SEAT No._____

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SARDAR PATEL UNIVERSITY
M.Sc. (PHYSICS) (IIIrd Semester) Examination
Tuesday, 18th April, 2017 2:00 pm to 5:00 pm
Course No.: PS03EPHY04
MICROPROCESSORS: PROGRAMMING, INTERFACING AND APPLICATIONS

Note: All questions are compulsory.

Total Marks:70

Q.1 Multiple Choice Questions. **(8)**

(i) LDA instruction uses ____ machine cycles for its execution.
(a) 1 **(b)** 2 **(c)** 3 **(d)** 4

(ii) An Op-Code used for microprocessor programming is a
(a) 8-bit Data **(b)** 16-bit Address **(c)** Instruction code **(d)** 16-bit Data

(iii) Asynchronous data transfer scheme can be implemented by _____ approach
(a) Hardware **(b)** Software **(c)** both a and b **(d)** DMA

(iv) An I/O port has
(a) Address bus **(b)** buffers **(c)** data bus **(d)** all of the above

(v) Clock frequency of ADC-0800 can be _____
(a) 100 kHz **(b)** 3MHz **(c)** 900 kHz **(d)** 2 kHz

(vi) In the output stage of a Sample and Hold circuit which of the following is used to obtain low droop rate and low noise?
(a) MOSFET, **(b)** MESFET, **(c)** Bi-FET, **(d)** CCD.

(vii) Seven segment display FND 503 is _____type display unit.
(a) Common Cathod **(b)** Common Anode
(c) Common Collector **(d)** None

(viii) The most suitable temperature sensor for microprocessor based temperature measurement and control system is
(a) Thermocouple **(b)** semiconductor diode **(c)** pyrometer **(d)** none.

Q.2 Short Answer Questions. (Attempt any seven) **(14)**

(a) Explain the instructions STA and LXI.

(b) Explain the instruction RIM.

(c) Write the meaning of each of the bits of control word for IC-8255.

(d) Which is the fastest data transfer technique in case of INTEL-8085 microprocessor? Why?

(e) What are the functions of Programmable counter/interval timer IC INTEL-8252?

(f) Explain how microprocessor receives an EOC signal once the A to D conversion is initiated.

(g) What are full scale and zero adjustments in ADC-0800? How are they implemented?

P.T.O.

(h) Explain in brief how frequency of a sine wave can be measured using microprocessor.

(i) Discuss how electrical quantities e.g. current, voltage and resistance are measured using a microprocessor.

Q.3(a) Sketch and explain the block diagram of INTEL-8085 microprocessor. (6)

(b) With the help of timing diagram explain the fetch and execute cycle. (6)

OR

(b) Give classification of instructions used for MPU-8085 programming. With suitable examples explain two byte and three byte instructions in detail. (6)

Q.4(a) Write an assembly language program for addition of two 8-bit numbers having 16-bits sum. (6)

(b) Describe interrupts of INTEL-8085. (6)

OR

(b) Discuss operating modes of IC 8255. (6)

Q.5(a) Discuss in detail about (6)

(i) Clock for ADC

(ii) Analog multiplexer.

(b) Explain in detail the application of S/H circuit LF 398 in a data acquisition system. (6)

OR

(b) Explain the operating principle of DAC and show how ADC can be realized using an DAC. (6)

Q.6(a) Discuss with the help of a suitable example how subroutine is used to create a desired time delay. (6)

(b) Explain how alpha numeric characters are displayed using interfacing diagram of display driver IC, seven segment LED display and microprocessor. (6)

OR

(b) Enlist different microprocessor compatible temperature sensors with their temperature range and discuss temperature monitoring system with the help of interfacing to 8085 MPU using any one of them along with a suitable assembly level programme. (6)

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