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**UNIVERSITY-BANGLADESH**

Choose an item.

**Lab Report**

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| Assignment Title: | Lab Report | | | |
| Assignment No: | 4 | | Date of Submission: | 23 February 2021 |
| Course Title: | Data Communication | | | |
| Course Code: | 00068 | | Section: | J |
| Semester: | Spring | 2020-21 | Course Teacher: | Md Mehedi Hasan |

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| **No** | **Name** | **ID** | | **Program** | | **Signature** | |
| 1 | Md.Yousuf Afendi | 19-39887-1 | | BSc [CSE] | |  | |
| ***Faculty use only*** | | | | | | |
| FACULTYCOMMENTS | | | **Marks Obtained** | |  | |
|  | | |  | |  | |
|  | | |  | |  | |
|  | | | **Total Marks** | |  | |
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x = A1 sin(2π(C\*100)t ) + A2 cos(2π(G\*100)t) + s\*randn(size(t))

Id:19-39887-1

A=1, B=9, C=3, D=9, E=8, F=8, G=7, H=1

|  |  |
| --- | --- |
| a) A1 = AB=19  A2 = AF =18  s=0.AH=0.11 |  |
| b) %Id:19-39887-1  A1=19;  A2=18;  s=0.11;  fs=40000;  t = 0:1/fs:1-1/fs;  powfund=(A1^2)/2+(A2^2)/2;  varnoise=s^2;  C=3;  G=7;  x = A1\*sin(2\*pi\*(C\*100)\*t)+A2\*cos(2\*pi\*(G\*100)\*t)+s\*randn(size(t));  noise= s\*randn(size(t));  SNR=powfund/varnoise  dfSNR=10\*log10(powfund/varnoise) |  |
| c) %Id:19-39887-1  A1=AB=19;  A2=AF=18;  s=AH=11;  fs=40000;  t = 0:1/fs:1-1/fs;  powfund=(A1^2)/2+(A2^2)/2;  varnoise=s^2;  C=3;  G=7;  x = A1\*sin(2\*pi\*(C\*100)\*t)+A2\*cos(2\*pi\*(G\*100)\*t)+s\*randn(size(t));  noise= s\*randn(size(t))  SNR=powfund/varnoise  dfSNR=10\*log10(powfund/varnoise)  bandwidth = 700-300  capacity1=bandwidth\*log2(1+SNR)  capacity2=bandwidth\*log2(1+dfSNR) |  |
| d) %Id:19-39887-1  A1=AB=19;  A2=AF=18;  s=0.11;  fs=40000;  t = 0:1/fs:1-1/fs;  powfund=(A1^2)/2+(A2^2)/2;  varnoise=s^2;  C=3;  G=7;  x = A1\*sin(2\*pi\*(C\*100)\*t)+A2\*cos(2\*pi\*(G\*100)\*t)+s\*randn(size(t));  noise= s\*randn(size(t));  SNR=powfund/varnoise  dfSNR=10\*log10(powfund/varnoise);  bandwidth = 700-300  capacity1=bandwidth\*log2(1+SNR)  capacity2=bandwidth\*log2(1+dfSNR)  apprxDataRate1=floor(bandwidth\*log2(1+SNR))  apprxDataRate2=floor(bandwidth\*log2(1+dfSNR))  level1=floor(2^(apprxDataRate1/(2\*bandwidth)))  level2=floor(2^(apprxDataRate2/(2\*bandwidth))) |  |