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 $x(t) = 2 + (t\cos t) + (t^2.\sin t)$ **[5]**

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

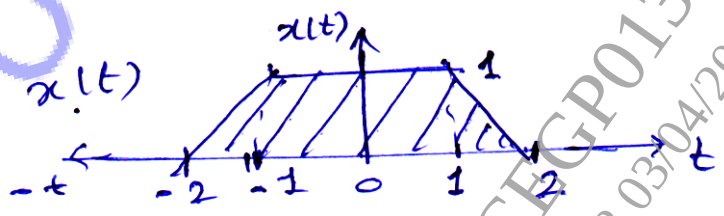
$x(t) = (4 \cos 3t) + (2 \sin 3\pi t)$

c) Sketch the following signals. **[5]**

i) $x(t - 2)$

ii) $3x(2t)$

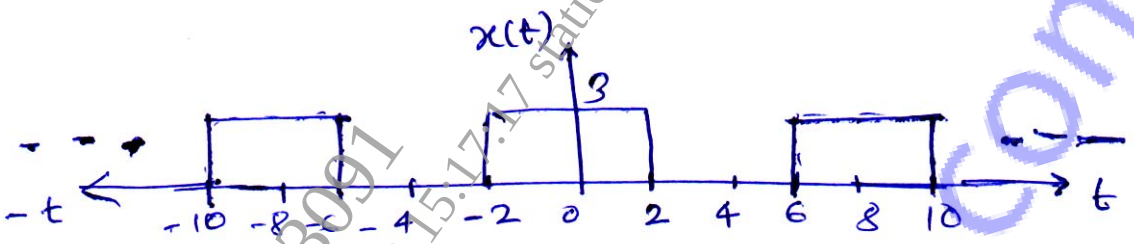
for a given signal



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]**

$y(n) = x^2(n) + n.x[n-1]$

c) Sketch the following signal in CT & DT form. Also, write Mathematical expression for the signals. **[5]**

i) Unit Impulse

ii) Rectangular pulse

Q3) a) Find the convolution sum for two given signals. Using graphical method. $x[n] = \{1, 1, 1\}$ and $h[n] = \{2, 1\}$. **[5]**

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.

$h[n] = h_1[n] + \{h_2[n] + h_3[n]\} * h_4(n)$ **[5]**

c) Find Impulse Response from given system equation and sketch $h(n)$

$y[n] = x[n] + 2x[n-1] - 4x[n+2]$ **[5]**