EE273 Microprocessor Systems — Midterm NOV 01, 2021

Time Allowed: 60 minute

Maximum Marks: 30

P oblem 1:

(6)

Write assembly code to evaluate $(x-\frac{x^2}{16}+10)$ and store the result in register R1. Assume register R0 = x. The variable x is 16-bit. Maximum credit will be given to the efficient implementation using least number of instructions.

Problem 2:

Figure 1 shows the memory contents of an ARM processor. Write the contents of PC. SP, R0. and R1 after every instruction cycle, starting from the processor reset. Show contents for PC. SP, R0, and R1 registers for first five instruction cycles.

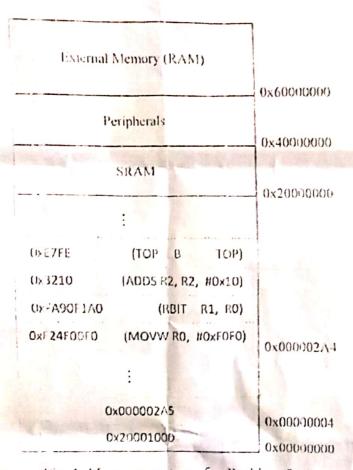


Fig. 1: Memory contents for Problem 2.

Problem 3:

(5+5)

- Explain the concept of pipelining in cortex-M3 processor.
- t) Differentiate between harvard and von Neumann architectures with the help of figures.

Problem 4:

(4)

Consider the assembly program given in the following listing. What will be the contents of registers R1 and R2 after the execution of the following program. (Backside)

Listing 1: Assembly program for Problem 4.

```
AREA MyMain, CODE, READONLY
data DCD 0x87654321
EXPORT __main

1.DR RO = data
1.DR R1, [R0]
REV R2, R1

Stop
B Stop
END
```

Power Distribution Systems(EE:358)

Fall 2021 Session 2019

Marks=30

Time=60 min.

Sr.#		Questions:	Marks	CLOs-PLOs
		Questions		
1.		Explain power distribution system planning process with help of block diagram?	(3)	CLO1- PLO1(C2)
	11.	Derive relationship between loss factor and load factor?	(4)	
		Differentiate between Time-of day and Demand rate structures, With brief examples?	(3)	
		briet examples:	(5)	
	IV.	Assume that a 9 kW air conditioner would run 65% of the time (65% duty cycle) and, during the peak hour, might be limited by utility remote control to a duty cycle of 55%. Determine the following:		
		e number of minutes of operation denied at the end of 1 h of control of unit		
	COL	e amount of reduced energy consumption during the peak hour if such atrol is applied simultaneously to 100,000 air conditioners throughout exystem		
	d) d,	e total amount of reduced energy consumption during the peak The total amount of additional reduction in energy consumption in part F&D losses of the T&D system at peak is 19%		
2.	Ī.	Differentiate between Conventional, CSP and CSPB transformers on	(4)	CLO2-
	u.	basis of ratings and protection systems. Compare Loop Type and Grid/Network Type Substation schemes for wiring?	(2)	PLO2(C4)
	Ш.	Develope expression for six feeder regular hexagon shaped system for voltage drop calculation?	(4)	
	IV.	Assume that the substation is served by four three-phase four-wire 2.4/4.16 kV grounded-wye primary feeders. The feeder mains are made of either #2 AWG copper or #1/0 ACSR conductors. The three-	(5)	
		phase open-wire overhead lines have a geometric mean spacing of 37 in. between phase conductors. Assume a lagging load power factor of		
		0.9 and a 1000 kVA/mi2 uniformly distributed load density. Calculate the following: a. Consider thermally loaded feeder mains		
		and find the following: I max=230A		
		ximum load per feeder station size		4
12 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		station spacing, both ways		
		Total percent voltage drop from the feed point to the end of the main		

