

Total No. of Questions : 10]

SEAT No. :

P1857

[4859]-1031

[Total No. of Pages : 2

B.E. (Electrical)

**d - DIGITAL SIGNAL PROCESSING
(2012 Course) (Elective - I) (Semester - I)**

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) *Answer Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8, Q9 or Q10.*
- 2) *Neat diagrams must be drawn wherever necessary.*
- 3) *All questions carry equal 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) State and explain sampling theorem. [5]

b) Give frequency response of first order discrete system. [5]

OR

Q2) a) Explain linear convolution using z-transform. [5]

b) Give the properties of discrete time system. Explain any one detail. [5]

Q3) a) What do you mean z-transform and its ROC. [5]

b) Explain causality and stability of LTI system. [5]

OR

Q4) a) Explain linearity property of D.T.F.T. with proof. [5]

b) Explain properties of unilateral z-transform. [5]

Q5) a) Define Discrete Fourier Transform. Explain any two properties. [8]

b) Explain linear convolution using DFT. [8]

OR

P.T.O.

Q6) a) Determine DFT of following sequence $x(n)=\{1, 2, 1, 2\}$. [8]

b) Explain DIT-FFT algorithm in detail. [8]

Q7) a) What are ideal frequency selective filters? Explain each with Mathematical expressions. [8]

b) Explain design of butterworth IIR filter using bilinear transformation. [8]

OR

Q8) a) Design Direct Form-I and Direct Form-II structure of IIR filter. [8]

b) Compare analog filters with digital filters. [8]

Q9) a) Explain design of FIR Filter using window technique. [10]

b) Compare FIR and IIR filter. [8]

OR

Q10) Write short note on (any Two): [18]

a) Measurement of voltage and current using DSP.

b) Harmonic Analysis using DSP.

c) DSP based protective relay.

