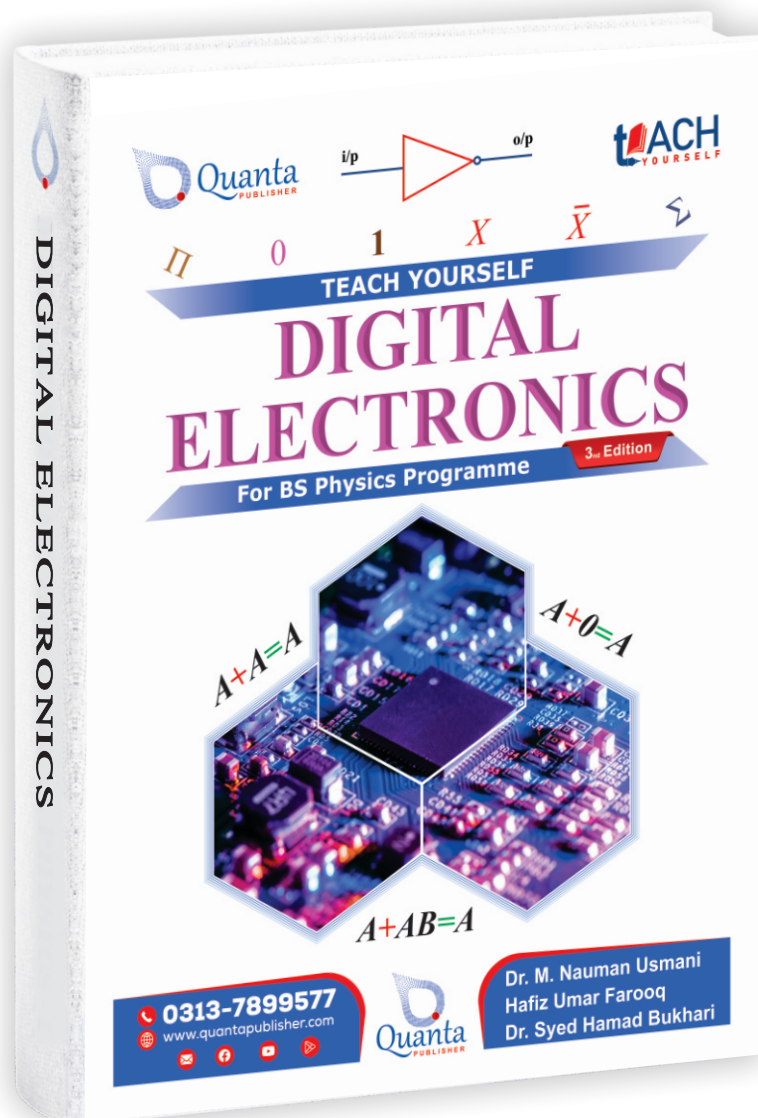



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UNIVERSITY OF THE PUNJAB

Roll No.

Seventh Semester 2018
Examination: B.S. 4 Years Programme

PAPER: Advanced Electronics-I (Theory)
Course Code: PHY-411

TIME ALLOWED: 30 mins.
MAX. MARKS: 10

Attempt this Paper on this Question Sheet only.

Q.1 Multiple Choice, Attempt all questions on the same sheet. 10

- In a toggle mode a JK flip flop has
(a) J=0, K=0 (b) J=1, K=1 (c) J=1, K=0 (d) J=0, K=1
- How many Flip-Flop are required to build a binary counter circuit to count from 0 to 1023?
(a) 6 (b) 10 (c) 24 (d) 12
- In Flip Flops clock is present but in Latch clock is
(a) Present always (b) absent always (c) may be present / absent (d) none
- Counter is a :
(a) Combinational circuit (b) Sequential circuit (c) both (d) None
- The fast logic family is
(a) ECL (b) DRL (c) TTL (d) TRL
- A 3 input NOR gate has eight inputs possibilities, how many of those possibilities will result a high output?
(a) 1 (b) 2 (c) 7 (d) 8
- How many outputs are on a BCD decoder?
(a) 4 (b) 16 (c) 8 (d) 10
- The storage element for a static RAM is:
(a) Diode (b) resistor (c) Capacitor (d) Flip Flop
- An OP-Amp has very _____.
(a) high voltage gain (b) high input impedance (c) Low output impedance (d) all of them
- Common Mode Gain of OP Amp is _____.
(a) Very high (b) Very Low (c) Always Unity (d) Unpredictable



UNIVERSITY OF THE PUNJAB

Seventh Semester 2018
 Examination: B.S. 4 Years Programme

Roll No.

PAPER: Advanced Electronics-I (Theory)
 Course Code: PHY-411

TIME ALLOWED: 2 hrs. & 30 mins.
 MAX. MARKS: 50

Attempt this Paper on Separate Answer Sheet provided.

Q.2 Short Answer, Attempt only five parts.

20

1. What is multiplexer, and de-multiplexer?
2. What are Registers, and its types?
3. Define Decoder, explain how it works?
4. What is RAM, what are its types?
5. List the major difference between PLA and PAL.
6. What is the operation of J, K Flip-Flop?
7. What is the edge triggered flip-flop?
8. What is a CPU?

Attempt three questions.

30

Q.3 (a) Describe the construction and working of Differential Amplifier?

(6,4)

(b) Why NAND and NOR gates are called Universal gate, design AND, OR, NOT with these gates.

Q.4 (a) Design a Synchronous Counter with JK Flip-Flop which count only 001,011,101,110,111

(5)

(b) What is Gray Code, design a circuit for Binary to Gray with exclusive OR for 11011. (5)

Q.5 (a) Explain the programmable logic devices PLD,s.

(6,4)

(b) Determine the output for 5-Bit R-2R ladder network when the digital input is 10101 if 0V corresponds to logic 0 and 5V corresponds to logic 1.

Q6 (a) Design a logic circuit of Multiplexer of 4 into 1 (4×1).

(6,4)

(b) A 2 MHz clock signal is applied to a five stage binary ripple counter. What is the frequency at the output of the fifth flip-flop.

Q 7. (a) Given the expression $X = A.B.C + A.B.C + B.C + A.C$ using only NAND gates draw the logic diagram. (5)

(b) What is ALU, how it work.

(5)



UNIVERSITY OF THE PUNJAB

Sixth Semester - 2018

Examination: B.S. 4 Years Programme

Roll No.

PAPER: Digital Electronics
Course Code: PHY-310 Part – I (Compulsory)

TIME ALLOWED: 15 Mints.
MAX. MARKS: 10

Attempt this Paper on this Question Sheet only.

Please encircle the correct option. Each MCQ carries 1 Mark. This Paper will be collected back after expiry of time limit mentioned above.

Q.1 Select the correct answer and encircle it.

(10)

- How many flip flops are required to construct a ripple counter of Mod-10?
 a) 10 b) 3 c) 4 d) 2
- How many f/f required constructing a Synchronous mod-24 counter?
 a) 6 b) 4 c) 5 d) 8
- A decimal number 256 be written in BCD as:
 a) 100101110 b) 010 0101 0110 c) 10 0101 0110 d) non of them
- A XOR gate has input A and b and its output is being written as:
 a) $A+B$ b) $AB+A'B$ c) $A'B+AB'$ d) $AB+A'B'$
- The code where all successive numbers differ from their preceding number by single bit is
 a) Binary code. b) BCD.
 c) Excess – 3. d) Gray.
- Which of the following are known as Universal gate?
 a) NAND & NOR b) AND & OR c) XOR & OR d) None
- Which of the following memories store the most number of bits?
 a) 64Kx8 memory b) 1Mx8 memory c) 32Mx8 memory d) 64x6 memory
- The result of adding hexadecimal number A6 to 3A is
 a) DD b) E0 c) F0 d) EF
- The excess-3 code of decimal 7 is represented by
 a) 1100 b) 1001 c) 1011 d) 1010
- The output of SR F/F when S=1, R= 0 is
 a) 1 b) 0 c) NO change d) High Impedance



UNIVERSITY OF THE PUNJAB

Sixth Semester - 2018

Examination: B.S. 4 Years Programme

Roll No.

PAPER: Digital Electronics
Course Code: PHY-310 Part – II

TIME ALLOWED: 2 Hrs. & 45 Mints.
MAX. MARKS: 50

Attempt this Paper on Separate Answer Sheet provided.

Q.2 Write short answer of each.

(2×10)=20

- I. Write the Gray equivalent of $(78)_{10}$.
- II. Find the hex sum of $(93 + 9DE)_{16}$.
- III. Explain how an D type F/F can work.
- IV. What is difference between Asynchronous and Synchronous counter?
- V. What is a D/A converter?
- VI. What is digital computer?
- VII. What are the semiconductor memories?
- VIII. What is the difference between the Boolean algebra & K-map in sequential circuits?
- IX. Solve $(7 - 10)_{10}$ with 2's compliment.
- X. What are the applications of Gray and Excess Code?

Q3. Draw the diagram of JK master Slave Flip Flop, explain its function with truth table. 10

Q4. Simplify the Boolean function and solve with SOP and draw the logic diagram with NAND gates.

$$F(A,B,C,D) = \Sigma (1,3,4,5,6,7,9,12,13)$$

10

Q.5 Write short note on any two.

5,5

- a) PAL
- b) Parallel counter
- c) Digital Clock

GOVERNMENT COLLEGE UNIVERSITY, FAISALABAD
 Final Terminal Examination (Fall 2021-22)
 BS (P.E) (5th Semester)
 Time: 120 Minutes

Degree/Discipline: _____
 Course Code: PHY-609
 Course Title: Advanced Electronics

Marks: 30
 Credit Hours: 3(3-0)

Note: Attempt all questions. Draw diagram where necessary.

Q. No.01: Provide short answer to following questions. (2X5=10)

- What is Gray code? How Gray and binary code can be converted into each other?
- Convert the fractional binary number 0.1011 to decimal.
- Implement the expression $X = \overline{(A + B + C)}$ using NAND logic.
- What is propagation Delay time? How it affect the working of synchronous and Asynchronous Counters?
- How a Decimal-to-BCD decoder works? Explain shortly.

Note: All questions in the subsequent section carry equal marks

Question # 02: what is the Quine-McCluskey method of logic simplification? Explain it for expression

$$X = \overline{A}\overline{B}\overline{C}D + \overline{A}\overline{B}CD + \overline{A}B\overline{C}\overline{D} + \overline{A}B\overline{C}D + A\overline{B}\overline{C}\overline{D} + A\overline{B}\overline{C}D + AB\overline{C}\overline{D} + ABCD$$

Question # 03: What is the difference between Ripple carry and look ahead carry adders? Explain in detail.

Question # 04: How can you differentiate between latches and Flip-flops? Explain the working of J-K Flip-flop in detail.

Question # 05: What is up/down counter? How it works? Explain

Question # 06: What are Shift Registers? Explain how to construct various types of shift registers?

Govt. College UNIVERSITY, FAISALABAD
External Semester Examinations Fall-2022-2023

Roll No.

Semester: 7th Programme: BS Physics Credit Hrs.: 3(3-0)
 Course Code: PHY-611/6-1 Part: Subjective Marks: 80
 Course Title: Advanced Electronics
 Time allowed: 2.30 Hours

Note: Attempt all questions. All the questions carry equal marks.

Q2. Design a 3 bit- gray code synchronous counter and draw its circuit diagram using JK flip flops.

Q3. Design a BCD to 7-segment decoder, also draw a circuit to show BCD to 7 segment decoder is used to suppress unnecessary zero.

Q4. (a) Draw the circuit diagram of Johnson counter and explain its working. (10)
 (b) simplify the given Boolean expression using K map. (10)

$$x = \bar{A}BC\bar{D} + ABC\bar{D} + \bar{A}BCD + ABCD + \bar{A}BC\bar{D} + ABC\bar{D} + \bar{A}BCD + ABCD + \bar{A}BC\bar{D} + ABC\bar{D}$$

Also draw the circuit of simplified expression using AND-OR logic.

Q5. (a) What are binary weighted input digital to analog converters? Draw the circuit diagram and explain its working. (14)
 (b) Convert the following numbers into BCD codes: $(502)_{10}$ ii. $(742)_{10}$ iii. $(805)_{10}$