

Roll. No.

Question Booklet Number

O.M.R. Serial No.

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B.Sc. (SEM.-V) (NEP) (SUPPLE.) EXAMINATION, 2024-25

ELECTRONICS

(Microprocessor Programming & Interfacing)

Paper Code							
B	1	4	0	5	0	2	T

Question Booklet
Series

A

Time : 1 : 30 Hours

Max. 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.
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 :

(Remaining instructions on last page)

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, उसे तुरन्त बदल लें।
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 छानना है। उत्तर को OMR उत्तर-पत्रक में सम्बन्धित प्रश्न संख्या में निम्न प्रकार भरना है :

(शेष निर्देश अन्तिम पृष्ठ पर)

1. Which port on the 8051 also serves as the multiplexed low-order address and data bus during external memory access?
 (A) Port 0
 (B) Port 1
 (C) Port 2
 (D) Port 3
2. The instruction "CMP B" performs which operation?
 (A) (A) + (B)
 (B) (A) - (B)
 (C) (A) and (B)
 (D) (A) or (B)
3. Which 8085 interrupt has the highest priority?
 (A) INTR
 (B) RST 7.5
 (C) RST 6.5
 (D) TRAP
4. The 8051 is fundamentally a:
 (A) Microprocessor
 (B) Microcontroller
 (C) Digital Signal Processor
 (D) Arithmetic Coprocessor
5. Which flag is set when the result of an arithmetic operation is zero?
 (A) Carry Flag (CY)
 (B) Parity Flag (P)
 (C) Zero Flag (Z)
 (D) Sign Flag (S)
6. The method where I/O devices are accessed using instructions like IN and OUT is called:
 (A) Memory Mapped I/O
 (B) Isolated I/O or I/O Mapped I/O
 (C) Direct I/O
 (D) Programmed I/O
7. What is the word size of the 8085 microprocessor?
 (A) 4-bit
 (B) 8-bit
 (C) 16-bit
 (D) 32-bit
8. The instruction "ORL P2, #0FH" will:
 (A) Set the lower nibble of P2
 (B) Clear the upper nibble of P2
 (C) Clear the lower nibble of P2
 (D) Complement the upper nibble of P2
9. Which component within the 8085 CPU is responsible for performing arithmetic and logic operations?
 (A) Register Array
 (B) Control Unit
 (C) Arithmetic Logic Unit (ALU)
 (D) Instruction Decoder
10. The RAL instruction performs a:
 (A) Right shift through carry
 (B) Left shift through carry
 (C) Right shift without carry
 (D) Left shift without carry

11. The 8255 chip is a:
 - (A) Programmable Interrupt Controller
 - (B) Programmable Timer/Counter
 - (C) Programmable Peripheral Interface (PPI)
 - (D) Direct Memory Access Controller
12. Which of the following is a software interrupt in the 8085?
 - (A) TRAP
 - (B) RST 7.5
 - (C) RST 6.5
 - (D) RST 5
13. The performance of a microprocessor is NOT typically determined by its:
 - (A) Clock Speed
 - (B) Word Size
 - (C) Memory Capacity
 - (D) Physical Weight
14. Which instruction is used to return from a subroutine?
 - (A) CALL
 - (B) PUSH
 - (C) RET
 - (D) POP
15. The main purpose of an address decoder in a microprocessor system is to:
 - (A) Amplify data bus signals
 - (B) Generate the system clock
 - (C) Select a specific memory chip or I/O device
 - (D) Convert analog signals to digital
16. The instruction "CPL P1.2" will:
 - (A) Clear bit 2 of Port 1
 - (B) Set bit 2 of Port 1
 - (C) Complement (toggle) bit 2 of Port 1
 - (D) Copy bit 2 of Port 1 to the carry flag
17. Which port provides the high-order address bits during external memory access?
 - (A) Port 0
 - (B) Port 1
 - (C) Port 2
 - (D) Port 3
18. The EA' (External Access) pin on the 8051 is tied to Vcc to:
 - (A) Enable execution from internal ROM
 - (B) Enable execution from external ROM
 - (C) Reset the microcontroller
 - (D) Enable the serial port
19. The total memory addressing capacity of the 8085 is:
 - (A) 64 KB
 - (B) 1 MB
 - (C) 256 Bytes
 - (D) 16 KB

20. Which of the following is a common application of a microprocessor?
- (A) Engine Control Unit (ECU) in a car
 - (B) Increasing AC voltage
 - (C) Storing large databases
 - (D) Generating electrical power
21. The SIM instruction is used to:
- (A) Read interrupt masks
 - (B) Set interrupt masks and perform serial output
 - (C) Execute an interrupt
 - (D) Reset the interrupt controller
22. The PUSH instruction is used to:
- (A) Read data from the stack
 - (B) Write data to the stack
 - (C) Increment the stack pointer
 - (D) Decrement the program counter
23. Which unit controls the timing and sequencing of operations within the 8085?
- (A) ALU
 - (B) Register Array
 - (C) Control Unit
 - (D) Flags
24. The instruction "MVI A, 05H" uses which addressing mode?
- (A) Immediate Addressing
 - (B) Direct Addressing
 - (C) Register Addressing
 - (D) Register Indirect Addressing
25. Which technique uses only some of the address lines to select a memory chip, potentially causing address aliasing?
- (A) Full Decoding
 - (B) Partial Decoding
 - (C) Complete Decoding
 - (D) Absolute Decoding
26. The BSR (Bit Set/Reset) mode in the 8255 is used to:
- (A) Set or reset the entire control word
 - (B) Set or reset individual bits of Port C
 - (C) Configure Port A as an input
 - (D) Configure all ports as outputs
27. Which branch instruction will always jump to a specified address, regardless of flags?
- (A) JC
 - (B) JZ
 - (C) JNC
 - (D) JMP
28. The HOLD input pin is used primarily for:
- (A) Interrupt Requests
 - (B) Direct Memory Access (DMA) operations
 - (C) Resetting the CPU
 - (D) Clock input

29. What is the primary function of a microprocessor?
- (A) To store data permanently
 - (B) To execute instructions and process data
 - (C) To provide power to the computer
 - (D) To display graphics on the screen
30. Which of these is a general-purpose 8-bit register in the 8085?
- (A) Accumulator (A)
 - (B) Stack Pointer (SP)
 - (C) Program Counter (PC)
 - (D) Instruction Register (IR)
31. The RIM instruction can be used to:
- (A) Read interrupt masks and serial input data
 - (B) Set interrupt masks
 - (C) Read the contents of the accumulator
 - (D) Reset the interrupt system
32. The 8085 microprocessor belongs to which generation?
- (A) First Generation (4-bit)
 - (B) Second Generation (8-bit)
 - (C) Third Generation (16-bit)
 - (D) Fourth Generation (32-bit)
33. Which arithmetic instruction does NOT affect the Carry flag?
- (A) ADD B
 - (B) SUB C
 - (C) INR A
 - (D) ADC D
34. The smallest unit of time in an 8085 timing diagram is the:
- (A) Instruction Cycle
 - (B) Machine Cycle
 - (C) T-state
 - (D) Clock Period
35. The instruction "ANL P1, #0F0H" will:
- (A) Set the lower nibble of P1
 - (B) Clear the upper nibble of P1
 - (C) Clear the lower nibble of P1
 - (D) Complement the upper nibble of P1
36. Which of the following is a dual-function pin of Port 3?
- (A) P1.0
 - (B) P2.0
 - (C) P3.0 (RXD)
 - (D) P0.0
37. The DAA instruction is used after:
- (A) Logical operations (AND, OR)
 - (B) Increment operations (INR)
 - (C) Addition of BCD numbers
 - (D) Subtraction of binary numbers

38. How many I/O ports does the standard 8051 microcontroller have?
- (A) 2
 - (B) 3
 - (C) 4
 - (D) 8
39. The signal used to synchronize slow peripherals with the 8085 CPU is:
- (A) HOLD
 - (B) READY
 - (C) RESET IN
 - (D) INTR
40. Which instruction is used to set a single bit of a port or any bit-addressable location?
- (A) MOV
 - (B) ADD
 - (C) SETB
 - (D) ANL
41. The complete sequence of steps to fetch and execute an instruction is called the:
- (A) Clock Cycle
 - (B) Machine Cycle
 - (C) T-state
 - (D) Instruction Cycle
42. A key feature that distinguishes a microcontroller from a microprocessor is:
- (A) Higher clock speed
 - (B) The presence of on-chip RAM, ROM, I/O ports, and timers
 - (C) Larger word size
 - (D) The ability to perform complex calculations
43. The Stack Pointer (SP) in the 8085 is a:
- (A) 8-bit register
 - (B) 16-bit register
 - (C) 32-bit register
 - (D) 1-bit flag
44. Which pin on the 8085 is used to indicate whether the address on the bus is for memory or I/O?
- (A) READY
 - (B) HOLD
 - (C) IO/M'
 - (D) ALE
45. The RST 4 instruction will jump to which fixed memory location?
- (A) 0000H
 - (B) 0020H
 - (C) 0028H
 - (D) 0030H
46. What is the function of the ALE (Address Latch Enable) pin?
- (A) To enable the data bus
 - (B) To demultiplex the address and data bus
 - (C) To reset the microprocessor
 - (D) To accept an interrupt

47. Which interrupt is both level-sensitive and non-maskable?
- (A) INTR
 - (B) RST 5.5
 - (C) RST 6.5
 - (D) TRAP
48. The operating mode of the 8255 is configured by writing to the:
- (A) Port A register
 - (B) Port B register
 - (C) Port C register
 - (D) Control Register
49. In Memory Mapped I/O, a peripheral is treated like a:
- (A) CPU register
 - (B) Memory location
 - (C) Isolated device
 - (D) Control unit
50. The EI instruction is used to:
- (A) Disable all interrupts
 - (B) Enable all interrupts
 - (C) Execute an interrupt
 - (D) Identify the interrupting device
51. A 32-bit microprocessor can process how many bits of data at a time?
- (A) 8 bits
 - (B) 16 bits
 - (C) 32 bits
 - (D) 64 bits
52. The first machine cycle of any instruction is always the:
- (A) Memory Read
 - (B) Memory Write
 - (C) I/O Read
 - (D) Opcode Fetch
53. Which of the following is a data transfer instruction?
- (A) ADD B
 - (B) JMP 2050H
 - (C) MOV C, A
 - (D) CMA
54. A time delay is often created using a loop that relies on:
- (A) Data transfer instructions
 - (B) Arithmetic instructions
 - (C) Branch instructions and a decrementing counter
 - (D) Stack operations
55. The instruction "LDA 2500H" will load the accumulator with data from:
- (A) Register A
 - (B) Memory location 2500H
 - (C) I/O port 25H
 - (D) The address held in the HL register pair

56. Which interrupt is edge-triggered?
- (A) INTR
 - (B) RST 7.5
 - (C) RST 6.5
 - (D) TRAP
57. How many address lines does the 8085 microprocessor have?
- (A) 8
 - (B) 16
 - (C) 20
 - (D) 32
58. To configure an 8051 port pin as an input, you should first:
- (A) Write a 0 to the corresponding port latch bit
 - (B) Write a 1 to the corresponding port latch bit
 - (C) Leave the pin unconnected
 - (D) Connect it directly to ground
59. The main function of the Program Counter (PC) is to:
- (A) Hold the data being processed
 - (B) Store the address of the next instruction to be executed
 - (C) Point to the top of the stack
 - (D) Hold the results of ALU operations
60. What is the purpose of the instruction "MOV P1, A"?
- (A) Move data from Port 1 to the Accumulator
 - (B) Move data from the Accumulator to Port 1
 - (C) Move the address of Port 1 to the Accumulator
 - (D) Move immediate data to Port 1
61. When interfacing a toggle switch as an input, a pull-up resistor is used to:
- (A) Limit the current flowing into the port
 - (B) Ensure a logic high when the switch is open
 - (C) Increase the switching speed
 - (D) Protect the port from electrostatic discharge
62. Which assembly directive is used to specify the starting address of a program block?
- (A) DB
 - (B) DW
 - (C) ORG
 - (D) END
63. An interrupt is a signal that causes the microprocessor to:
- (A) Shut down
 - (B) Pause its current program and execute an Interrupt Service Routine (ISR)
 - (C) Speed up its clock
 - (D) Clear all registers

64. The lower 8-bit address bus (A0-A7) in the 8085 is multiplexed with:
- (A) Control signals
 - (B) The data bus (D0-D7)
 - (C) The higher address bus (A8-A15)
 - (D) Interrupt signals
65. The time interval between an interrupt request and the start of ISR execution is called:
- (A) Execution Time
 - (B) Response Time
 - (C) Latency Time
 - (D) Delay Time
66. Which 8085 register pair is commonly used as a memory pointer?
- (A) BC
 - (B) DE
 - (C) HL
 - (D) SP
67. What is the function of "MOV C, P1.3"?
- (A) Moves the value of bit P1.3 to the carry flag
 - (B) Moves the value of the carry flag to bit P1.3
 - (C) Moves the value of Port 1 to register C
 - (D) Moves the value of register C to Port 1
68. To interface an LED to an 8085 via the 8255, the LED is connected to a port pin configured as an output along with a:
- (A) Pull-down resistor
 - (B) Current limiting resistor
 - (C) Voltage regulator
 - (D) Bypass capacitor
69. How many 8-bit I/O ports does the 8255 PPI have?
- (A) 2
 - (B) 3
 - (C) 4
 - (D) 8
70. Which instruction is used to clear a single bit?
- (A) MOV
 - (B) CLR
 - (C) ORL
 - (D) CPL
71. A key advantage of Memory Mapped I/O is:
- (A) It uses separate control signals (IO/M'=1)
 - (B) All memory reference instructions can be used for I/O
 - (C) It has a separate address space
 - (D) It requires less address decoding

72. A subroutine is invoked using the:
- (A) PUSH instruction
 - (B) POP instruction
 - (C) CALL instruction
 - (D) RET instruction
73. In an instruction, the part that specifies the operation to be performed is called the:
- (A) Operand
 - (B) Mnemonic
 - (C) Opcode
 - (D) Label
74. How many T-states does a typical Opcode Fetch (OF) machine cycle take in the 8085?
- (A) 3
 - (B) 4
 - (C) 6
 - (D) 10
75. Bit-addressable memory in the 8051 is located in:
- (A) The Accumulator only
 - (B) The Register Banks only
 - (C) The RAM area from 20H to 2FH and some SFRs
 - (D) The internal ROM (code memory)
76. The READY signal is used during which machine cycle?
- (A) Opcode Fetch
 - (B) Memory Read
 - (C) Memory Write
 - (D) To extend any cycle when dealing with slow devices
77. What is the function of the INX H instruction?
- (A) Increments the H register by 1
 - (B) Increments the L register by 1
 - (C) Increments the HL register pair by 1
 - (D) Increments the memory location pointed by HL
78. Which of the following is a valid bit manipulation instruction?
- (A) MOV A, 20H
 - (B) ADD A, #30H
 - (C) SETB 20H.0
 - (D) JNZ LOOP
79. After acknowledging an interrupt, the 8085 executes a:
- (A) CALL instruction to the ISR address
 - (B) JMP instruction to the ISR address
 - (C) PUSH instruction to save registers
 - (D) RESTART instruction internally
80. What happens when a TRAP interrupt occurs?
- (A) It can be disabled by the DI instruction
 - (B) The microprocessor is reset
 - (C) It is automatically vectored to address 0024H
 - (D) It is non-maskable and vectored to address 0024H

81. To configure all ports of the 8255 as output ports in Mode 0, the control word should be:
- (A) 80H
 - (B) 89H
 - (C) 9BH
 - (D) 00H
82. In which mode of 8255 is Port C used for handshaking signals for Port A and Port B?
- (A) Mode 0
 - (B) Mode 1
 - (C) Mode 2
 - (D) BSR Mode
83. In the instruction "JNB P3.4, LABEL", the jump will occur if:
- (A) Bit P3.4 is set (1)
 - (B) Bit P3.4 is not set (0)
 - (C) The accumulator is zero
 - (D) The carry flag is set
84. The instruction "STA 2500H" will store the contents of the accumulator:
- (A) In the accumulator itself
 - (B) In register A
 - (C) At memory location 2500H
 - (D) At the address held in the HL register pair
85. The purpose of the PUSH instruction is to:
- (A) Read data from the stack
 - (B) Write data to the stack
 - (C) Increment the stack pointer
 - (D) Decrement the program counter
86. Which machine cycle is always the first step of an instruction cycle?
- (A) Memory Read
 - (B) Memory Write
 - (C) I/O Read
 - (D) Opcode Fetch
87. How many T-states does a typical Opcode Fetch (OF) machine cycle take in 8085?
- (A) 3
 - (B) 4
 - (C) 6
 - (D) 10
88. To interface an LED with an 8085 using the 8255, the LED should be connected to an output port and require a:
- (A) Current limiting resistor
 - (B) Voltage amplifying transistor
 - (C) Pull-up resistor
 - (D) Filter capacitor
89. To interface a toggle switch as an input, a pull-up resistor is typically used to:
- (A) Limit the current
 - (B) Ensure a defined high logic level when the switch is open
 - (C) Increase the switching speed
 - (D) Protect the port from ESD
90. To configure an 8051 port pin as an input, you should:
- (A) Write a 0 to the corresponding port latch
 - (B) Write a 1 to the corresponding port latch
 - (C) Ground the pin
 - (D) Connect it to Vcc

91. The performance of a microprocessor is often measured by its:
- (A) Color and size
 - (B) Speed and word size
 - (C) Weight and material
 - (D) Brand and model
92. Which component of the 8085 CPU is responsible for performing arithmetic and logic operations?
- (A) Register Array
 - (B) Control Unit
 - (C) Arithmetic Logic Unit (ALU)
 - (D) Instruction Decoder
93. The opcode for an instruction represents the:
- (A) Data to be operated on
 - (B) Memory address of the operand
 - (C) Operation to be performed
 - (D) Result of the operation
94. Which branch instruction will always jump to a given address?
- (A) JC
 - (B) JZ
 - (C) JNC
 - (D) JMP
95. A subroutine is called using the:
- (A) PUSH instruction
 - (B) POP instruction
 - (C) CALL instruction
 - (D) RET instruction
96. An interrupt is a process that:
- (A) Stops the microprocessor permanently
 - (B) Pauses the normal execution of a program to service a request
 - (C) Speeds up the clock frequency
 - (D) Erases the contents of memory
97. The time between the receipt of an interrupt and the start of its ISR is called:
- (A) Execution Time
 - (B) Response Time
 - (C) Latency Time
 - (D) Delay Time
98. Which 8085 register pair is used as a memory pointer?
- (A) BC
 - (B) DE
 - (C) HL
 - (D) PSW
99. The sequence of operations performed by the microprocessor to execute an instruction is called the:
- (A) Clock Cycle
 - (B) Machine Cycle
 - (C) T-state
 - (D) Instruction Cycle
100. DSGFS The RST 7 instruction will jump to which fixed memory location?
- (A) 0000H
 - (B) 0020H
 - (C) 0038H
 - (D) 003CH

Rough Work

Rough Work

Example :

Question :

Q.1 (A) ● (C) (D)

Q.2 (A) (B) ● (D)

Q.3 (A) ● (C) (D)

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 & 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.

उदाहरण :

प्रश्न :

प्रश्न 1 (A) ● (C) (D)

प्रश्न 2 (A) (B) ● (D)

प्रश्न 3 (A) ● (C) (D)

5. प्रत्येक प्रश्न के अंक समान हैं। आपके जितने उत्तर सही होंगे, उन्हीं के अनुसार अंक प्रदान किये जायेंगे।
6. सभी उत्तर केवल ओ०एम०आर० 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. ओ०एम०आर० 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 में, रफ-कार्य के लिए दिए खाली पेज पर ही किया जाना चाहिए।
11. परीक्षा-कक्ष में लॉग-बुक, कैल्कुलेटर, 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 प्रश्नपुस्तिका के सभी पृष्ठ भलीभाँति छपे हुए हैं। यदि प्रश्नपुस्तिका में कोई कमी हो, तो कक्षनिरीक्षक को दिखाकर उसी सिरिज की दूसरी प्रश्नपुस्तिका प्राप्त कर लें।