M. Sc. (Electronics) (Fourth Semester)

EXAMINATION, July, 2022

MICROPROCESSOR AND MICROCONTROLLER

Paper Code
ELC	4	0	2	(N)

Questions Booklet Series

C

Time : 1:30 Hours]

[*Maximum Marks : 100*

Instructions to the Examinee :

1. Do not open the booklet unless you are asked to do so.

2. The booklet contains 60 questions. Examinee is required to answer any 50 questions in the OMR Answer-Sheet provided and not in the question booklet. If more than 50 questions are attempted by student, then the first attempted 50 questions will be considered for evaluation. All questions carry equal marks.

3. Examine the Booklet and the OMR Answer-Sheet very carefully before you proceed. Faulty question booklet due to missing or duplicate pages/questions or having any other discrepancy should be got immediately replaced.

परीक्षार्थियों के लिए निर्देश :

1. प्रश्न-पुस्तिका को तब तक न खोलें जब तक आपसे कहा न जाए।

2. प्रश्न-पुस्तिका में 60 प्रश्न हैं। परीक्षार्थी को किन्हीं 50 प्रश्नों को केवल दी गई OMR आन्सर-शीट पर ही हल करना है, प्रश्न-पुस्तिका पर नहीं। यदि छात्र द्वारा 50 से अधिक प्रश्नों को हल किया जाता है तो प्रारम्भिक हल किये हुए 50 उत्तरों को ही मूल्यांकन हेतु सम्मिलित किया जाएगा। सभी प्रश्नों के अंक समान हैं।

3. प्रश्नों के उत्तर अंकित करने से पूर्व प्रश्न-पुस्तिका तथा OMR आन्सर-शीट को सावधानीपूर्वक देख लें। दोषपूर्ण प्रश्न-पुस्तिका जिसमें कुछ भाग छपने से छूट गए हों या प्रश्न एक से अधिक बार छप गए हों या उसमें किसी अन्य प्रकार की कमी हो, तो उसे तुरन्त बदल लें।

(Remaining instructions on the last page)

(शेष निर्देश अन्तिम पृष्ठ पर)

(Only for Rough Work)

1. During comparison operation, the result of comparing or subtraction is stored in :

   (A) memory

   (B) registers

   (C) stack

   (D) nowhere

2. The directive used to inform the assembler, the names of the logical segments to be assumed for different segments used in the program is :

   (A) ASSUME

   (B) SEGMENT

   (C) SHORT

   (D) DB

3. The extension that is essential for every assembly level program is :

   (A) .ASP

   (B) .ALP

   (C) .ASM

   (D) .PGM

4. The Stack follows the sequence :

   (A) first-in-first-out

   (B) first-in-last-out

   (C) last-in-first-out

   (D) last-in-last-out

5. When a stack segment is initialised then :

   (A) SS and SP are initialised

   (B) Only SS is initialised

   (C) Only SP is initialised

   (D) SS and SP need not be initialised

6. An interrupt breaks the execution of instructions and diverts its execution to :

   (A) Interrupt service routine

   (B) Counter word register

   (C) Execution unit

   (D) Control unit

7. NMI stands for :

   (A) Nonmaskable Interrupt

   (B) Nonmultiple Interrupt

   (C) Nonmovable Interrupt

   (D) None of the above

8. Example of an external interrupt is :

   (A) divide by zero interrupt

   (B) keyboard interrupt

   (C) overflow interrupt

   (D) type 2 interrupt

9. When does the CPU execute IRET :

    (A) contents of IP and CS are retrieved

    (B) the control transfers from TSR to main program

    (C) clears the trap flag

    (D) clears the interrupt flag

10. In static memory, the lower 8-bit bank of an available 16-bit memory chip is called :

    (A) lower address memory bank

    (B) even address memory bank

    (C) static lower memory bank

    (D) odd address memory bank

11. How many pins are multiplexed in 8085 microprocessor ?

    (A) 12

    (B) 16

    (C) 8

    (D) 4

12. Which flag is set, when most significant Bit is 1 after an operation ?

    (A) sign flag

    (B) parity flag

    (C) carry flag

    (D) zero flag

13. Input and output data transfer can take place only between :

    (A) B register and input output device

    (B) Program counter register and input output device.

    (C) Stack pointer register and input output device.

    (D) Accumulator and input output device.

14. The higher order address lines are fully present for how many clock cycles ?

    (A) 2

    (B) 3

    (C) 5

    (D) 4

15. In 07H :

    (A) 07h is the address of the input port

    (B) 07h is the address of the output port

    (C) 07h is the data to the input port

    (D) 07h is the data from the input port

16. H = 56 h, A= 00h, After the execution of XRA H :

   (A) Data in A = 23H

   (B) Data in A = AAH

   (C) Data in A = 68H

   (D) Data in A = 56H

17. D = 56h, A= 00h, After the execution of CMP D :

   (A) carry flag = 1, zero flag = 1

   (B) carry flag = 0, zero flag = 1

   (C) carry flag = 1, zero flag = 0

   (D) carry flag = 0, zero flag = 0

18. How many machine cycles are needed to execute LDA 4000 instruction ?

   (A) 2

   (B) 4

   (C) 5

   (D) 3

19. One 'T- state is 0.1 microsecond, then the processor operates at :

   (A) 10 MHz frequency

   (B) 20 MHz frequency

   (C) 30 MHz frequency

   (D) 40 MHz frequency

20. Subprogram is always terminated by _____ instructions.

   (A) RET

   (B) PUSH

   (C) Halt

   (D) RST

21. If more than one interrupt occurs at same time, on what basis interrupts assign to the processor _____.

   (A) Priority basis

   (B) Random basis

   (C) Processors stops to accept interrupt

   (D) Delay basis

22. SIM instructions are used to perform _____ communication.

   (A) Parallel

   (B) Serial

   (C) Both serial and parallel

   (D) Not used for communication purpose

23. All the functions of the ports of 8255 are achieved by programming the bits of an internal register called :

   (A) data bus control

   (B) read logic control

   (C) control word register

   (D) None of the above

24. In BSR mode, only port C can be used to :

    (A) set individual ports

    (B) reset individual ports

    (C) set and reset individual ports

    (D) programmable I/O ports

25. The signals that are provided to maintain proper data flow and synchronization between the data transmitter and receiver are :

    (A) handshaking signals

    (B) control signals

    (C) input signals

    (D) None of the above

26. The number of counters that are present in the programmable timer device 8254 is :

    (A) 1

    (B) 2

    (C) 3

    (D) 4

27. The mode that is used to interrupt the processor by setting a suitable terminal count is :

    (A) mode 0

    (B) mode 1

    (C) mode 2

    (D) mode 3

28. The generation of a square wave is possible in the mode :

    (A) mode 1

    (B) mode 2

    (C) mode 3

    (D) mode 4

29. If BCD = 0, then the operation is :

    (A) decimal count

    (B) hexadecimal count

    (C) binary count

    (D) octal count

30. The operation that can be performed on control word register is :

    (A) read operation

    (B) write operation

    (C) read and write operations

    (D) None of the above

31. Which of the following is not a status flag in microprocessor ?

    (A) Overflow flag

    (B) Trap flag

    (C) Interrupt flag

    (D) Index flag

32. Which of the following registers is not used in opcode fetch operations ?

    (A) Program counter

    (B) Memory address register

    (C) Memory data register

    (D) Flag register

33. A memory connected to a microprocessor has 20 address lines and 16 data lines. What will be the memory capacity ?

    (A) 128 KB

    (B) 2 MB

    (C) 16 MB

    (D) 64 KB

34. Which of the following is not true about 8085 microprocessor ?

    (A) It is an 8-bit microprocessor

    (B) It is a 40 pin DIP chip

    (C) It is manufactured using PMOS technology

    (D) It has 16 address lines

35. Which of the following is a non-vectored interrupt ?

    (A) TRAP

    (B) RST-5.5

    (C) RST-6.5

    (D) INTR

36. What is stored in the H & L general-purpose register ?

    (A) Opcode

    (B) Address of memory

    (C) Address of next instruction

    (D) Temporary data

37. If a 64 GB memory has to be connected to a microprocessor, minimum how many address lines are required ?

    (A) 36

    (B) 39

    (C) 32

    (D) 37

38. Which of the following is a software interrupt ?

    (A) TRAP

    (B) INTR

    (C) RST-6.5

    (D) RST-5

39. Which of the following is false about LDA instruction ?

(A) It is a 3-byte instruction

(B) It uses indirect addressing mode

(C) It has 13 T-states

(D) It doesn't affect any flags

40. Suppose registers 'A' and 'B' contain 50H and 40H respectively. After instruction MOV A, B, what will be the contents of registers A and B ?

(A) 40H, 40H

(B) 50H, 40H

(C) 50H, 50H

(D) 60H, 40H

41. Conditional instructions are independent of which of the following flags ?

(A) Z

(B) AC

(C) CY

(D) P

42. Which of the following is a register-indirect addressing mode instruction set ?

(A) STA 2700H

(B) ACI 36H

(C) DAA

(D) LDAX B

43. Which of the following is true about microprocessors ?

(A) It has an internal memory

(B) It has interfacing circuits

(C) It contains ALU, CU, and registers

(D) It uses Harvard architecture

44. Which of the following is not a property of TRAP interrupt in microprocessor ?

(A) It is a non-maskable interrupt

(B) It is of highest priority

(C) It uses edge-triggered signal

(D) It is a vectored interrupt

45. Which of the following is a special-purpose register of microprocessor ?

(A) Program counter

(B) Instruction register

(C) Accumulator

(D) Temporary register

46. Which of the following circuits is used as a special signal to demultiplex the address bus and data bus ?

(A) Priority Encoder

(B) Decoder

(C) Address Latch Enable

(D) Demultiplexer

47. Which of the following is true about MOV A, B instruction ?

(A) It means move the content of register A to register B

(B) It uses immediate addressing mode

(C) It doesn't affect the flag register

(D) It is a 2-byte instruction

48. Which of the following is not correct about HLT instruction ?

(A) It is a machine control instruction

(B) It is used to start the execution of the program

(C) PC is disconnected from the address bus

(D) A reset interrupt is required to come out of halt state

49. Which to of the following is true about SPHL instruction ?

(A) It uses indexed addressing mode

(B) It is a 3-byte instruction

(C) It requires three T-states

(D) Contents of HL pair is moved to SP

50. In 8-bit microprocessor, how many opcodes are present ?

(A) 246

(B) 278

(C) 250

(D) 256

51. The instruction that is not possible among the following is :

(A) MOV AX, BX

(B) MOV AX, [BX]

(C) MOV 55H, BL

(D) MOV AL, 55H

52. The registers that cannot be used as operands for arithmetic and logical instructions are :

(A) general purpose registers

(B) pointers

(C) index registers

(D) segment registers

53. The number of PUSH instructions and POP instructions in a subroutine must be :

(A) PUSH instructions must be greater than POP instructions

(B) POP instructions must be greater than PUSH instructions

(C) Both must be equal

(D) Instructions may be any kind

54. For 8086 microprocessor, the stack segment may have a memory block of a maximum of :

(A) 32 K bytes

(B) 64 K bytes

(C) 16 K bytes

(D) None of the above

55. Which of the following is not a data copy/transfer instruction ?

(A) MOV

(B) PUSH

(C) DAS

(D) POP

56. Which of the following instructions is not valid ?

(A) MOV AX, BX

(B) MOV DS, 5000H

(C) MOV AX, 5000H

(D) PUSH AX

57. In POP instruction, after each execution of the instruction, the stack pointer is :

(A) incremented by 1

(B) decremented by 1

(C) incremented by 2

(D) decremented by 2

58. The instruction, MOV AX, 1234H is an example of :

(A) register addressing mode

(B) direct addressing mode

(C) immediate addressing mode

(D) based indexed addressing mode

59. The contents of a base register are added to the contents of index register in :

(A) indexed addressing mode

(B) based indexed addressing mode

(C) relative based indexed addressing mode

(D) based indexed and relative based indexed addressing mode

60. In general, the source operand of an instruction can be :

(A) memory location

(B) register

(C) immediate data

(D) All of the above

(Only for Rough Work)

4. Four alternative answers are mentioned for each question as—A, B, C & D in the booklet. The candidate has to choose the most correct/appropriate answer and mark the same in the OMR Answer-Sheet as per the direction :

    Example :

    Question :

    Q. 1 Ⓐ ● Ⓒ Ⓓ
    Q. 2 Ⓐ Ⓑ ● Ⓓ
    Q. 3 Ⓐ ● Ⓒ Ⓓ

    Illegible answers with cutting and over-writing or half filled circle will be cancelled.

5. Each question carries equal marks. Marks will be awarded according to the number of correct answers you have.

6. All answers are to be given on OMR Answer sheet only. Answers given anywhere other than the place specified in the answer sheet will not be considered valid.

7. Before writing anything on the OMR Answer Sheet, all the instructions given in it should be read carefully.

8. After the completion of the examination candidates should leave the examination hall only after providing their OMR Answer Sheet to the invigilator. Candidate can carry their Question Booklet.

9. There will be no negative marking.

10. Rough work, if any, should be done on the blank pages provided for the purpose in the booklet.

11. To bring and use of log-book, calculator, pager and cellular phone in examination hall is prohibited.

12. In case of any difference found in English and Hindi version of the question, the English version of the question will be held authentic.

Impt. : On opening the question booklet, first check that all the pages of the question booklet are printed properly. If there is ny discrepancy in the question Booklet, then after showing it to the invigilator, get another question Booklet of the same series.

4. प्रश्न-पुस्तिका में प्रत्येक प्रश्न के चार सम्भावित उत्तर— A, B, C एवं D हैं। परीक्षार्थी को उन चारों विकल्पों में से एक सबसे सही अथवा सबसे उपयुक्त उत्तर छाँटना है। उत्तर को OMR आन्सर-शीट में सम्बन्धित प्रश्न संख्या में निम्न प्रकार भरना है :

    उदाहरण :

    प्रश्न :

    प्रश्न 1 Ⓐ ● Ⓒ Ⓓ
    प्रश्न 2 Ⓐ Ⓑ ● Ⓓ
    प्रश्न 3 Ⓐ ● Ⓒ Ⓓ

    अपठनीय उत्तर या ऐसे उत्तर जिन्हें काटा या बदला गया है, या गोले में आधा भरकर दिया गया, उन्हें निरस्त कर दिया जाएगा।

5. प्रत्येक प्रश्न के अंक समान हैं। आपके जितने उत्तर सही होंगे, उन्हीं के अनुसार अंक प्रदान किये जायेंगे।

6. सभी उत्तर केवल ओ. एम. आर. उत्तर-पत्रक (OMR Answer Sheet) पर ही दिये जाने हैं। उत्तर-पत्रक में निर्धारित स्थान के अलावा अन्यत्र कहीं पर दिया गया उत्तर मान्य नहीं होगा।

7. ओ. एम. आर. उत्तर-पत्रक (OMR Answer Sheet) पर कुछ भी लिखने से पूर्व उसमें दिये गये सभी अनुदेशों को सावधानीपूर्वक पढ़ लिया जाये।

8. परीक्षा समाप्ति के उपरान्त परीक्षार्थी कक्ष निरीक्षक को अपनी OMR Answer Sheet उपलब्ध कराने के बाद ही परीक्षा कक्ष से प्रस्थान करें। परीक्षार्थी अपने साथ प्रश्न-पुस्तिका ले जा सकते हैं।

9. निगेटिव मार्किंग नहीं है।

10. कोई भी रफ कार्य, प्रश्न-पुस्तिका के अन्त में, रफ-कार्य के लिए दिए खाली पेज पर ही किया जाना चाहिए।

11. परीक्षा-कक्ष में लॉग-बुक, कैलकुलेटर, पेजर तथा सेल्युलर फोन ले जाना तथा उसका उपयोग करना वर्जित है।

12. प्रश्न के हिन्दी एवं अंग्रेजी रूपान्तरण में भिन्नता होने की दशा में प्रश्न का अंग्रेजी रूपान्तरण ही मान्य होगा।

महत्वपूर्ण : प्रश्नपुस्तिका खोलने पर प्रथमतः जाँच कर देख लें कि प्रश्न-पुस्तिका के सभी पृष्ठ भलीभाँति छपे हुए हैं। यदि प्रश्नपुस्तिका में कोई कमी हो, तो कक्षनिरीक्षक को दिखाकर उसी सिरीज की दूसरी प्रश्न-पुस्तिका प्राप्त कर लें।