T.E. (IT) (Sem-V) (CBCGS) (R-20-21) 9 29 ... CC Scheme)

Microcontroller Embedded Programming

University of Mumbai
Examinations Summer 2022

Time: 2 hour 30 minutes | Max. Marks: 80

Q1.	**Choose the correct option for following questions. All the Questions are compulsory and carry equal marks**
1.	On power up, the 8051 uses which RAM locations for register R0- R7
Option A:	00-2F
Option B:	00-07
Option C:	00-7F
Option D:	00-0F
2.	The register that provides control and status information about counters is
Option A:	IP
Option B:	TMOD
Option C:	TSCON
Option D:	PCON
3.	In ARM Processor, _____ is used for compare negative two 32-bit integer.
Option A:	LSL
Option B:	ASL
Option C:	CMN
Option D:	CMP
4.	Which part of the UNIX operating system interacts with the hardware?
Option A:	Kernel
Option B:	Shell
Option C:	vi editor
Option D:	application program
Q5.	Which signal is sampled at regular intervals for the purpose of DAC?
Option A:	analog signal
Option B:	digital signal
Option C:	quantised signal
Option D:	sampled signal
6.	_____ directives are used to initialize operands.
Option A:	INT
Option B:	DATAWORD
Option C:	RESERVE
Option D:	DCD
7.	What is the address range of SFR Register bank?
Option A:	00H-77H
Option B:	40H-80H
Option C:	80H-7FH
Option D:	80H-FFH
8.	What is the operation for mode 1?
Option A:	13-bit timer mode, 8-bit timer/counter THx and TLx as 5-bit prescalar
Option B:	16-bit timer mode, 16-bit timer/counter THx and TLx are cascaded, no prescalar

Option C:	8-bit auto reload mode, 8-bit auto reload time/counter; THx holds a value which is to be reloaded into TLx each time it overflows
Option D:	Spilt timer mode
9.	How many digital pins are there on the UNO board?
Option A:	14
Option B:	12
Option C:	16
Option D:	20
10.	RS pin of LCD is used for
Option A:	for selecting command register or data register
Option B:	For reading command register or data register
Option C:	Used to latched information available at its data pins
Option D:	For Adjusting Contrast

Q2	**Solve any Four out of Six** **5 marks each**
A	Explain serial communication of 8051 microcontroller.
B	Write short note on modes of timers of microcontroller 8051
C	Explain in detail interfacing of ADC with 8051 microcontroller.
D	What are the design metrics of Embedded system?
E	What are sensors used in IoT applications with the target embedded boards for measuring temperature, pressure and humidity? Explain the same
F	Define Embedded System. Explain various components of Embedded System.

Q3	**Solve any Two Questions out of Three** **10 marks each**
A	Explain various addressing modes of ARM7 with suitable example instruction.
B	Compare the features of Arduino and Raspberry Pi embedded target boards.
C	With the help of neat diagram, explain Architecture of 8051.

Q4	**Please delete the instruction shown in front of every sub question**
A	**Solve any Two** **5 marks each**
i.	List the kernel objects and explain the functions of each.
ii.	Explain CPSR register of ARM7 in detail.
iii.	Briefly explain about Inter Process Communication.
B	**Solve any One** **10 marks each**
i.	Explain in detail ARM7 pipelining.
ii.	Explain the addressing modes of 8051 microcontroller.

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