

(104PHY17)

M.Sc. DEGREE EXAMINATION, NOVEMBER 2017

FIRST SEMESTER

Branch — Physics

Paper IV – ANALOG AND DIGITAL ELECTRONICS

(New Syllabus)

Time : 3 Hours

Max. Marks : 70

PART – A

Answer any FOUR of the following. All questions carry equal marks.

(Marks : 4×5 marks = 20 marks)

1. Draw the characteristic of n-channel FET.
2. Draw the inverter circuit by using CMOS.
3. Write down the characteristic of ideal op-amp.
4. Determine output voltage for non-inverting amplifier when $V_i = 100\text{mV}$, $R_f = 100\text{K}\Omega$ and $R_i = 80\text{K}\Omega$.
5. Construct JK-flip flop by using NAND gate and write its truth table.
6. Draw the circuit diagram of R – 2R binary ladder D/A convert and explain it.
7. Explain Stack operation in 8086 Microprocessor.
8. Write assembly language program to generate 1ms of time delay.

PART – B

(Essay Type).

Answer ALL questions. All questions carry equal marks.

(Marks : $4 \times 12\frac{1}{2}$ marks = 50 marks)

9. (a) Explain the working of enhancement MOSFET and give its characteristics with neat diagram.

Or

- (b) Explain the working of UJT and give its applications with neat diagram.

10. (a) Draw the block diagram of op-amp and explain the working of each part.

Or

- (b) Explain the working of op-amp integrator and differentiator with neat sketches.

11. (a) Design Mod3 and Mod5 synchronous counters and write down their truth table.

Or

- (b) Draw the circuit diagram of successive approximation ADC and explain its working.

12. (a) Draw the architecture of 8086 Microprocessor and explain it.

Or

- (b) Write an assembly language program for addition of two 16-bit numbers.

- (c) Write an assembly language program for division of two 16-bit numbers.
