

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR (AUTONOMOUS) B.Tech II Year I Semester Supplementary Examinations August-2022 SIGNALS, SYSTEMS AND RANDOM PROCESSES (Electronics and Communication Engineering) Time: 3 hours Max. Marks: 60 INTE-0 Max. Marks: 60 (Answer all Five Units 5 x 12 = 60 Marks) INTE-0 INTE-0 Max. Marks: 60 (Answer all Five Units 5 x 12 = 60 Marks) INTE-0 INTE-0 INTE-0 INTE-0 Max. Marks: 60 (Answer all Five Units 5 x 12 = 60 Marks) INTE-0 INTE-0 INTE-0 INTE-0 Steech the following signals L3 6Marks) INTE-0 IIII Steech II Steech III Steech IIII Steech IIIII Steech IIII Steech IIII Steech IIII Steech IIII Steech IIII S	R	eg. No:													
(AUTONOMOUS)B. Tech II Year I Semester Supplementary Examinations August-2022 SIGNALS, SYSTEMS AND RANDOM PROCESSES 		SIDDI	HART	H INS	TITU	TE O	F EN	GINE	ERIN	G & '	ГЕСН	INOL	OGY::	PUTTUR	
B. Jech if year 1 Semester Supplementary Examinations August-2022 SIGNALS, SYSTEMS AND RANDOM PROCESSES (Electronics and Communication Engineering) Max. Marks: 60 (Answer all Five Units 5 x 12 = 60 Marks) UNIT-1 1 What are the basic operations on signals? Illustrate with an example. L1 12M 2 a Find which of the signals are causal or non-causal. L3 6M (i) $x(t) = c^a u(t-1)$ (ii) $x(n) = u(n+4) - u(n-2)$ b Sketch the following signals L3 6M (i) $x(t) = c^a u(t-2) - 2 u(t-3)$ (ii) $x(1) = t(t-1) - t(t-3) + r(t-4)$ UNIT-II 3 a Explain about representation of a signal in exponential Fourier series. L2 6M Demostrate how Fourier Transform derived from Fourier transform. L6 12M OR A berive the Transfer function and impulse response of an LTI system. L3 6M b Define Linear time variant, Linear time-invariant, step response of the system. L1 6M OR OR OR OR OR		D T	L. U	Veee			(AU	TON	OMOU	IS)			A		
ISTENDAND KARDOW PROCESSES(Electronics and Communication Engineering)Time: 3 hoursMax. Marks: 60(Answer all Five Units 5 x 12 = 60 Marks)UNIT-1]1What are the basic operations on signals? Illustrate with an example.L112MOR2a Find which of the signals are causal or non-causal.L36MOR2a Find which of the signals are causal or non-causal.L36MOR2a Find which of the signals are causal or non-causal.L36MOR2a Explain about representation of a signal in exponential Fourier series.L26MORA state and Prove any four properties of Continuous time Fourier transform.L612MORA perive the Transfer function and impulse response of an LTI system.L36MNOTORA Determine the Laplace transform of the signal x(t) = e nd u(t) - e ^{tot} u(-t) and alsofind its ROC.b Find the Laplace transforms and region for		В.І	ech II	Year		estei SVS	' Sup		entary		mina	tions	Augus	st-2022	
Time: 3 hours Max. Marks: 60 (Answer all Five Units 5 x 12 = 60 Marks) [INIT-7] 1 What are the basic operations on signals? Illustrate with an example. L1 12M OR 2 a Find which of the signals are causal or non-causal. L3 6M (i) $x(t) = e^{it} u(t-1)$ (ii) $x(t) = u(t+4) - u(t-2)$ b Sketch the following signals (i) $x(t) = 2^{it} u(t-1)$ (ii) $x(t) = u(t+1) - u(t-3) + u(t-4)$ UNIT-II 3 a Explain about representation of a signal in exponential Fourier series. L3 6M b Demonstrate how Fourier Transform derived from Fourier Series. L3 6M b Demonstrate how Fourier Transform derived from Fourier series. L3 6M b Demonstrate how Fourier Transform derived from Fourier series. L3 6M b Define Linear time variant, Linear time-invariant, step response of the system. L1 6M b Define Linear time variant, Linear time system is expressed as $h(t) = e^{-it} u(t)$. Find the Frequency response of the system b Define Linear time variant, Linear time system is expressed as $h(t) = e^{-it} u(t)$. Find the Frequency response of the system b Define the Following Properties of LTI System c DNIT-IV 7 a Determine the Laplace transform of the signal $x(t) = e^{-it} u(t) - e^{-it} u(t-1)$ (ii) $x(t) = e^{-i[t]}$ OR 8 Let X is a continuous random variable with density function $f_x(x) = x/9 + k = 0.ex < 6$ 0 Otherwise i) Find the Laplace transform of a stationary random process is an even function of τ . b Explain the classification of Random Processes L2 6M (i) $ R_{xx}(t) \le R_{xx}(0)$ (ii) $ R_{xx}(t) \le R_{xx}(0)$ (iii) $ R_{xx}(t) \le R_{xx}(0)$				SIG	(Electi	ronics	and C	Commi	inicati	on En	ginee	ring)	5E.5		
(Answer all Five Units 5 x 12 = 60 Marks) UNT-11What are the basic operations on signals? Illustrate with an example.L112M OR2a Find which of the signals are causal or non-causal. (i) $x(t)=e^{3}u(t-1)$ (ii) $x(n)=u(n+4)-u(n-2)$ b Sketch the following signalsL36M (i) $x(t)=2 u(t+2)-2 u(t-3)$ (ii) $x(t)=r(t)-r(t-1)-r(t-3)+r(t-4)$ UNIT-IIS3a Explain about representation of a signal in exponential Fourier series. Demonstrate how Fourier Transform derived from Fourier Series.L26M 6M5a Derive the Transfer function and impulse response of an LTI system. b Define Linear time variant, Linear time-invariant, step response of the system. b Define Linear time variant, Linear time-invariant, step response of the system. b Define the Following Properties of LTI System i) Distributive Property (ii) Associative Property i) Distributive Property (ii) Associative Property UNIT-IVL16M 6M7a Determine the Laplace transform of the signal $x(t)=e^{-at} u(t) - e^{-bt} u(-t)$ and alsofind its ROC. b Find the Laplace transform of the signal $x(t)=e^{-at} u(t) - e^{-bt} u(-t)$ and $(i) x(t)=e^{-3t} u(t) - (ii) x(t)=e^{-at} (t) - e^{-bt} u(-t)$ and $f_X(x) = x^{3} + k - 0 < x < 6$ 0 Otherwise i) Find 'k' ii) Find p[2 <x<5]< td="">CN9a Show that the autocorrelation function of a stationary random process is an even function of τ. b Explain the classification of Random ProcessesL26M10Prove the following (i) R_{xx}(t) () $\leq R_{xx}(0)$ (ii) R_x(t) () $\leq R_{xx}(0) < R_{xx}(0) < R_{xx}(0)$L612M</x<5]<>	Time: 3 hours										Max. Marks: 60				
UNIT-11What are the basic operations on signals? Illustrate with an example.L112M0R0R122a Find which of the signals are causal or non-causal.L36M(i) $\chi(t) = e^{2t} u(t-1)$ (ii) $\chi(n) = u(n+4) - u(n-2)$ b Sketch the following signalsL36M(i) $\chi(t) = 2 u(t+2) - 2 u(t-3)$ (ii) $\chi(t) = r(t) - r(t-1) - r(t-3) + r(t-4)$ L36M(i) $\chi(t) = 2 u(t+2) - 2 u(t-3)$ (ii) $\chi(t) = r(t) - r(t-3) + r(t-4)$ L36Mb Demonstrate how Fourier Transform derived from Fourier Series.L26Mb Demonstrate how Fourier Transform derived from Fourier transform.L612M(UNIT-III)1212M12M5a Derive the Transfer function and impulse response of an LTI system.L36Mb Define Linear time variant, Linear time-invariant, step response of the system.L16Mb Define the Following Properties of LTI SystemL16Mi) Distributive Property(ii) Associative Property126Mb Define the Laplace transform of the signal $\chi(t) = e^{-at} u(t) - e^{-bt} u(-t)$ and alsofind its ROC.L16Mb Find the Laplace transforms and region for the following signalsL16Mi) $\chi(t) = e^{-3t} u(t-1)$ (ii) $\chi(t) = e^{-4t-1}$ C2M6a Show that the autocorrelation function of a stationary random process is an even function of τ .L36Mb Define the classification of Random ProcessesL26Mi) Find 'k' ii) Find p[2 <x<5]< td="">INIT-IV9aShow that the autocor</x<5]<>					(Ans	wer a	ll Five	Units	5 x 1	2 = 6	0 Mar	ks)			
1What are the basic operations on signals? Illustrate with an example. ORL112M2a Find which of the signals are causal or non-causal. (i) $x(t) = e^{2t} u(t-1)$ (ii) $x(n)=u(n+4)-u(n-2)$ b Sketch the following signalsL36M3a Explain about representation of a signal in exponential Fourier series. b Demonstrate how Fourier Transform derived from Fourier Series. Demonstrate how Fourier Transform derived from Fourier transform. UNIT-IIL612M3a Explain about representation of a signal in exponential Fourier series. b Demonstrate how Fourier Transform derived from Fourier series. Demonstrate how Fourier transform derived from Fourier transform. UNIT-IIIL612M5a Derive the Transfer function and impulse response of an LTI system. 								UNI	T-I						
OK2a Find which of the signals are causal or non-causal. (i) $x(t) = e^{2t}$ u(t-1) (ii) $x(n)=u(n+4)-u(n-2)$ b Sketch the following signals (i) $x(t)=2$ u(t-2) - 2 u(t-3) (ii) $x(t)=r(t)-r(t-1)-r(t-3)+r(t-4)$ UNIT-IIL36M3a Explain about representation of a signal in exponential Fourier series. Demonstrate how Fourier Transform derived from Fourier Series. CORL26M4State and Prove any four properties of Continuous time Fourier transform. UNIT-IIIL612M5a Derive the Transfer function and impulse response of an LTI system. Define Linear time variant, Linear time-invariant, step response of the system. b Define the Following Properties of LTI System b Define the Following Properties of LTI System b Define the Following Properties of LTI System b Define the Eollowing Properties of LTI System b Define the Eollowing Properties of LTI System b Define the Eollowing Properties of LTI System b Define the Laplace transform of the signal $x(t) = e^{-at} u(t) - e^{-bt} u(-t)$ and alsofind its ROC. b Find the Laplace transforms and region for the following signals (i) $x(t) = e^{-st} u(t-1)$ (ii) $x(t) = e^{-at}[1]$ 6M7a Determine the Laplace transform sond region for the following signals (i) $x(t) = e^{-st} u(t-1)$ (ii) $x(t) = e^{-at}[1]$ 12M7a Let X is a continuous random variable with density function $f_X(x) = x/9+k$ $0 < x < 6$ 0 0 Otherwise i) Find 'k' ii) Find $p[2 < x < 5]$ 129a Show that the autocorrelation function of a stationary random process is an even function of r. b Explain the classification of Random Processes 0 CRL210Prove the following (ii) $ R_{xx}(t) \leq R_{xx}(0)$ (i	1	What are th	e basic	opera	tions o	on sigi	nals? I	llustra	te wit	h an e	xampl	e.		L1	12M
2a Find with or the signals are closed or non-redustat.L36M(i) $x(t) = e^{3} u(t-1)$ (ii) $x(n)=u(n+4)-u(n-2)$ b Sketch the following signalsL36M(i) $x(t)=2 u(t+2)-2 u(t-3)$ (ii) $x(n)=u(n+4)-u(n-2)$ L36M3a Explain about representation of a signal in exponential Fourier series.L26Mb Demonstrate how Fourier Transform derived from Fourier Series.L36M6a Explain about representation of a signal in exponential Fourier series.L36M6a Explain about representation of a number of continuous time Fourier transform.L612M7a Derive the Transfer function and impulse response of an LTI system.L36Mb Define Linear time variant, Linear time-invariant, step response of the system.L16M6a The impulse response of a continuous-time system is expressed as $h(1)-e^{-2i}u(t)$. Find the Frequency response of the systemL16Mb Define the Following Properties of LTI SystemL16M6Mi) Distributive Property(ii) Associative PropertyL16Mi) Distributive Property(ii) Associative PropertyL16Mi) $x(x)=e^{-5i}u(t-1)$ (ii) $x(t)=e^{-4 t }$ ORL312M7a Determine the Laplace transforms and region for the following signalsL16Mi) $x(x)=e^{-5i}u(t-1)$ (ii) $x(t)=e^{-4 t }$ ORL312Mf $\chi(x)=x/9+k$ $000L16Mi) x(x)=e^{-5i}u(t-1)(ii) x(t)=e^{-4 t }I2MI2Mii) Find 'k' iii$	2	OR a Find which of the signals are causal or non-causal												13	6M
bSketch the following signalsL36M(i) $x(t)=2 u(t+2)-2 u(t-3)$ (ii) $x(t)=r(t)-r(t-3)+r(t-4)$ UNIT-113aExplain about representation of a signal in exponential Fourier series.L26MbDemonstrate how Fourier Transform derived from Fourier Series.L36M•OR0612M5aDerive the Transfer function and impulse response of an LTI system.L36MbDefine Linear time variant, Linear time-invariant, step response of the system.L16M6aThe impulse response of a continuous-time system is expressed as h(t)=e ⁻²¹ u(t).Find the Frequency response of the systemL16MbDefine the Following Properties of LTI System i) Distributive PropertyL16M6M7aDetermine the Laplace transform of the signal $x(t)=e^{-at} u(t) - e^{-bt} u(-t)$ and alsofind its ROC.L56MbFind the Laplace transforms and region for the following signalsL16M $(i)x(t)=e^{-5i} u(t-1)$ $(ii) x(t)=e^{-at}[t]]$ ORL312M8Let X is a continuous random variable with density function 		(i) $\mathbf{x}(t) = \mathbf{e}$	(i) $x(t) = e^{2t} u(t-1)$ (ii) $x(n) = u(n+4) - u(n-2)$											15	UNI
(i) $x(t)=2 u(t+2) - 2 u(t-3)$ (ii) $x(t)=r(t)-r(t-1)-r(t-3)+r(t-4)$ UNIT-11 3 a Explain about representation of a signal in exponential Fourier series. L3 6M b Demonstrate how Fourier Transform derived from Fourier Series. L3 6M 4 State and Prove any four properties of Continuous time Fourier transform. L6 12M UNIT-111 5 a Derive the Transfer function and impulse response of an LTI system. L3 6M b Define Linear time variant, Linear time-invariant, step response of the system. L1 6M oR 6 a The impulse response of a continuous-time system is expressed as h(t)=e ^{-3t} u(t).Find the Frequency response of the system b Define the Following Properties of LTI System L1 6M i) Distributive Property (ii) Associative Property UNIT-IV 7 a Determine the Laplace transform of the signal $x(t) = e^{-at} u(t) - e^{-bt} u(-t)$ and L5 6M alsofind its ROC. b Find the Laplace transforms and region for the following signals L1 6M (i) $x(t)=e^{-5t} u(t-1)$ (ii) $x(t)=e^{-at} [t]$ 0R 8 Let X is a continuous random variable with density function f x (x) = x/9+k 0 <x<6 0 Otherwise i) Find 'k' ii) Find p[2<x<5] 9 a Show that the autocorrelation function of a stationary random process is an even function of τ. b Explain the classification of Random Processes L2 6M (i) $R_{xx}(t) \le R_{xx}(0)$ (ii) $R_{xx}(t) \le R_{xx}(0)$ (ii) $R_{xx}(t) \le R_{xx}(0)$ (ii) $R_{xx}(t) \le R_{xx}(0)$</x<5] </x<6 		b Sketch the following signals												L3	6M
Internal3 a Explain about representation of a signal in exponential Fourier series.L26Mb Demonstrate how Fourier Transform derived from Fourier Series.L36M4 State and Prove any four properties of Continuous time Fourier transform.L612M UNIT-IIIUNIT-III 65 a Derive the Transfer function and impulse response of an LTI system.L36Mb Define Linear time variant, Linear time-invariant, step response of the system.L16M6 a The impulse response of a continuous-time system is expressed as h(t)=e ⁻²¹ u(t). Find the Frequency response of the systemL16Mb Define the Following Properties of LTI SystemL16M6Mi) Distributive Property(ii) Associative PropertyL16Mii) Distributive Property(ii) Associative PropertyL16Mii) x(t)=e ⁻⁵¹ u(t-1)(ii) x(t)=e ^{-a1[1]} CR8Let X is a continuous random variable with density function f x(x) = x/9+kL312Mf x(x) = x/9+k0 <x<6 </x<6 00012M12Mga Show that the autocorrelation function of a stationary random process is an even function of r.L26M9a Show that the autocorrelation of Random ProcessesL26Mii) R _{xx} (r) ≤ R _{xx} (0) iii) P (r) = C01212Miii) R _{xx} (r) < R _{xx} (0) iii) P (r) = C01212Miii) R _{xx} (r) < R _{xx} (0) iii) P (r) = C01212iiiiiiiii 10121212iiiiiiiiii		(i) x(t)=2	u(t+2)	- 2 u(t	-3)	(ii) >	(t)=r(t)-r(t-1	L)-r(t-3	8)+r(t-	4)				
5 a Deprint about representation of a signal in exponent router series. L3 6M 0R 0R 12M 6M 4 State and Prove any four properties of Continuous time Fourier transform. L6 12M 5 a Derive the Transfer function and impulse response of an LTI system. L3 6M b Define Linear time variant, Linear time-invariant, step response of the system. L1 6M 6 a The impulse response of a continuous-time system is expressed as h(t)=e ^{-2t} u(t).Find the Frequency response of the system L3 6M b Define the Following Properties of LTI System L1 6M i) Distributive Property (ii) Associative Property 11 6M i) Distributive Property (ii) Associative Property 11 6M alsofind its ROC. b Find the Laplace transform of the signal x(t)= e ^{-at} u(t) - e ^{-bt} u(-t) and alsofind its ROC. L5 6M b Find the Laplace transforms and region for the following signals L1 6M (i)x(t)=e ^{-5t} u(t-1) (ii) x(t)=e ^{-at t} 0R 12 6M s tet X is a continuous random variable with density function f _X (x) = x/9+k 0 <x<6< td=""> 0 0 <</x<6<>	3	a Explain	ahout r	enrese	ntatio	n of a	sional	in exi	onent	ial Fo	urier s	eries		L2	6M
OR4State and Prove any four properties of Continuous time Fourier transform.L612MUNIT-IIIUNIT-III6M5a Derive the Transfer function and impulse response of an LTI system.L36Mb Define Linear time variant, Linear time-invariant, step response of the system.L16M6a The impulse response of a continuous-time system is expressed as $h(t)=e^{-2t}u(t)$. Find the Frequency response of the systemL36Mb Define the Following Properties of LTI SystemL16M6Mi) Distributive Property(ii) Associative PropertyL16Mi) Distributive Property(ii) Associative PropertyL16Ma Determine the Laplace transform of the signal $x(t)=e^{-at}u(t) - e^{-bt}u(-t)$ and alsofind its ROC.L16Mb Find the Laplace transforms and region for the following signalsL16M(i) $x(t)=e^{-5t}u(t-1)$ (ii) $x(t)=e^{-at} ^{1} $ OR12M8Let X is a continuous random variable with density functionL312M $f_X(x) = x/9+k$ $00012M9a Show that the autocorrelation function of a stationary random process is an even function of \tau.L26M9a Show that the autocorrelation function of a stationary random process is an even function of \tau.L26M10Prove the followingL612M(i) R_{xx}(\tau) \leq R_{xx}(0)(ii) R_{xx}(\tau) \leq R_{xx}(0)(iii) R_{xx}(\tau) \leq R_{xx}(0)$	U	b Demons	trate ho	ow Fou	irier T	ransfo	rm de	rived	from F	Fourier	r Serie	erres.			6M
4 State and Prove any four properties of Continuous time Fourier transform. L6 12M UNIT-III UNIT-III 6M 5 a Derive the Transfer function and impulse response of an LTI system. L3 6M b Define Linear time variant, Linear time-invariant, step response of the system. L1 6M 6 a The impulse response of a continuous-time system is expressed as h(t)=e ^{-2t} u(t). Find the Frequency response of the system L3 6M b Define the Following Properties of LTI System L1 6M i) Distributive Property (ii) Associative Property E 6M i) Distributive Property (ii) Associative Property E 6M i) Determine the Laplace transform of the signal $x(t) = e^{-at} u(t) - e^{-bt} u(-t)$ and alsofind its ROC. L1 6M b Find the Laplace transforms and region for the following signals L1 6M (i) $x(t)=e^{-5t} u(t-1)$ (ii) $x(t)=e^{-at} _1 $ 0R 12M 8 Let X is a continuous random variable with density function L3 12M $f_X(x) = x/9+k$ $0 < x < 6$ 0 0 0 9 a Show that the autocorrelation function of a stationary random p	_							O	R	_					
UNIT-III5 a Derive the Transfer function and impulse response of an LTI system.L36Mb Define Linear time variant, Linear time-invariant, step response of the system.L16M6 a The impulse response of a continuous-time system is expressed as h(t)=e ^{-2t} u(t).Find the Frequency response of the systemL36Mb Define the Following Properties of LTI System i) Distributive PropertyL16M7 a Determine the Laplace transform of the signal $x(t) = e^{-at} u(t) - e^{-bt} u(-t)$ and alsofind its ROC.L56Mb Find the Laplace transforms and region for the following signals (i) $x(t)=e^{-5t} u(t-1)$ (ii) $x(t)=e^{-at} _1 $ L16M8 Let X is a continuous random variable with density function $f_X(x) = x/9+k$ $0 < x < 6$ 0 Otherwise i) Find 'k' ii) Find $p[2 < x < 5]$ L16M9 a Show that the autocorrelation function of a stationary random process is an even function of r.L26M9 Prove the following (i) $R_{xx}(\tau) \le R_{xx}(0)$ L612M(i) $R_{xx}(\tau) \le R_{xx}(0)$ L612M	4	State and P	State and Prove any four properties of Continuous time Fourier transform.												12M
b Define Linear time variant, Linear time-invariant, step response of the system. OR 6 a The impulse response of a continuous-time system is expressed as h(t)= e^{-2t} u(t).Find the Frequency response of the system b Define the Following Properties of LTI System i) Distributive Property (ii) Associative Property UNIT-IV 7 a Determine the Laplace transform of the signal $x(t) = e^{-at} u(t) - e^{-bt} u(-t)$ and alsofind its ROC. b Find the Laplace transforms and region for the following signals (i) $x(t)=e^{-5t} u(t-1)$ (ii) $x(t)=e^{-a t }$ OR 8 Let X is a continuous random variable with density function f _X (x) = $x/9+k$ $0 < x < 6$ 0 Otherwise i) Find 'k' ii) Find p[2 <x<5] 9 a Show that the autocorrelation function of a stationary random process is an even function of τ. b Explain the classification of Random Processes L2 6M OR 10 Prove the following (i) $R_{xx}(\tau) \le R_{xx}(0)$ ii) $R_{xx}(\tau) \le R_{xx}(0)$ iii) $R_{xx}(\tau) \le R_{xx}(0)$</x<5] 	5	UNIT-III a Derive the Transfer function and impulse response of an LTL system												L3	6M
OR6 a The impulse response of a continuous-time system is expressed as $h(t)=e^{-2t}$ u(t).Find the Frequency response of the systemL36Mb Define the Following Properties of LTI System i) Distributive PropertyL16Moptimize Property(ii) Associative Property UNIT-IV67 a Determine the Laplace transform of the signal $x(t) = e^{-at}$ u(t) - e^{-bt} u(-t) and alsofind its ROC. b Find the Laplace transforms and region for the following signalsL16M6 (i)x(t)= e^{-5t} u(t-1)(ii) $x(t)=e^{-at} ^{t} $ ORL312MOR8 Let X is a continuous random variable with density function $f_X(x) = x/9+k$ 0L312MOR9 a Show that the autocorrelation function of a stationary random process is an even function of τ . b Explain the classification of Random ProcessesL26MOR10Prove the following i) $ R_{xx}(\tau) \leq R_{xx}(0)$ iii) $ R_{xx}(\tau) \leq R_{xx}(0)$ iii) $ R_{xx}(\tau) \leq R_{xx}(0)$	U	b Define Linear time variant, Linear time-invariant, step response of the system.											L1	6M	
6 a The impulse response of a continuous-time system is expressed as $h(t)=e^{-2t}$ u(t). Find the Frequency response of the system L3 6M b Define the Following Properties of LTI System L1 6M i) Distributive Property (ii) Associative Property 6 7 a Determine the Laplace transform of the signal $x(t) = e^{-at} u(t) - e^{-bt} u(-t)$ and L5 6M alsofind its ROC. b Find the Laplace transforms and region for the following signals L1 6M 6 (i) $x(t) = e^{-5t} u(t-1)$ (ii) $x(t) = e^{-at} ^t $ 6N 6M OR 8 Let X is a continuous random variable with density function $f_X(x) = x/9+k$ 0 <x<6< td=""> 12M 9 a Show that the autocorrelation function of a stationary random process is an even function f_{τ}. L2 6M OR 10 Prove the following L6 12M (i) $R_{xx}(\tau) \le R_{xx}(0)$ (i) $R_{xx}(\tau) \le R_{xx}(0)$ L6 12M</x<6<>					_			O	R		-				
b Define the Following Properties of LTI System i) Distributive Property (ii) Associative Property UNIT-IV 7 a Determine the Laplace transform of the signal $x(t) = e^{-at} u(t) - e^{-bt} u(-t)$ and L5 6M alsofind its ROC. b Find the Laplace transforms and region for the following signals (i) $x(t)=e^{-5t} u(t-1)$ (ii) $x(t)=e^{-a t }$ OR 8 Let X is a continuous random variable with density function f _X (x) = x/9+k 0 <x<6 0 Otherwise i) Find 'k' ii) Find p[2<x<5] 9 a Show that the autocorrelation function of a stationary random process is an even function of τ. b Explain the classification of Random Processes (i) $R_{xx}(\tau) \le R_{xx}(0)$ (i) $R_{xx}(\tau) \le R_{xx}(0)$ (i) $R_{xx}(\tau) \le R_{xx}(0)$</x<5] </x<6 	6	a The imp h(t)-e ^{-2t}	ulse res	sponse	of a c	ontinu	ious-ti	me sy	stem i	s expr	ressed	as		L3	6M
i) Distributive Property (ii) Associative Property UNIT-IV 7 a Determine the Laplace transform of the signal $x(t) = e^{-at} u(t) - e^{-bt} u(-t)$ and L5 6M alsofind its ROC. b Find the Laplace transforms and region for the following signals L1 6M (i) $x(t)=e^{-5t} u(t-1)$ (ii) $x(t)=e^{-a t }$ 0R 8 Let X is a continuous random variable with density function L3 12M $f_X(x) = x/9+k$ $0 < x < 6$ 0 Otherwise i) Find 'k' ii) Find p[2 <x<5] 9 a Show that the autocorrelation function of a stationary random process is an L2 6M even function of τ. b Explain the classification of Random Processes L2 6M 0 Prove the following L6 12M (i) $R_{xx}(\tau) \le R_{xx}(0)$ (ii) $R_{xx}(\tau) \le R_{xx}(0)$</x<5] 		b Define th	b Define the Following Properties of LTI System												6M
UNIT-IV7 a Determine the Laplace transform of the signal $x(t) = e^{-at} u(t) - e^{-bt} u(-t)$ and L5 6M alsofind its ROC.6Mb Find the Laplace transforms and region for the following signalsL1 6M $(i)x(t)=e^{-5t} u(t-1)$ $(ii) x(t)=e^{-a t }$ OR8 Let X is a continuous random variable with density functionf $_X(x) = x/9+k$ $0 < x < 6$ 0Otherwisei) Find 'k'ii) Find $p[2 < x < 5]$ UNIT-V9 a Show that the autocorrelation function of a stationary random process is an even function of τ .b Explain the classification of Random ProcessesL2OR10 Prove the followingL6(i) $ R_{xx}(\tau) \le R_{xx}(0)$ L6(ii) $ R_{xx}(\tau) \le R_{xx}(0)$ L6		i) Distrib	outive I	Proper	ty	(ii)	Assoc	iative	Prope	rty					
7a Determine the Laplace transform of the signal $x(t) = e^{-x} u(t) - e^{-x} u(-t)$ andLS6Malsofind its ROC.b Find the Laplace transforms and region for the following signalsL16M $(i)x(t)=e^{-5t} u(t-1)$ $(ii) x(t)=e^{-a t }$ ORL312MN OR 8 Let X is a continuous random variable with density functionL312M $f_X(x) = x/9+k$ $0 < x < 6$ 0Otherwise12M $(i) K^*$ (i) Find $p[2 < x < 5]$ UNIT-V 9a Show that the autocorrelation function of a stationary random process is an even function of τ .L26MOR10 Prove the followingL612M $(i) R_{xx}(\tau) \le R_{xx}(0)$ L612M $(i) R_{xx}(\tau) \le R_{xx}(0)$ L612M	_					c	6	UNII	-IV		at co	-ht			
b Find the Laplace transforms and region for the following signals (i) $x(t)=e^{-5t}u(t-1)$ (ii) $x(t)=e^{-a t }$ OR 8 Let X is a continuous random variable with density function f _X (x) = x/9+k 0 <x<6 0 Otherwise i) Find 'k' ii) Find p[2<x<5] UNIT-V 9 a Show that the autocorrelation function of a stationary random process is an even function of τ. b Explain the classification of Random Processes L2 6M OR 10 Prove the following (i) $R_{xx}(\tau) \le R_{xx}(0)$ ii) $R_{xx}(\tau) \le R_{xx}(0)$</x<5] </x<6 	Ί	a Determinal also find	ne the	Lapla C	ce trai	nsforn	n of t	he sig	nal x((t)= e	" u(t)	- e •	u(-t) ar	nd L5	6M
(i) $x(t)=e^{-5t} u(t-1)$ (ii) $x(t)=e^{-a t }$ OR 8 Let X is a continuous random variable with density function f _X (x) = x/9+k 0 <x<6 0 Otherwise i) Find 'k' ii) Find p[2<x<5] UNIT-V 9 a Show that the autocorrelation function of a stationary random process is an L2 6M even function of τ. b Explain the classification of Random Processes L2 6M OR 10 Prove the following (i) $R_{xx}(\tau) \le R_{xx}(0)$ ii) P (τ) = P (τ)</x<5] </x<6 		b Find the	Laplac	e. e trans	sforms	and r	egion	for the	e follo	wing	signal	S		L1	6M
OR8Let X is a continuous random variable with density functionL312M $f_X(x) = x/9+k$ $0 < x < 6$ 000Otherwise0Otherwisei) Find 'k'ii) Find p[2 < x < 5]		(i)x(t)= $e^{-5t}u(t-1)$ (ii) x(t)= $e^{-a t }$													
f Let <i>A</i> is a continuous function variable with density function $f_X(x) = x/9+k$ $0 < x < 6$ 0 Otherwise i) Find 'k' ii) Find p[2 <x<5] 9 a Show that the autocorrelation function of a stationary random process is an L2 6M even function of τ. b Explain the classification of Random Processes L2 6M 0R 10 Prove the following (i) $R_{xx}(\tau) \le R_{xx}(0)$ ii) P (τ) = P (τ)</x<5] 	8	Let X is a c	ontinu	ous ra	ndom	variat	le wit	UI h dens	K sity fuu	nction				13	12M
$\begin{array}{cccc} 0 & \text{Otherwise} \\ \text{i) Find `k' & ii) Find p[2$	U	$f_X(x) = x/2$	9+k	0 < x < 0	5	vuriue		ii della	ity ita	letion					12111
1) Find $[K' = 1i]$ Find $p[2 < x < 5]$ UNIT-V 9 a Show that the autocorrelation function of a stationary random process is an L2 6M even function of τ . b Explain the classification of Random Processes L2 6M OR 10 Prove the following (i) $ R_{xx}(\tau) \le R_{xx}(0)$ ii) $P_{xx}(\tau) = P_{xx}(\tau)$		0	•• \	Otherv	vise										
9 a Show that the autocorrelation function of a stationary random process is an even function of τ . b Explain the classification of Random ProcessesL26MOR10 Prove the following (i) $ R_{xx}(\tau) \le R_{xx}(0)$ ii) P. (τ) = P. (τ)L612M		1) Find K	11)	Find p	o[2 <x<< td=""><td>[5]</td><td></td><td>TINIT</td><td>Γ_V</td><td></td><td></td><td></td><td></td><td></td><td></td></x<<>	[5]		TINIT	Γ_V						
even function of τ . b Explain the classification of Random Processes CR 10 Prove the following (i) $ R_{xx}(\tau) \le R_{xx}(0)$ ii) $P_{xx}(\tau) = P_{xx}(\tau)$	9	a Show that the autocorrelation function of a stationary random process is an												an L2	6M
b Explain the classification of Random Processes D D D D D D D D		even fun	ctiono	f τ.						5		Ţ			
10 Prove the following (i) $ R_{xx}(\tau) \le R_{xx}(0)$ (ii) $R_{xx}(\tau) = R_{xx}(0)$		b Explain	the clas	ssificat	tion of	Rand	om Pr	ocesse	es					L2	6M
(i) $ \mathbf{R}_{xx}(\tau) \le \mathbf{R}_{xx}(0)$ (ii) $ \mathbf{R}_{xx}(\tau) \le \mathbf{R}_{xx}(0)$	10	Prove the fo	ollowin	ıg				U	N					L6	12M
ii) $\mathbf{P} (\mathbf{\tau}) = \mathbf{P} (\mathbf{\tau})$	-	(i) $ \mathbf{R}_{xx}(\tau) $	$\leq R_{xx}$ ((Ŭ)											
$\begin{array}{l} \text{II} \mathbf{K}_{XX} \left(-t \right) = \mathbf{K}_{XX} \left(t \right) \\ \text{iii} \mathbf{P} (0) = \mathbf{F} \left[\mathbf{Y}^2 (t) \right] \end{array}$		ii) $R_{xx}(-\tau)$	$= \mathbf{R}_{xx} (1 - \mathbf{F} \mathbf{V}^2)$	t) (t)]											

*** END ***