2404E380

Candidate's Seat No :_____

B.Sc. (NEP) Sem.-4 Examination

DSC-C-242

Electronics

Time : 2-00 Hours] **April-2025** **[Max. Marks : 50**

Instructions: (1) All questions carry equal marks
(2) The symbols have their usual meanings & figures to the right indicate marks.

1 (A) Name nine basic processes used to fabricate ICs using silicon planar technology. Explain Silicon Wafer preparation with the help of figure. 5

(B) Explain classification of integrated circuits. Also draw its diagram. Also with the help of table and figure explain IC chip size and circuit complexity. 5

OR

(A) Explain fabrication of a typical circuit. Step5: Base Diffusion, Step6: Emitter Diffusion and Step7: Aluminium Metallization with the help of figures. 5

(B) Explain Cross section of (a) Monolithic integrated circuit transistor and (b) A discrete planar epitaxial transistor with the help of diagram. Comparison of npn and pnp IC Transistors. 5

2 (A) With diagram, waveforms & truth table explain the working of 3-bit binary ripple counter. 5

(B) Draw a logic diagram, waveforms & truth table of Mod-3 counter and explain its working. 5

OR

(A) Draw a circuit of synchronous 4 bit up-down counter and explain its working. 5

(B) Draw and explain a circuit of three flip-flop Mod-5 Counter, its truth table, draw desired waveforms and its logic block 5

3 (A) Explain the following data transfer group instructions. Define their states, Flags, Addressing and Machine Cycles: 1. Mov r,M; 2. LXI rp, data 16; 3. STA Addr; 4. LHLD addr; 5. STAX rp 5

(B) Give five advantages and five disadvantages of High-level languages. 5

OR

(A) Explain the following logical group instructions. Define their states, Flags, Addressing and Machine Cycles: 1. ANA M; 2. ORA r; 3. XRI data; 4. CMP M; 5. RRC 5

(B) Explain stack in detail with figure of Stack before PUSH operation, Stack after PUSH operation, Stack before POP operation and Stack after POP operation. 5

4 (A) Write a assembly language program of 8085 for addition of two 8-bit numbers – sum 8-bits. 5

(B) Write a assembly language program of 8085 for 8-bit decimal subtraction. 5

OR

(A) Write a assembly language program of 8085 for 8-bit subtraction. 5

(B) Write a assembly language program of 8085 for addition of two 16-bit numbers – sum 16-bits. 5

5 Attempt any **TEN** out of twelve. 10

1 An IC is a miniature, low cost electronic circuit fabricated on a single crystal chip of _____.
2 A Schottky barrier diode is clamped between base and collector of a transistor to avoid _____.
3 Buried layer is a heavily doped n^+ layer sandwiched between the p-type substrate and n- type epitaxial collector to reduce the collector _____ resistance of the IC transistor.
4 The largest decimal number that can be stored in a eight-flip-flop counter (mod 256) is _____.
5 _____ is the largest binary number representable by a mod-7 ripple counter.
6 _____ flip-flops are required to construct mod-1024 ripple counter.
7 ADC M is an example of _____ addressing.
8 JPE addr (label) is example of _____ addressing.
9 SPHL is the example of _____ addressing.
10 One's complement of 5485H is _____H.
11 Two's complement of 96 is _____.
12 Result of shifting 65 left by one bit is _____.