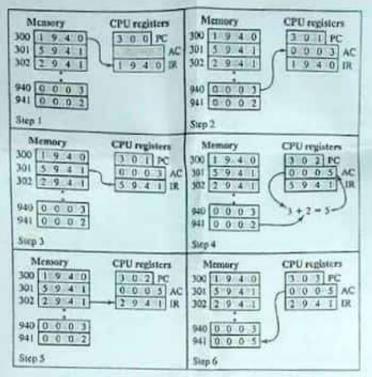
minimproch com exces 200 ponts and meners	which is 256 / Ab- 250 p-
me have 8 lots memory	1 = 16,te /
1+256 = 256 br	ter / Supr
(1×10 = 11	(2,6488).
	12248
University of Pagings	Computer Systems Engineering, 12% & 8 vering and Technology, Peshawar, Pakistan
The same of Engineer	Pabietan
Midtern Exam (Fall 2017) Paper CSE-30	Computer Organization and Architecture
Note: Attempt all questions on answer sheet.	Marks: 25
Question No. 1 (Marks-8);	
The hypothetical machine is shown in Figure 1 aso has	wo I/O instructions:
0 14	15
Openda Add	ina i La Callanda de
(a) Introduct forms	21
9 1	1) 7 km
This was a supposed	
(b) langer format	0
and the same transfer	PUSH A
Program counter (PC) = Address of instruction Instruction register (IR) = function being encound	RK SP
Accomulator (AC) w Temporary storage	PD31-
(x) Daernia CPU ingivin	A DESCRIPTION OF THE PROPERTY
0001 = Lood AC from mersory 0010 = Succi AC to mensory	ned sp
0101 = Add to AC from naturery	PUSH C
ta) Partialiti of opens	Dan Color
Figure 1: Characteristics of hypo	othetical Machine
to begin believe to the	1269.7
1. 0011 Load AC from I/O	2- (1)
2 0111 Store AC to I/O	7058
In these cases, the 12-bit address identifies a particular I	A CONTRACTOR OF THE PARTY OF TH
(using the format of Figure 2) for the following program	O device, Show the program execution 289
Service Control of the Control of th	2100 123941
1. Load AC from device 5.	210
2. Add contents of memory location 940.	
3. Store AC to memory location 941. 4. Store AC to device 6.	
4. Store AC to device o,	
Assume that the next value retrieved from device 5 is 3	and that location 940 contains a value of
2 St = 20%	5/= 2100 Str 20
	70 10 1
99/	4
98 / 3A2 - Page 1 of 2	*
90 / 3A25 Page 1 of 2	1 99 4512
18 1725	99 45 674
7 3000	
2100 112344	ZICP 1234 2000 1239/



1101



4096 0000

Figure 2: Example of program execution

Question No. 2 (Marks=6)

Consider a hypothetical microprocessor generating a 32-bit address and having a 32-bit data bus.

- 1. What is the maximum memory address space that the processor can access directly if it is connected to a "32-bit memory"?
- 2. What is the maximum memory address space that the processor can access directly if it is connected to an "16-bit memory"?

Question No. 3 (Marks=6)

Given x=0101 and y=1010 in twos complement notation (i.e. x=5, y=-6), compute the product p=x X y with Booth's algorithm.

Question No. 4 (Marks=5) What is stack? How it works for the following program:	0011	1100
PUSH A PUSH B		1
PUSH C	60	((0
POP D		

Status of registers:

SP=2100H; A=1234H; B=5678H; C=9A25H

Where:

Where, SP(stack pointer), A, B, C, D are 16 bit-registers while each memory location is of 8-bit size.