



QP – 222

V Semester B.Sc. Examination, March/April 2022  
(CBCS) (F+R) (2016 – 17 and Onwards)  
ELECTRONICS – VI

EL – 502 : Microprocessor and Electronic Instrumentation

Time : 3 Hours

Max. Marks : 70

**Instructions :** i) Answer **all** questions from **Part– A**. **Any five** questions from **Part – B** and **any four** questions from **Part – C**.

ii) Answer **all** questions of **Part – A** in **any one** page, the same questions answered multiple times will **not** be considered for evaluation.

PART – A

Answer **all** the sub-divisions.

(15×1=15)

1. i) The data bus of any microprocessor is always
  - a) unidirectional
  - b) bidirectional
  - c) either unidirectional or bidirectional
  - d) none of these
- ii) In 8085 microprocessor ALE signal is made high to
  - a) Enable the data bus to be used as lower order address bus
  - b) To latch the higher order address byte on the address/data bus
  - c) Both a) and b)
  - d) Disable the data bus
- iii) When a subroutine is called, the address of the instruction following the CALL instruction is stored in
  - a) stack pointer
  - b) program counter
  - c) stack
  - d) accumulator
- iv) \_\_\_\_\_ is a 3 byte instruction.
  - a) LDA 8050h
  - b) MVI A, 25h
  - c) ADD B
  - d) ORI 0FH

P.T.O.





- v) When any arithmetic instruction is executed, the conditional flags are
- a) always set
  - b) always reset
  - c) not affected
  - d) affected
- vi) XCHG instruction exchanges the content of H-L with
- a) BC
  - b) DE
  - c) PSW
  - d) SP
- vii) \_\_\_\_\_ T-states are required for the execution of MVI B, 24h instruction ?
- a) 10
  - b) 13
  - c) 7
  - d) 4
- viii) Among the following \_\_\_\_\_ can stop the main program and do other programs.
- a) Interrupt
  - b) Timer
  - c) Counter
  - d) SPI
- ix) A microprocessor is capable of addressing 64 kbytes of memory. Its address bus width is
- a) 8
  - b) 12
  - c) 16
  - d) 20
- x) LVDT is a \_\_\_\_\_ transducer.
- a) temperature
  - b) pressure
  - c) displacement
  - d) photoelectric
- xi) Which transducer is known as 'self-generating' transducer ?
- a) active transducer
  - b) passive transducer
  - c) analog transducer
  - d) secondary transducer
- xii) Thermocouples are made of
- a) two dissimilar metals
  - b) only metallic conductors
  - c) semiconductor materials
  - d) two similar metals
- xiii) The capacitance of a passive capacitance transducer depends on the following factors, except
- a) Distance between the two parallel plates
  - b) The area of the two parallel plates
  - c) Relative dielectric constant
  - d) Mass of the two parallel plates





- xiv) The source of bio electric potentials is
  - a) ionic in nature
  - b) electrochemical
  - c) positive charges
  - d) negative charges
- xv) Needle electrodes are
  - a) designed to measure bioelectric potentials near or within the cell
  - b) designed to penetrate the skin so that they can record biopotentials like EEG signals from the brain
  - c) designed to measure biopotentials from the surface of the skin
  - d) typical examples include the metal microelectrodes and micropipette

PART - B

Answer **any five** questions.

(5×7=35)

- 2. a) Explain the features of 8085 microprocessor.
- b) Mention the different types of bus organization in 8085 microprocessor. (5+2)
- 3. Explain the various addressing modes in 8085 microprocessor by giving an example each. 7
- 4. a) What is stack ?
- b) Explain the stack operation in 8085 microprocessor. (2+5)
- 5. With an example explain the various unconditional jump instructions in 8085 microprocessor. 7
- 6. Draw and explain the functional block diagram of 8255 PPI. 7
- 7. a) Explain the hardware interrupts in 8085 microprocessor.
- b) Explain the principle of ultrasonic temperature transducer. (4+3)
- 8. a) Draw the block diagram of lock in amplifier and write its principle. (4+3)
- b) Write a note on microphone.
- 9. Explain resting and action potential with a typical cell potential waveform. (2+5)





## PART - C

Answer **any four** questions. (4×5=20)

10. Differentiate the following 8085 microprocessor instructions. **5**

a) LHLD 8050 and LXI H 8050

b) STAX B and STA 8050

c) MOV A, B and MVI A, 30h

11. Calculate the time delay for the following program with 1 MHz clock. **5**

MVI B, FFH      7 T states

LOOP : DCR B      4 T states

JNZ LOOP      10/7 T states

12. The expected value of current to be measured is 10A. However, the measurement gives a value of 8.5 A.

Calculate :

i) absolute error

ii) percentage error

iii) relative accuracy

iv) percentage accuracy. **5**

13. Write a note on the origin of bio-electric signals. **5**

14. Draw the labelled block diagram of ECG and explain. **5**