Reg. No. :

Question Paper Code: 59713

B.E. / B.Tech. DEGREE EXAMINATION, DEC 2020

Fifth Semester

Biomedical Engineering

15UBM504 – PRINCIPLES OF DIGITAL SIGNAL PROCESSING

(Regulation 2015)

Duration: One hour   Maximum: 30Marks

PART A - (6 x 1 = 6 Marks)

(Answer any six of the following questions)

1. DTFT can be obtained by performing_____ in time domain.   CO1- R
    (a) Rounding   (b) Sampling   (c) Quantization   (d) None of the above

2. The Fourier transform of a discrete and a periodic sequence is _____   CO1- R
    (a) Periodic   (b) Continuous   (c) Both (a) and (b)   (d) None of the above

3. The method used to reduce the warping effect is called _____   CO2-R
    (a) Frequency warping   (b) Scaling   (c) Pre warping   (d) Deformation

4. A digital filter is a device that eliminates _____ and extracts the signal of   CO2- R
    interest from other signals
    (a) Frequency   (b) Noise   (c) Interference   (d) Fluctuation

5. In FIR filters, which among the following parameters remains unaffected by   CO3- U
    the quantization effect?
    (a) Magnitude response   (b) Phase characteristics

    (c) Both (a) and (b)   (d) None of the above

6. FIR digital filters are of following nature   CO3- R
    (a) Recursive   (b) Non recursive

    (c) Reversive   (d) Non reversive

7. Which of the following is the rounding up value of (0.10110)   CO4- U
    (a) 0.110   (b) 0.101   (c) 0.111   (d) 0.100

8. Limit cycles in the recursive are directly attributable to which of the following?   CO4- R
    (a) Round off errors in multiplication   (b) Overflow errors in addition

    (c) Both (a) and (b)   (d) None of the above

9. FWT stands for   CO5- U

(a) Fast wavelet transformation (b) Fast wavelet transform

(c) Fourier wavelet transform (d) Fourier wavelet transformation

10. Narrow wavelets represents   CO5- U

(a) Sharp details (b) Finer details (c) Blur details (d) Edge details

PART – B (3 x 8= 24 Marks)

(Answer any three of the following questions)

11. Determine the y(n) if h(n)={1,1,1} x(n)={1,2,3,1} by using linear   CO1- App   (8)
    convolution and circular convolution.

12. Explain the procedure for designing analog filters using the   CO2- U   (8)
    Butterworth filter approximation.

13. Design LPF which has the following specifications   CO3- C   (8)
    $$H(e^{jw})| = e^{-j3w} \quad \text{for } 0 \leq |w| \leq \pi/2$$
    $$0 \quad \text{for } \pi/2 \, |w| \leq \pi$$
    for N=7 using frequency sampling method.

14. Distinguish between fixed point and floating point arithmetic.   CO4- Ana   (8)

15. Derive an equation for Pyramid algorithm.   CO5- U   (8)

59713