Reg. No. :					

Question Paper Code: 44404

B.E. / B.Tech. DEGREE EXAMINATION, AUGUST 2021

Fourth Semester

Electronics and Communication Engineering

14UEC404- SIGNALS AND SYSTEM

(Regulation 2014)

Duration: 1:45 hour

Maximum: 50 Marks

PART A - (10 x 2 = 20 Marks)

(Answer any ten of the following questions)

- 1. Define step signal.
- 2. Differentiate between deterministic and random signal.
- 3. State Dirichelt's condition.
- 4. Explain about Parseval's theorem.
- 5. State and prove the differentiation property of Laplace transform.
- 6. State the condition for stability.
- 7. Prove the time shifting property of discrete time Fourier transform.
- 8. What is aliasing?
- 9. What is the z-transform of $\delta(n+k)$?
- 10. List the advantages of the state variable representation of a system.
- 11. Sketch the even and odd samples of x(n)=(1,1,1,1,2).
- 12. Give mathematical representation of continuous and discrete time step response.
- 13. State Dirichelt's condition.
- 14. Explain about Parseval's theorem.
- 15. State and prove the differentiation property of Laplace transform.

PART – B (3 x 10= 30 Marks)

(Answer any three of the following questions)

16. Examine whether the following signal is periodic or not? If periodic determine the fundamental period.

(i)
$$je^{j6t}$$
,
(ii) X (t) =3u(t)+2 sin 2t.,
(iii) x (n) = Cos 4n
(iv) x(n)=1+e^{j2\pi n/3}-e^{j4\pi n/7}.
(10)

17. Determine the trigonometric form of the Fourier series of the ramp signal shown in Fig. (10)



- 18. Develop H(S) = S(S+3)/(S+2)(S+1)(S+4) Using Cascade form. (10)
- 19. Describe a real value band limited signal having no spectral components above a frequency of B Hz is determined uniquely by its values at uniform interval spaced no greater than 1/2B second apart. (10)
- 20. Find the state variable matrices *A*, *B*, *C* and *D* for the equation (10)

$$y(n) - 3y(n - 1) - 2y(n - 2) = x(n) + 5x(n - 1) + 6x(n - 2).$$