ELE 4142　　　　　　　　HW7　　　　　Name_____
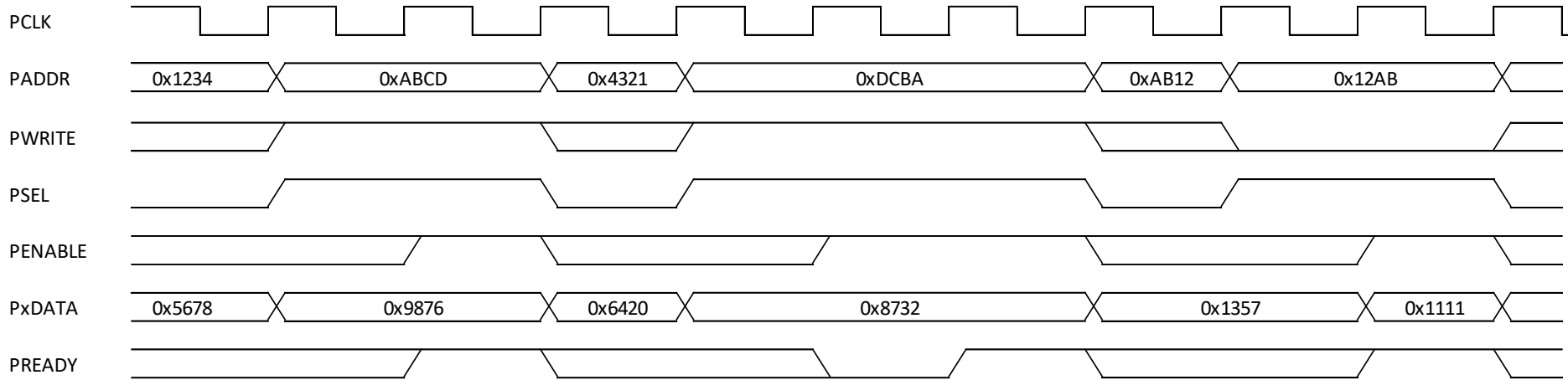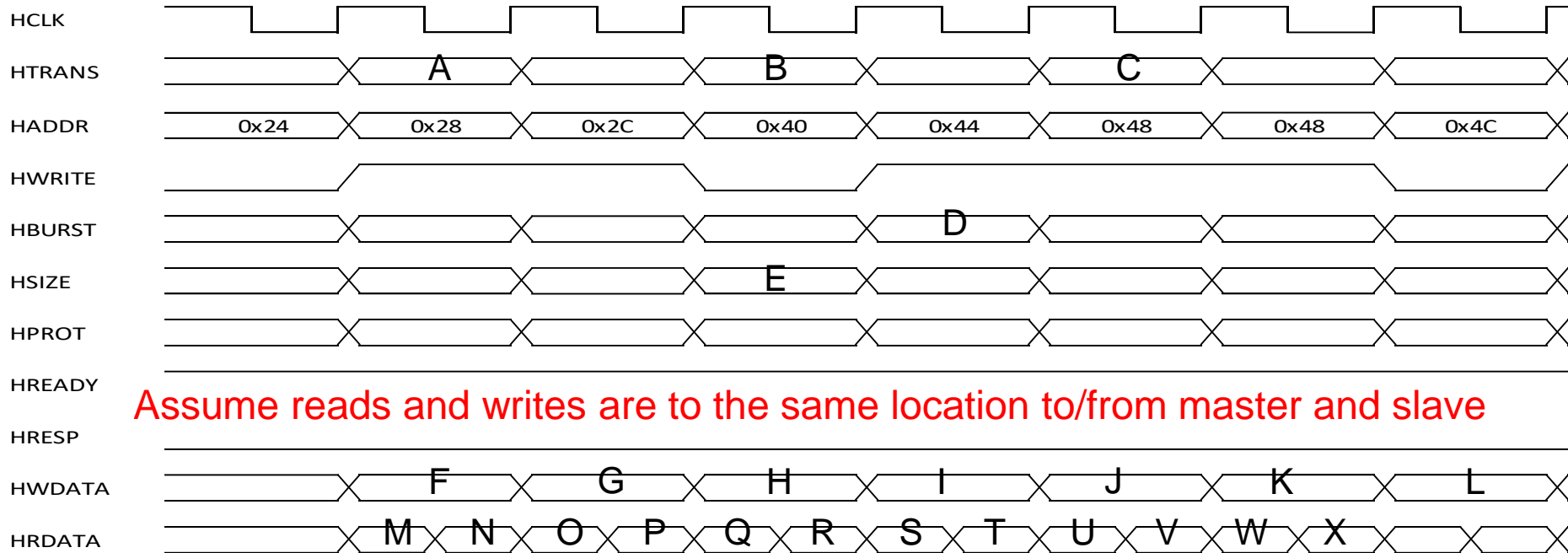
Below is a trace from an APB bus, fill in the table below (leave unknowns empty) after completion of this trace. 32 bit address and data　　　　　15pts

PCLK

PADDR　0x1234　　0xABCD　　0x4321　　0xDCBA　　0xAB12　　0x12AB

PWRITE

PSEL

PENABLE

PxDATA　0x5678　　0x9876　　0x6420　　0x8732　　0x1357　　0x1111

PREADY

	Data	
Address	Master (via the bridge)	Slave (peripheral)
0x1234		
0x12AB		
0x4321		
0xAB12		
0xABCD		
0xDCBA		

Below is a trace from an AHB-Lite bus, fill in the values below (leave unknowns empty)   35 pts

HCLK

HTRANS   A   B   C

HADDR   0x24   0x28   0x2C   0x40   0x44   0x48   0x48   0x4C

HWRITE

HBURST   D

HSIZE   E

HPROT

HREADY

Assume reads and writes are to the same location to/from master and slave

HRESP

HWDATA   F   G   H   I   J   K   L

HRDATA   M N O P Q R S T U V W X

Data - Prior to beginning of trace

Address	Master	Slave
0x24	0x00	0x11
0x28	0x01	0x22
0x2C	0x02	0x33
0x40	0x03	0x44
0x44	0x04	0x55
0x48	0x05	0x66
0x4C	0x06	0x77

Location	Value (hex)	Location	Value (hex)
A		M	
B		N	
C		O	
D		P	
E		Q	
F		R	
G		S	
H		T	
I		U	
J		V	
K		W	
L		X	

ELE 4142   HW7   Name_____

Assume a PCIe Link operating a 8GT/s   30pts

a) In a 1x configuration what is the Link bandwidth using 8b/10b encoding
    (don't use the table from the notes – it will not be right)

b) In a 4x configuration what is the Link BW using 128b/130b encoding

c) Assuming a 1x configuration, 8b/10b encoding, a 4DW header, 32 Bytes of
data and no ECRC or End, how many bits would transfer in a single read
request?

d) Assuming a 4x configuration, 8b/10b encoding, a 4DW header, 32 Bytes of
data and no ECRC or End, how long would a single read request take?

Search and Think   20 pts

Identify and <u>explain</u> 3 advantages of using differential signaling

Identify at least 1 disadvantage of differential signaling