

Roll No. ....

Question Booklet Number

O. M. R. Serial No.

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Question Booklet Number
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## M. Sc. (Electronics) (Fourth Semester)

### (NEP) EXAMINATION, 2025-26

#### MICROPROCESSOR AND MICROCONTROLLER

Paper Code							
B	1	4	1	0	0	2	T

Questions Booklet Series
<b>C</b>

Time : 1:30 Hours ]

[ Maximum Marks : 75

#### Instructions to the Examinee :

1. Do not open the booklet unless you are asked to do so.
2. The booklet contains 100 questions. Examinee is required to answer 75 questions in the OMR Answer-Sheet provided and not in the question booklet. 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 100 प्रश्न हैं। परीक्षार्थी को 75 प्रश्नों को केवल दी गई OMR आन्सर-शीट पर ही हल करना है, प्रश्न-पुस्तिका पर नहीं। 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. What is the size of the Program Counter in 8051 ?
  - (A) 8-bit
  - (B) 12-bit
  - (C) 16-bit
  - (D) 32-bit
2. Each I/O port in 8051 is of how many bits ?
  - (A) 4
  - (B) 8
  - (C) 16
  - (D) 32
3. Interrupt INTR is a/an ..... Interrupt.
  - (A) Non-vectored
  - (B) Vectored
  - (C) Edge
  - (D) None of the above
4. What is stored in the H & L general-purpose register ?
  - (A) Opcode
  - (B) Address of memory
  - (C) Address of next instruction
  - (D) Temporary data
5. If 'n' denotes the number of clock cycles and 'T' denotes period of the clock at which the microprocessor is running, then the duration of execution of loop once can be denoted by :
  - (A)  $n + T$
  - (B)  $n - T$
  - (C)  $n * T$
  - (D)  $n / T$
6. The instruction that pushes the flag register on to the stack is :
  - (A) PUSH
  - (B) POP
  - (C) PUSHF
  - (D) POPF
7. The instruction, MOV AX, [2500H] is an example of :
  - (A) immediate addressing mode
  - (B) direct addressing mode
  - (C) indirect addressing mode
  - (D) register addressing mode
8. 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
9. In 8257, each of the four channels has :
  - (A) a pair of two 8-bit registers
  - (B) a pair of two 16-bit registers
  - (C) one 16-bit register
  - (D) one 8-bit register

10. The register that stores the bits required to mask the interrupt inputs is :
- (A) In-service register
  - (B) Priority resolver
  - (C) Interrupt Mask register
  - (D) None of the above
11. In a cascaded mode, the number of vectored interrupts provided by 8259A is :
- (A) 4
  - (B) 8
  - (C) 16
  - (D) 64
12. The register that stores all the interrupt requests in it in order to serve them one by one on a priority basis is :
- (A) Interrupt Request Register
  - (B) In-Service Register
  - (C) Priority resolver
  - (D) Interrupt Mask Register
13. When non-specific EOI command is issued to 8259A it will automatically :
- (A) set the ISR
  - (B) reset the ISR
  - (C) set the INTR
  - (D) reset the INTR
14. The input and output operations are respectively similar to the operations :
- (A) read, read
  - (B) write, write
  - (C) read, write
  - (D) write, read
15. In direct memory access mode, the data transfer takes place :
- (A) directly
  - (B) indirectly
  - (C) directly and indirectly
  - (D) None of the above
16. The ..... address of a memory is a 20 bit address for the 8086 microprocessor.
- (A) Physical
  - (B) Logical
  - (C) Both (A) and (B)
  - (D) None of the above
17. How many bits the instruction pointer is wide ?
- (A) 16 bit
  - (B) 32 bit
  - (C) 64 bit
  - (D) 128 bit

18. The number of Interrupt lines in 8085 is :
- (A) 3
  - (B) 2
  - (C) 4
  - (D) 5
19. The Programmable interrupt controller is required to :
- (A) handle one interrupt request
  - (B) handle one or more interrupt requests at a time
  - (C) handle one or more interrupt requests with a delay
  - (D) handle no interrupt request
20. BIU stand for :
- (A) Bus interface unit
  - (B) Base interface
  - (C) Both (A) and (B)
  - (D) None of the above
21. After every response to the single step interrupt the flag that is cleared is :
- (A) IF (Interrupt Flag)
  - (B) TF (Trap Flag)
  - (C) OF (Overflow Flag)
  - (D) None of the above
22. The expansion of DAA is :
- (A) decimal adjust after addition
  - (B) decimal adjust before addition
  - (C) decimal adjust accumulator
  - (D) decimal adjust auxiliary
23. The generation of a square wave is possible in the :
- (A) mode 1
  - (B) mode 2
  - (C) mode 3
  - (D) mode 4
24. 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
25. The number of counters that are present in the programmable timer device 8254 is :
- (A) 1
  - (B) 2
  - (C) 3
  - (D) 4
26. 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

27. H = 23h, 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
28. The size of instruction queue in 8086 is :
- (A) 4 bytes
  - (B) 6 bytes
  - (C) 8 bytes
  - (D) 2 bytes
29. Example of an external interrupt is :
- (A) divide by zero interrupt
  - (B) keyboard interrupt
  - (C) overflow interrupt
  - (D) type2 interrupt
30. Which of the following register is not used in opcode fetch operations ?
- (A) Program counter
  - (B) Memory address register
  - (C) Memory data register
  - (D) Flag register
31. 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
32. 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
33. SIM instructions are used to perform ..... Communication.
- (A) Parallel
  - (B) Serial
  - (C) Both (A) and (B)
  - (D) Not used for communication purpose
34. 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

35. Subprogram is always terminated by ..... instructions.
- (A) RET
  - (B) PUSH
  - (C) Halt
  - (D) RST
36. 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
37. 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
38. The pin that disables all the DMA channels by clearing the mode registers is :
- (A) MARK
  - (B) CLEAR
  - (C) RESET
  - (D) READY
39. The architecture of 8051 consists of :
- (A) 4 latches
  - (B) 2 timer registers
  - (C) 4 on-chip I/O ports
  - (D) All of the above
40. The operation that can be performed on the status register is :
- (A) write operation
  - (B) read operation
  - (C) read and write operations
  - (D) All of the above
41. The priority of the channels varies frequently in :
- (A) rotating priority scheme
  - (B) fixed priority scheme
  - (C) rotating priority and fixed priority scheme
  - (D) None of the above
42. The 8257 is able to accomplish the operation of :
- (A) verifying DMA operation
  - (B) write operation
  - (C) read operation
  - (D) All of the above

43. How many machine cycles are needed to execute LDA 4000 instruction ?
- (A) 2
  - (B) 4
  - (C) 5
  - (D) 3
44. 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
45. 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
46. NMI stands for :
- (A) Nonmaskable interrupt
  - (B) Nonmultiple interrupt
  - (C) Nonmovable interrupt
  - (D) None of the above
47. Which of the following instruction is not valid ?
- (A) MOV AX, BX
  - (B) MOV DS, 5000H
  - (C) MOV AX, 5000H
  - (D) PUSH AX
48. A memory connected to a micro-processor 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
49. 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
50. Which of the following is a software interrupt ?
- (A) TRAP
  - (B) INTR
  - (C) RST 6.5
  - (D) RST 5

51. The instruction, RLA performs :
- (A) rotation of address register to left
  - (B) rotation of accumulator to left
  - (C) rotation of address register to right
  - (D) rotation of accumulator to right
52. The addressing mode, in which the instructions has no source and destination operands is :
- (A) register instructions
  - (B) register specific instructions
  - (C) direct addressing
  - (D) indirect addressing
53. Which of the following is not an addressing mode of 8051 ?
- (A) Register instructions
  - (B) Register specific instructions
  - (C) Indexed addressing
  - (D) None of the above
54. Which of the following is an 8-bit register in 8085 ?
- (A) Program Status Word
  - (B) Timer Control Register
  - (C) Accumulator
  - (D) All of the above
55. In idle mode, the device that is disabled in 8051 :
- (A) serial port
  - (B) timer block
  - (C) clock to CPU
  - (D) All of the above
56. Pin X1 and X2 are used for connecting in 8085 :
- (A) Oscillator
  - (B) Rectifier
  - (C) Amplifier
  - (D) None of the above
57. The instruction that compliments the accumulator :
- (A) CMC
  - (B) CMA
  - (C) STC
  - (D) RRC
58. Interrupt RST7.5 is ..... triggered.
- (A) Level
  - (B) Edge
  - (C) Edge and Level
  - (D) None of the above
59. The operating frequency of 8085 is :
- (A) 3 MHz
  - (B) 6 MHz
  - (C) 9 MHz
  - (D) 12 MHz
60. How many 8-bit ports are there in 8255 ?
- (A) 2
  - (B) 3
  - (C) 4
  - (D) 5

61. The number of pins in 8051 microcontroller IC is :
- (A) 20
  - (B) 30
  - (C) 40
  - (D) 60
62. 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
63. 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
64. For 8086 microprocessor, the stack segment may have a memory block of a maximum of :
- (A) 32K bytes
  - (B) 64K bytes
  - (C) 16K bytes
  - (D) None of the above
65. 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
66. 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
67. 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
68. 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.

69. 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
70. Which of the following circuit 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
71. Which of the following is a special-purpose register of microprocessor ?
- (A) Program counter
  - (B) Instruction register
  - (C) Accumulator
  - (D) Temporary register
72. 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
73. 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
74. 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
75. The higher order address lines are fully present for how many clock cycles ?
- (A) 2
  - (B) 3
  - (C) 5
  - (D) 4
76. 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

77. 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
78. How many pins are multiplexed in 8085 microprocessor ?
- (A) 12
  - (B) 16
  - (C) 8
  - (D) 4
79. 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
80. 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
81. The extension that is essential for every assembly level program is :
- (A) .ASP
  - (B) .ALP
  - (C) .ASM
  - (D) .PGM
82. 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
83. During comparison operation, the result of comparing or subtraction is stored in :
- (A) memory
  - (B) registers
  - (C) stack
  - (D) nowhere
84. 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.

85. Which of the following is a register-indirect addressing mode instruction set ?
- (A) STA 2700H
  - (B) ACI 36H
  - (C) DAA
  - (D) LDAX B
86. Conditional instructions are independent of which of the following flags ?
- (A) Z
  - (B) AC
  - (C) CY
  - (D) P
87. Which of the following is a non-vectored interrupt ?
- (A) TRAP
  - (B) RST-5.5
  - (C) RST-6.5
  - (D) INTR
88. Which is 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.
89. 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
90. In general, the source operand of an instruction can be :
- (A) memory location
  - (B) register
  - (C) immediate data
  - (D) All of the above
91. Which of the following is not a data copy/transfer instruction ?
- (A) MOV
  - (B) PUSH
  - (C) DAS
  - (D) POP
92. In 8-bit microprocessor, how many opcodes are present ?
- (A) 246
  - (B) 278
  - (C) 250
  - (D) 256

93. 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.
94. 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
95. Which of the following is not a status flag in microprocessor ?
- (A) Overflow flag
  - (B) Trap flag
  - (C) Interrupt flag
  - (D) Index flag
96. In 8051, the registers that contain the status information are :
- (A) control registers
  - (B) instruction registers
  - (C) program status word
  - (D) All of the above
97. The pin that is used to write data to the addressed memory location, during DMA write operation is :
- (A) MEMR (active low)
  - (B) AEN
  - (C) MEMW (active low)
  - (D) IOW (active low)
98. The registers that are not accessible by the user are :
- (A) Accumulator and B register
  - (B) IP and IE
  - (C) Instruction registers
  - (D) TMP1 and TMP2
99. After the execution of XRA A, what is result in Reg. A ?
- (A) Reset
  - (B) Set
  - (C) Compliment
  - (D) None of the above
100. S0 and S1 are the ..... signals of 8085.
- (A) Control signal
  - (B) Status signal
  - (C) Clock signal
  - (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 correct answer and mark the same in the OMR Answer-Sheet as per the direction :

**Example :**

**Question :**

Q. 1 (A) ● (C) (D)

Q. 2 (A) (B) ● (D)

Q. 3 (A) ● (C) (D)

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 any 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 सही उत्तर छँटना है। उत्तर को OMR आन्सर-शीट में सम्बन्धित प्रश्न संख्या में निम्न प्रकार भरना है :

**उदाहरण :**

**प्रश्न :**

प्रश्न 1 (A) ● (C) (D)

प्रश्न 2 (A) (B) ● (D)

प्रश्न 3 (A) ● (C) (D)

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।