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**Question Paper Code: 34404**

B.E. / B.Tech. DEGREE EXAMINATION, DEC 2020

Fourth Semester

Electronics and Communication Engineering

01UEC404 – SIGNALS AND SYSTEMS

(Regulation 2013)

Duration: 1:15hrs

Maximum: 30 Marks

PART A - (6 x 1 = 6 Marks)

**(Answer any six of the following questions)**

- Which of the following is a signal?
  - mobile phone
  - walkie-talkie
  - personal computer
  - human speech
- A signal is defined at every instant of time is
  - output signal
  - input signal
  - DT signal
  - CT signal
- Fourier series is only applicable for
  - Energy signals
  - power signals
  - a periodic signals
  - periodic signals
- The frequency response usually represented in graph by its
  - magnitude
  - phase
  - both magnitude and phase
  - none of these
- The Laplace transform of  $u(t)$  is
  - $1/s$
  - $s^2$
  - $1/s^2$
  - $s$
- Given that  $H(s)=e^{-4s}$ . What is the impulse response of the system?
  - $\delta(t-4)$
  - $u(t-4)$
  - $e^{-4t}u(t)$
  - $e^{4t}u(t)$

7. For a finite duration causal or positive time sequence the ROC is the entire Z plane except at  
 (a)  $z=0$                       (b)  $z=\infty$                       (c)  $z=0$  and  $z=\infty$                       (d)  $z=1$
8. The Drawback of DTFT is  
 (a) 0 inverse is in CT                      (b) inverse is in DT  
 (c) all the above                      (d) none of these
9. The output due to impulse input is called as \_\_\_\_\_response.  
 (a) impulse                      (b) frequency                      (c) step                      (d) output
10. The Z-transform of correlation of the sequence  $x(n)$  &  $y(n)$  is,  
 (a)  $X^*(z)Y^*(Z^{-1})$                       (b)  $X(z)Y(z^{-1})$                       (c)  $X(z)*Y(z)$                       (d)  $X(z^{-1})Y(z^{-1})$

PART – B (3 x 8= 24 Marks)

**(Answer any three of the following questions)**

11. Sketch the following type of signals: (i)  $u(t-2)$ , (ii)  $u(t-2)$ , (iii)  $-3 u(t-2)$  and (iv)  $u(-t+1)$ . (8)
12. Find the exponential Fourier series for the halfwave rectified sinewave with amplitude  $A$  and  $T = 2\pi$ . (8)
13. Obtain the inverse Laplace transform of the function  $X(s) = 1/(s^2+3s+2)$ , ROC:  $-2 < \text{Re}\{s\} < -1$ . (8)
14. List out and explain any four properties of DTFT. (8)
15. Find the impulse response and step response for the following system  $Y(n) - 3/4 y(n-1) + 1/8 y(n-2) = x(n)$ . (8)