Enrolment No._____

HASMUKH GOSWAMI COLLEGE OF ENGINEERING, VAHELAL

MID SEMESTER EXAMINATION, SEPTEMBER-2016

Subject Code: 2171003 **Date: 24-09-16**

Subject Name: DSP **Sem: 7TH**

Time: 10:00 TO 10:50 **Total Marks: 20**

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

QUE.1 **(A)** Obtain DFT of the following sequence: **6**

x(n)= $\left(\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{1}{2},0,0,0,0\right)$, using decimation in frequency FFT algorithm.

QUE.2 **(A)** Determine whether the signal $\left(\frac{1}{2}\right)^{n} \boldsymbol{u}(\boldsymbol{n})$ is an energy or power signal and calculate its energy or power. **3**

(B) Examine whether the following signal is periodic signal or not: **4**

x(n)=$cos\left(\frac{n}{10}\right) cos\left(\frac{n\pi}{10}\right)$

OR

(B) Compute the linear convolution of the following: **4**

x(n) = {1,1,1,1} and h(n) = {1,1,1,1}

QUE.3 **(A)** Determine Z transform of x(n) and draw its ROC: **3**

x(n)= $\left[(0.5)^{n} \sin\frac{\pi n}{4}\right]$ u(n)

(B) Compute the length 4 sequence from its DFT which is given by **4**

X(k)= {4, 1-j,-2, 1+j}

OR

(A) Find Z transform and sketch the ROC of: **3**

x(n) = $(-1)^{n}\, 2^{-n} u(n)$

(B) Determine the sequence y(n) using circular convolution: **4**

x(n) = {1,2,3,1} and h(n) ={4,3,2,2}

********** ALL THE BEST **********