

Total No. of Questions : 4]

SEAT No. :

PA-4961

[Total No. of Pages : 2

[6008]-206

S.E. (Electronics/ E & T.C/E & Computers) (Insem)

SIGNALS & SYSTEMS

(2019 Pattern) (Semester - II) (204191)

Time : 1 Hour]

[Max. Marks : 30

Instructions to the candidates:

- 1) Answer Q.1 or Q.2 and Q.3 or Q.4.
- 2) Neat diagrams must be drawn wherever necessary.
- 3) Figures to the right indicate full marks.
- 4) Use of logarithmic tables slide rule, Mollier charts, electronic pocket calculator and steam tables is allowed.
- 5) Assume suitable data if necessary.

Q1) a) Find Even and odd parts of given  $x(t) = 2 + (t \cos t) + (t^2 \cdot \sin t)$  [5]

b) Check whether given signal is periodic or aperiodic. If periodic, find the period of the signal. [5]

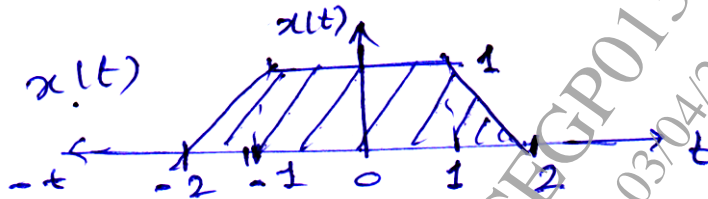
$$x(t) = (4 \cos 3t) + (2 \sin 3\pi t)$$

c) Sketch the following signals. [5]

i)  $x(t - 2)$

ii)  $3x(2t)$

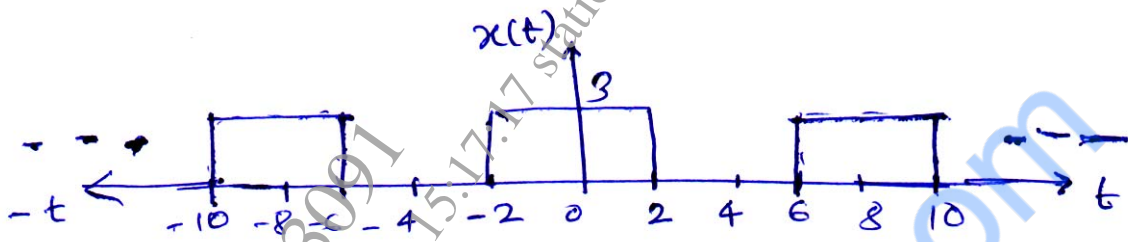
for a given signal



OR

P.T.O.

- Q2) a) Check whether given signal is Energy or power signal. Find Energy and power. [5]



- b) Check whether the given system is Linear, Time-Invariant, Memory [5]  
 $y(n) = x^2(n) + n \cdot x[n - 1]$
- c) Sketch the following signal in CT & DT form. Also, write Mathematical expression for the signals. [5]
- Unit Impulse
  - Rectangular pulse

- Q3) a) Find the convolution sum for two given signals. Using graphical method. [5]  
 $x[n] = \{1, 1, 1\}$  and  $h[n] = \{2, 1\}$ .
- b) State the properties of convolution. [5]
- c) Check whether the given system impulse response  $h(t) = 6 u(t + 3)$ , the system represents static (memory), stable and causal. [5]

OR

- Q4) a) Find the convolution Integral of two given signals. [5]  
 $h(t) = u(t)$  and  $x(t) = e^{-3t}u(t)$
- b) Draw the schematic block diagram for a given impulse response. [5]  
 $h[n] = h_1[n] + \{h_2[n] + h_3[n]\} * h_4(n)$
- c) Find Impulse Response from given system equation and sketch  $h(n)$  [5]  
 $y[n] = x[n] + 2x[n - 1] - 4x[n + 2]$

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