Vivekananda College of Engineering & Technology, Puttur [A Unit of Vivekananda Vidyavardhaka Sangha Puttur ®]

Affiliated to VTU, Belagavi & Approved by AICTE New Delhi

CRM08 Rev 1.10 30/06/22

CONTINUOUS INTERNAL EVALUATION- 1

Dept: ECE	Sem / Div: IV	Sub: Signals and Systems	S Code: 18EC45
Date: 06/07/22	Time:9:30-11:00 am	Max Marks: 50	Elective: N

Note: Answer any 2 full questions, choosing one full question from each part.

signals. (i) $x(t) y(t-1)$ (ii) $x(t+1) y(t-2)$ (iii) $x(t) y(-1-t)$ (iv) $x(4-t) y(t)$ Fig $2(a)$ -i Fig $2(a)$ -ii b Calculate the Energy or Power of the following signals: (i) $x(t) = 5 \cos(200\pi t)$ (ii) $x[n] = (-2)^n [u(n+1) - u(n-2)]$ c Sketch the following signals i) $x(t) = -u(t+3) + 2u(t+1) - 2u(t-1) + u(t-3)$ ii) $y(t) = r(t+2) - r(t+1) - r(t-1) + r(t-2)$ PART B 3 a Determine whether the following systems represented by input-output	arks	RBT	COs
b Determine whether the following signals are periodic or not. If periodic, find the fundamental period. i) $x(t) = \sin(4\pi t) + \sin(5t)$ ii) $x(t) = \sin^2(400\pi t)$ iii) $x(n) = \cos(2\pi n) + \sin(50\pi n)$ c Two signals $x(t)$ and $y(t)$ are shown in Fig. I(c). Express the signal $x(t)$ in terms of $y(t)$. Fig. 1(c)-ii OR 2 a Fig. Q2(a) shows two signals $y(t)$ and $y(t)$. Sketch the following signals. (i) $y(t) = y(t) = y(t) = y(t)$ Fig. 2(a)-ii Fig. 2(a)-ii $y(t) = y(t) = y(t) = y(t)$ b Calculate the Energy or Power of the following signals: (i) $y(t) = y(t) = y(t) = y(t) = y(t) = y(t)$ c Sketch the following signals: i) $y(t) = y(t) = y(t) = y(t) = y(t) = y(t)$ c Sketch the following signals: i) $y(t) = y(t) = y(t) = y(t) = y(t) = y(t)$ ii) $y(t) = y(t) = y(t) = y(t) = y(t)$ PART B 3 a Determine whether the following systems represented by input-output 10			
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3 a Determine whether the following systems represented by input-output 10			
Diffice titing the following of the factoring of the fact	10	1.0	CO1
relations are Linear, Memory-less, Causal and Stable.	10	L2	COI
(i) $y[n] = nx^2(n)$ ii) $y(t) = \sin(6t)x(t)$			
b Derive the expression for convolution sum. Perform Convolution 8 operation on the following signals:	8	L2	CO1

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Rev 1.10

EC

30/06/22

CONTINUOUS INTERNAL EVALUATION- 1

$x[n]=\delta[n+1]-\delta[n]+\delta[n-3]$ and $h[n]=\delta[n]-\delta[n-2]$ Sketch the resulting signal.			
Following signals represent input and impulse response of a continuous-time Linear and Time-Invariant (LTI): obtain the output for the applied input. $x(t) = u(t) - u(t-3) \qquad h(t) = e^{-2t} [u(t+1) - u(t-1)]$	7	L3	CO2
OR			
4 a Given $x[n]=u[n]-u[n-5]$, be the input signal applied to a Linear and Time-Invariant (LTI) discrete-time system and $h[n]=a^n(u[n]-u[n-7])$, be the impulse response of the system.	10	L3	CO2
Obtain the output signal, $y[n]$.			
b Determine whether the following systems represented by input-output relations are Time-Invariant and Invertible:	8	L3	COI
(i) $y(t) = x(\frac{t}{2})$ ii) $y(t) = x(2t+3)$ iii) $y[n] = nx[n]$			
The input signal $x(t)=e^{-t}u(t)$ to a LTI system whose impulse response is given by $h(t)=u(t)$ Calculate the output $y(t)$.	7	L2	CO2

Prepared by: Vinay P

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