

Course No: EQUP 3324
 Course Title: Microcontroller.
 Date: 19 / 04 / 2017
 No. of Questions: 3
 Time: 60 min.
 Using Calculator (Yes)

University of Palestine



Midterm Exam
 2nd Term 2016/2017
 Total Grade: 15

Instructor Name: Eng. M. Timraz
 Student No.: _____
 Student Name: _____
 College Name: Engineering
 Dep. / Specialist: Biomedical Eng.
 Using Dictionary (No)

Q1: Put True or False in the specific table below. (05/15)

- (1) P: R3 ← R5, MAR ← IR, P is the value that the instruction operation need to reach.
- (2) In a digital system with many registers, it is impractical to have data and control lines to directly allow each register to be loaded with the contents of every possible other registers.
- (3) The Output Register (OUTR) holds an 8 bit character to be sent to an output device.
- (4) The Basic Computer has two components, a processor and memory.
- (5) During FETCH, Read an instruction from memory and decode the instruction and update PC.
- (6) The micro-program consists of a little number of short instructions.
- (7) In basic computer, hardwired and micro-programmed controls are considering the implementation of the control unit for the Basic Computer.
- (8) The processor has a register, the Program Counter (PC) that holds the memory address of the next instruction to get.
- (9) BUS ← R1, R2 ← BUS.
- (10) M [PC] ← R1, To write a value from a register to a location in memory.

<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>

Q2: Choose the correct answer (a, b or c) and then put it in the specific table in the model answer note. (05/15)

- (1) When an operand is found, using either direct or indirect addressing, it is placed in the
 - a. ROM.
 - b. PROM.
 - c. Data Register (DR).
 - d. Program Counter (PC).
- (2) In a direct or indirect addressing, the processor needs to keep track of what locations in memory (it is addressing) in the
 - a. Data Register (DR).
 - b. Address Register (AR).
 - c. RAM.
 - d. Cache.
- (3) The Basic Computer has a single general purpose register, it is
 - a. Accumulator (AC).
 - b. Instruction Register (IR).
 - c. Data Register (DR).
 - d. Program Counter (PC).

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- (4) a scratch register to store intermediate results or other data, Often a processor need in the Basic Computer.
- Accumulator (AC).
 - Temporary Register (TR).
 - Temporary Data.
 - Program Counter (PC).
- (5) _____ is usually accessed in computer systems by putting the desired address in a special register.
- Input registers (IR).
 - Data register (DR).
 - Memory.
 - Bus System.
- (6) The address that can be directly used without modification to access an operand for a computation-type instruction, or as the target address for a branch-type instruction.
- Implied Address.
 - Effective Address (EA).
 - Immediate Address.
 - Non of the above.
- (7) A control memory on the processor contains microprograms that activate the necessary control signals.
- Microprogrammed Control.
 - Hardware control.
 - External control.
 - A and b.
- (8) The memory has 32768 words in it, so it takes bits to select a word in memory; Each word is 16 bits long.
- 14 bits.
 - 15 bits.
 - 16 bits.
 - 17 bits.
- (9) A list of instructions or statements for directing the computer to perform a required data processing task.
- Instruction.
 - Program.
 - Subroutine.
 - Branch.

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(10) The registers in the Basic Computer are connected using

- a. Bus System.
- b. Interface.
- c. Connectors.
- d. all of the above.

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Q3: Write a Micro C program to control " 5 motors" operate with 24VDC, Each motor operates according to the signal coming from the external sensor.

Draw the circuit showing all electrical and electronics elements and terminals that you are used in the program (5/15)

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Good Luck.