

Exam No:	*
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GANPAT UNIVERSITY

B. TECH SEM- VI (BM&I) CBCS REGULAR EXAMINATION- APRIL-JUNE 2017 2BM604 MICROCONTROLLER APPLICATIONS

TIME: 3 HRS
TOTAL MARKS: 60

Instructions: (1) This Question paper has two sections. Attempt each section in separate answer book. (2) Figures on right indicate marks. (3) Be precise and to the point in answering the descriptive questions. (4) Assume data wherever necessary. SECTION: I Que.1 [10] Describe TMOD register along with description of various timer modes. a). **(5)** Explain 1). MOV R5, #0FFH b). 2). RET 3). CPL A **(5)** 4). SETB P1.3 5). CLR TR0 OR Que.1. [10] How to use timer in mode 1 for 8051 microcontroller? Discuss the steps of timer (5)mode 1 programming. The following shows the crystal frequency for three different 8051 based systems. b). (5)Find the period of machine cycle in each case. i). 11.0592 MHz ii). 20 MHz Que.2. [10]i). How many timers do we have in the 8051? (5)ii). What is the typical time delay required for debouncing a key switch? iii). What is full form of UART? iv). Crystal frequency of 8051 is v). Which port is used for AD0 to AD7 lines in expanded mode of operations? Explain serial communication for 8051 microcontroller. **(5)** OR Que.2 [10] Calculate time delay in the following subroutine. Assuming crystal frequency a). (5)11.0592Hz. Delay: Mov R2,#10H Again: Mov R3,#15H Here: NOP NOP DJNZ R3, Here DJNZ R2, Again RET Enlist & Explain various jump instructions. (5)

Que.3.		Answer any two.	[10]
	a).	Write an assembly language program to toggle the bits of port 1 with a delay which depends on the value of number in r0.	(5)
	b).	Write an assembly language program to divide the content of r0 by r1. Store the	(5)
		result in r2 (answer) and r3 (reminder). Then restore the original content of r0.	
	c).	Write an assembly language program to find no. of o1's and 0's from the given 8	(5)
		bit data.	
		SECTION: II	
Que.4.			[10]
	a).	Discuss the difference between a microprocessor and a microcontroller with block diagram.	(4)
	b).	Discuss the following with example.	(5)
	D).	1). PROGRAM COUNTER 2). A & B REGISTER	(3)
	c).	ADD 85H & 70H find the content of AC, CY, and P?	(1)
	C).	OR	(1)
Que.4.			[10]
Quein	a).	What is execution time of a single cycle instruction for 6Mhz Crystal?	(2)
	b).	Differentiate the stack and stack pointer with necessary figure and example.	(4)
	c).	Discuss the internal RAM organization of 8051 microcontroller.	(4)
Que.5.			[10]
	a).	Write Program to generate two square wave one of 5kHz at pin p2.3 and second of frequency 25khz at pin P3.1.Assume the XTAL=22Mhz.	(5)
	b).	Explain the Enabling and disabling an interrupt with role of interrupt enable register?	(4)
	c).	Write the functions of Port 0.	(1)
		OR	
Que.5.			[10]
	a).	What is interrupt vector table? Write the interrupt vector table for 8051.	(5)
	b).	Differentiate the interrupt & polling with example.	(3)
	c).	What are the function of bits PSW.3 & PSW .4?	(2)
Que.6.			[10]
	a).	Draw and explain the interfacing diagram of stepper motor with 8051 microcontroller and write the codes for the same.	(5)
	b)	Discuss various addressing modes of 8051 microcontroller	(5)

END OF PAPER