

Total No. of Questions : 12]

SEAT No.:

P1137

[Total No. of Pages : 3

[4163]-344

May - June 2012

T.E. (Computer Engineering)
DIGITAL SIGNAL PROCESSING
(2008 Pattern) (Sem. - I)

Time : 3 Hours]

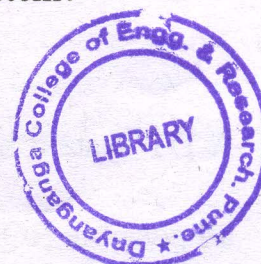
[Max. Marks : 100

Instructions to the candidates:

- 1) Answers to the two sections should be written in separate books.
- 2) Neat diagrams must be drawn whenever necessary.
- 3) Use of logarithmic tables, slide rule, Mollier charts, electronic pocket calculator and steam tables is allowed.
- 4) Assume suitable data, if necessary.
- 5) Attempt Q. 1 or Q. 2, Q. 3 or Q. 4, Q. 5 or Q. 6 from Section-I and Q. 7 or Q. 8, Q. 9 or Q. 10, Q. 11 or Q. 12 from Section-II.

SECTION - I

- Q1) a) With illustrations, explain shifting, folding and time scaling operations on discrete-time signals. [6]
- b) Explain how impulse response can model a system? [6]
- c) Define : [6]
- i) Quantization.
 - ii) Time-Invariant system.
 - iii) Recursive system.
 - iv) Power signal.



OR

- Q2) a) An analog signal $x(t) = \sin(200\pi t) + 3 \cos(250\pi t)$ is sampled at a rate 300 sample/sec. Find the frequency of the DT signal. [6]
- b) Find the linear convolution of the two signals $x(n) = 3^n u(-n)$;
 $h(n) = \left(\frac{1}{3}\right)^n u(n-2)$. [6]
- c) Find the following systems are linear or non-linear. [6]
- i) $y(n) = (n+1)x(n)$.
 - ii) $y(n) = 2x(n) + 3$.
 - iii) $y(n) = x(n^2)$.

P.T.O.

