Time: 3 Hours **Total Marks: 80**

N.B.: 1. Question No. 1 compulsory.
2. Attempt any Three out of remaining five questions.
3. Figures to the right indicate full marks.
4. Draw neat diagram wherever necessary.

Q1. Solve any four out of five

A)	Differentiate between Microprocessor and Microcontrollers	05
B)	Give salient features of ARM7 processor	05
C)	Explain in brief various characteristics of RTOS	05
D)	What are the design metrics of an embedded systems	05
E)	List an important features of Raspberry_pi board.	05

Q2.	A)	Explain SJMP,AJMP and LJMP instructions of 8051 in detail	10
	B)	Explain CPSR of ARM7 in detail	10

Q3.	A)	Write a program to transfer "INDIA" serially at 9600 baud rate with using 8051.Assume frequency 11.0592Mhz.	10
	B)	Explain in brief the architecture of RTOS	10

Q4.	A)	List and explain how exceptions and interrupts handled in ARM7.	10
	B)	Write a program to generate a triangular waveform using DAC and 8051. Draw the interfacing circuit diagram	10

Q5.	A)	Explain Internal memory organization of 8051	10
	B)	Draw interfacing of keyboard matrix with 8051 in detail with diagram. Write a program to generate Hexadecimal values.	10

Q6. Write notes on: (ANY TWO) 20

a) Hard real time and Soft real time RTOS
b) Modes of timers in 8051
c) Interrupts of 8051
d) Extended libraries of Arduino

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