV			
7.	**a).**	**Explain** the concept of objective function and constraints	**4**	**3**	**7**
	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**	**14**
		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;	**5**	**4**	**14**
		OR			

10.		**Use** the flow chart of PSO and explain various steps in PSO	**5**	**3**	**14**

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

NOTE : Questions can be given as A,B splits or as a single Question for 14 marks