## **GUJARAT TECHNOLOGICAL UNIVERSITY**

Diploma Engineering - SEMESTER - 2 (NEW) - EXAMINATION - Winter-2024

Subject Code: 4320703 Date: 09-01-2025

**Subject Name: Basics of Digital Electronics** 

Time: 10:30 AM TO 01:00 PM Total Marks: 70

## **Instructions:**

1. Attempt all questions.

- 2. Make Suitable assumptions wherever necessary.
- 3. Figures to the right indicate full marks.
- 4. Use of simple calculators and non-programmable scientific calculators are permitted.
- 5. English version is authentic.

			Marks
Q.1	(a)	Convert decimal number 459 into binary, octal and hexadecimal	03
<b>뇟</b> 욁.1	(생)	ડેસિમલ નંબર 459 ને બાઈનરી, ઓકટલ તથા હેકસાડેસીમલ માં કન્વર્ટ કરો.	०३
	(b)	Write: (1) 1's and 2's complement for binary number 110101 (2) 9's and 10's complement for decimal number 32.6	04
	(બ)	લખો: (1) બાઈનરી નંબર 110101 માટે 1's and 2's કોંપ્લીમેંટ (2) ડેસિમલ નંબર 32.6 માટે 9's and 10's કોંપ્લીમેંટ	०४
	(c)	Convert: (1) 11010.011 binary to octal (2) Decimal 67.75 to binary (3) Octal 63.5 to hexadecimal (4) 5A.B hexadecimal to binary (5) 104.85 decimal to binary, octal and hexadecimal	07
	(5)	કન્પર્ટ કરો: (1) 11010.011 binary to octal (2) Decimal 67.75 to binary (3) Octal 63.5 to hexadecimal (4) 5A.B hexadecimal to binary (5) 104.85 decimal to binary, octal and hexadecimal	იტ
		OR	
	(c)	Explain various arithmetic operations with binary numbers.	07
	(ક)	બાઈનરી નંબર માટે વિવિધ arithmetic operations સમજાવો.	09
Q.2	(a)	Explain AND, OR and NOT gates with logic symbol and truth table	03
<b>አ</b> &.2	(અ)	AND, OR તથા NOT ગેટ logic symbol તથા truth table સાથે સમજાવો.	03
	<b>(b)</b>	Explain minterms and maxterms with example.	04
	(બ)	સઉદાહરણ minterms તથા maxterms સમજાવો.	०४
	(c)	State and prove De Morgan's theorem with truth table and equivalent logic cirucuit.	07

Q.2   (a)   Explain NAND, NOR and EX-OR gates with logic symbol and truth table   (3)		(ક)	De Morgan's theorem truth table તથા equivalent logic cirucuit સાથે સમજાવો	09
प्रश्ते.2         (२५)         NAND, NOR d'ell EX-OR शेट logic symbol d'ell truth table से सिंथे, 24 मिश्रादी.         03           (b)         Prove that - ((AB)'+A'+AB)' = 0         04           (c)         What is universal gate? Show that NAND gate is universal gate.         07           (c)         Universal gate et êt êt? NAND gate universal gate êt ât साजित.         09           (b)         Universal gate et êt? ? NAND gate universal gate êt ât साजित.         03           (c)         What is K map? Draw K map for a four variable function.         03           (d)         K map êt êt? variable function Htê K map £têt.         03           (e)         Explain canonical SOP and POS         04           (e)         Canonical SOP d'ell POS HH%d ?         04           (c)         Reduce the function f=∑m(5,6,7,9,10,11,13,14,15) using K map and implement the simplified form using NAND gate.         07           (b)         K map ell +t&£ell function f=∑m(5,6,7,9,10,11,13,14,15) £t\$qt ost still dell A'NAND gate £tlt implement \$t\$t.         08           Q. 3         (a)         Explain don't care condition with example.         03           Q. 3         (a)         Explain don't care condition with example.         03           Q. 3         (a)         Reduce the function f=\(\bar{m}\mathbb{M}\), 2,6,7,11,12,13,15) using K map and implement the simplified form using NOR gate.				
원내생대한   10   10   10   10   10   10   10   1	Q.2	(a)		03
(4) 원[બિર 5ર]- ((AB)*+A*+AB)* = 0 (c) What is universal gate? Show that NAND gate is universal gate. (d) Universal gate 및 항 ? NAND gate universal gate 한 러 원[બિર 5ર]. (e) What is K map? Draw K map for a four variable function. (f) Stl. (g) What is K map? Draw K map for a four variable function. (h) Explain canonical SOP and POS (h) Explain don't care condition mains NAND gate. (h) Explain don't care condition with example. (h) Explain for the care condition with example. (h) Explain full H&& Ox HPMT) (h) Explain Solve the function f=\pi M(1,5,6,7,11,12,13,15) using K map and implement the simplified form using NOR gate. (h) Explain half adder with block diagram. (h) Explain full adder with block diagram, truth table and logic circuit. (h) Combinational circuit et et al. (h) Explain full adder with truth table and logic circuit. (h) Explain full adder with truth table and logic circuit. (h) Explain full adder with truth table and logic circuit. (h) Explain full adder with truth table and logic circuit. (h) Explain full subtractor with block diagram, truth table and logic circuit. (h) Explain full subtractor with block diagram, truth table and logic circuit. (h) Explain full subtractor with block diagram, truth table and logic circuit. (h) Explain full subtractor with block diagram, truth table and logic circuit. (h) Explain full subtractor with blo	<b>以</b> 욂.2	(씨)	- · · · · · · · · · · · · · · · · · · ·	٥3
(c) What is universal gate? Show that NAND gate is universal gate. (5) Universal gate 및 한 ? NAND gate universal gate 한 러ዛ 레덴너 5킨.  Q. 3 (a) What is K map? Draw K map for a four variable function. (b) Explain canonical SOP and POS (4) Canonical SOP delt POS 레뷔에데 (c) Reduce the function 두 TM(5,6,7,9,10,11,13,14,15) using K map and implement the simplified form using NAND gate. (5) K map 레 મદદથી function 라 TM(5,6,7,9,10,11,13,14,15) રિડ્યુસ 5킨 delt del NAND gate ঝিয় map delter delte		(b)	Prove that $-((AB)'+A'+AB)' = 0$	04
(5) Universal gate શું છે? NAND gate universal gate 한 러મ સાબિત કરો.  Q. 3 (a) What is K map? Draw K map for a four variable function.  (b) Explain canonical SOP and POS  (c) Explain canonical SOP and POS  (d) Canonical SOP dell POS 원부에서		(બ)	સાબિત કરો- ((AB)'+A'+AB)' = 0	०४
\$\frac{3}\$ (a)       What is K map? Draw K map for a four variable function.       03         URJ.3 (전)       K map Qi Ø ? Ul? variable function HlÈ K map &lÈ.       03         (b)       Explain canonical SOP and POS       04         (c)       Reduce the function f=\( \sum \) (\$5.67,9,10,11,13,14,15) using K map and implement the simplifted form using NAND gate.       07         (c)       K map All H&& I multiplement \$\frac{1}{2}\$ function f=\( \sum \) (\$\sum (5.67,9,10,11,13,14,15) \) (\$\frac{1}{2}\$ \) (\$\frac{1}{2}\$ \) (\$\frac{1}{2}\$ NAND gate \$\frac{1}{2}\$ R! implement \$\frac{1}{2}\$ R!       09         Q.3       (a)       Explain don't care condition with example.       03         URJ.3       (A)       Reduce A'C+BD'+AB'C using K map.       04         (b)       Reduce A'C+BD'+AB'C using K map.       04         (c)       Reduce the function f=\( \pi \m \) (1,5.6,7.11,12,13,15) using K map and implement the simplified form using NOR gate.       05         (c)       Reduce the function f=\( \pi \m \) (1,5.6,7.11,12,13,15) (2.544 52) og       09         dul da NOR gate Gl21 implement 52.       09         dul da NOR gate Gl21 implement 52.       09         Q.4       (a)       Explain combinational circuit with block diagram.       03         URJ.4       (b)       Give the classification of combinational circuit.       04         (b)       Give the cla		(c)	What is universal gate? Show that NAND gate is universal gate.	07
Q. 3 (a) What is K map? Draw K map for a four variable function.  \( \text{V34.3} \) (સ) K map શું છે? ચાર variable function માટે K map દોરો.  \( \text{Observable} \) Explain canonical SOP and POS  \( \text{V4} \) Canonical SOP dul POS સમજાવે  \( \text{Canonical SOP dul POS સમજાવે } \) Reduce the function f=∑m(5,6,7,9,10,11,13,14,15) using K map and implement the simplified form using NAND gate.  \( \text{SOE} \) K map ની મદદથી function f=∑m(5,6,7,9,10,11,13,14,15) Usylet operates of the function f=\sum m(6,6,7,9,10,11,13,14,15) \text{Usylet operates of the function f=\sum m(6,6,7,9,10,11,13,14,15) \text{Usylet operates of the function the foliation of the function		(ક)		09
પશ.3. (신)   K map 횡 형 ? 된단 variable function 보다 K map 타한.   03	0.3	(a)		03
(b) Explain canonical SOP and POS (44) Canonical SOP dell POS 원박생인 (c) Reduce the function 두 () (주,6,7,9,10,11,13,14,15) using K map and implement the simplified form using NAND gate. (5) K map 에 મદદથી function 두 () (주,6,7,9,10,11,13,14,15) (રિડ્યુસ કરો તથા તેને NAND gate દ્વારા implement કરો.  OR  Q.3 (a) Explain don't care condition स्थापति. (b) Reduce A'C+BD'+AB'C using K map. (c) Reduce A'C+BD'+AB'C using K map. (d) K map 에 মΕΕΘΙ A'C+BD'+AB'C (રિડ્યુસ કરો. (e) Reduce the function f=\piM(1,5,6,7,11,12,13,15) using K map and implement the simplified form using NOR gate. (5) K map 에 মΕΕΘΙ function f=\piM(1,5,6,7,11,12,13,15) (રિડ્યુસ કરો. Q.4 (a) Explain combinational circuit with block diagram. (d) Explain combinational circuit સ્थाभवी. (a) Give the classification of combinational circuit. (4) Combinational circuit નું વર્ગી કરણ આપો. (c) Explain full adder with block diagram, truth table and logic circuit. (b) Give the classification of combinational circuit સાથે ફ્વ એડર સ્યાબવો. (c) Explain half adder with truth table and logic circuit. (d) Truth table dell logic circuit સાથે કાર એડર સામજાવો. (d) Explain 4:1 multiplexer with block diagram, truth table and logic circuit. (d) Block diagram, truth table dell logic circuit સાથે 4:1 multiplexer સામજાવો. (d) Explain full subtractor with block diagram, truth table and logic circuit. (d) Block diagram, truth table dell logic circuit સાથે 4:1 multiplexer સામજાવો. (c) Explain full subtractor with block diagram, truth table and logic circuit. (d) Block diagram, truth table dell logic circuit સાથે 4:1 multiplexer સામજાવો. (c) Explain full subtractor with block diagram, truth table and logic circuit.		- ' '		
(બ) Canonical SOP તથા POS સમજાવો	71 81.5	` ,		
(c) Reduce the function f=\( \sum (5,6,7,9,10,11,13,14,15)\) using K map and implement the simplified form using NAND gate.  (5) K map ની મદદથી function f=\( \sum (5,6,7,9,10,11,13,14,15)\) (દિડ્યુસ કરો તથા તેને NAND gate દ્વારા implement કરો.  (6) OR  Q. 3 (a) Explain don't care condition with example.  (a) સઉદાહરણ don't care condition સમજાવી.  (b) Reduce A'C+BD'+AB'C using K map.  (c) Reduce the function f=\( \sum M(1,5,6,7,11,12,13,15)\) using K map and implement the simplified form using NOR gate.  (b) K map ની મદદથી function f=\( \sum M(1,5,6,7,11,12,13,15)\) (દિડ્યુસ કરો નથા તેને NOR gate દ્વારા implement \$\frac{1}{2}\) (b) Reduce diagram સાથે combinational circuit સમજાવી.  Q. 4 (a) Explain combinational circuit with block diagram.  (b) Give the classification of combinational circuit.  (b) Give the classification of combinational circuit.  (c) Explain full adder with block diagram, truth table and logic circuit.  (d) Combinational circuit નું વર્ગ[કરણ આપો.  (e) Explain full adder with truth table and logic circuit.  (b) Block diagram, truth table dul logic circuit સાથે ફુલ એડર સમજાવો.  (d) Truth table dul logic circuit સાથે કુલ એડર સમજાવો.  (d) Explain 4:1 multiplexer with block diagram, truth table and logic circuit.  (b) Explain 4:1 multiplexer with block diagram, truth table and logic circuit.  (c) Explain full subtractor with block diagram, truth table and logic circuit.  (b) Explain full subtractor with block diagram, truth table and logic circuit.  (c) Explain full subtractor with block diagram, truth table and logic circuit.  (f) Block diagram, truth table dul logic circuit સાથે 4:1 multiplexer સમજાવો.  (c) Explain full subtractor with block diagram, truth table and logic circuit.		` ′		
(ક) K map ની મદદથી function f=\( \sum \)m(5,6,7,9,10,11,13,14,15) રિડ્યુસ કરો તથા તેને NAND gate દ્વારા implement કરો.  OR  Q. 3 (a) Explain don't care condition with example.  (b) Reduce A'C+BD'+AB'C using K map.  (c) Reduce the function f=\( \pi \)M(1,5,6,7,11,12,13,15) using K map and implement the simplified form using NOR gate.  (5) K map ની મદદથી A'C+BD'+AB'C રિડ્યુસ કરો.  (6) Reduce the function f=\( \pi \)M(1,5,6,7,11,12,13,15) using K map and implement the simplified form using NOR gate.  (5) K map ની મદદથી function f=\( \pi \)M(1,5,6,7,11,12,13,15) (રિડ્યુસ કરો) વધા તેને NOR gate દ્વારા implement કરો.  Q. 4 (a) Explain combinational circuit with block diagram.  (b) Give the classification of combinational circuit.  (c) Explain full adder with block diagram, truth table and logic circuit.  (d) Combinational circuit નુ વર્ગીકરણ આપો.  (e) Explain full adder with block diagram, truth table and logic circuit.  (b) Block diagram, truth table dથl logic circuit સાથે ફૂલ એડર સમજાવો.  OR  Q. 4 (a) Explain half adder with truth table and logic circuit.  (b) Explain 4:1 multiplexer with block diagram, truth table and logic circuit.  (c) Explain full subtractor with block diagram, truth table and logic circuit.  (b) Block diagram, truth table dથl logic circuit સાથે 4:1 multiplexer સમજાવો.  (c) Explain full subtractor with block diagram, truth table and logic circuit.  (b) Block diagram, truth table dથl logic circuit સાથે 4:1 multiplexer સમજાવો.		` ′	Reduce the function $f=\sum m(5,6,7,9,10,11,13,14,15)$ using K map	
Q. 3 (a) Explain don't care condition with example.  \[ \text{URLS} (અ) \\ \text{URLS} (\text{URLS}) \\ \text{URLS} (		(ક)	K map नी मध्ध्यी function f=∑m(5,6,7,9,10,11,13,14,15) रिS्युस	09
지원.3 (전) 원용단원 don't care condition 원부였다. 03 (b) Reduce A'C+BD'+AB'C using K map. 04 (位) K map 레 보운인 A'C+BD'+AB'C (문文및된 5한. 08 (c) Reduce the function 두ㅠM(1,5,6,7,11,12,13,15) using K map and implement the simplified form using NOR gate. (5) K map 레 보운인 function f=ㅠM(1,5,6,7,11,12,13,15) (문文및된 5한. 09 라인 라이 NOR gate 보인 implement 5한. 09 라인 라이 NOR gate 보인 combinational circuit 번째에다. 03 바로 (데) Combinational circuit 로 (데) 다이 마르 NOR 0.4 (a) Explain full adder with block diagram, truth table and logic circuit. 03 보게에다. 08 문자원리 4:1 multiplexer with block diagram, truth table and logic circuit. 09 보게에다. 09 보게				
(b) Reduce A'C+BD'+AB'C using K map. (બ) K map ની મદદથી A'C+BD'+AB'C રિડ્યુસ કરો. (c) Reduce the function f=\pi M(1,5,6,7,11,12,13,15) using K map and implement the simplified form using NOR gate. (s) K map ની મદદથી function f=\pi M(1,5,6,7,11,12,13,15) રિડ્યુસ કરો બધા તેને NOR gate દ્વારા implement કરો.  Q. 4 (a) Explain combinational circuit with block diagram. (b) Give the classification of combinational circuit. (c) Combinational circuit નું વર્ગીકરણ આપો. (d) Combinational circuit નું વર્ગીકરણ આપો. (e) Explain full adder with block diagram, truth table and logic circuit. (f) Block diagram, truth table dથl logic circuit સાથે ફુલ એડર સમજાવો. (h) Explain half adder with truth table and logic circuit. (h) Combinational circuit સાથે હાફ એડર સમજાવો. (h) Explain 4:1 multiplexer with block diagram, truth table and logic circuit. (h) Explain 4:1 multiplexer with block diagram, truth table and logic circuit. (h) Block diagram, truth table dથl logic circuit સાથે 4:1 multiplexer સમજાવો. (h) Explain full subtractor with block diagram, truth table and logic circuit. (h) Block diagram, truth table dથl logic circuit સાથે 4:1 multiplexer અપ્રમજાવો. (f) Explain full subtractor with block diagram, truth table and logic circuit. (g) Block diagram, truth table dથl logic circuit સાથે 4:1 multiplexer અપ્રમજાવો. (g) Explain full subtractor with block diagram, truth table and logic circuit.	Q. 3	(a)	Explain don't care condition with example.	03
(બ) K map ની મદદથી A'C+BD'+AB'C રિડ્યુસ કરો.	પ્રશ્ન.3	(씨)	સઉદાહરણ don't care condition સમજાવો.	٥3
(c) Reduce the function f=\pi M(1,5,6,7,11,12,13,15) using K map and implement the simplified form using NOR gate.  (s) K map ની મદદથી function f=\pi M(1,5,6,7,11,12,13,15) રિડ્યુસ કરો બર્ગ તથા તેને NOR gate દ્વારા implement કરો.  Q. 4 (a) Explain combinational circuit with block diagram.  Uશ્ચ.4 (અ) Block diagram સાથે combinational circuit સમજાવો.  (b) Give the classification of combinational circuit.  (c) Explain full adder with block diagram, truth table and logic circuit.  (c) Explain full adder with block diagram, truth table and logic circuit.  (d) Block diagram, truth table dથા logic circuit સાથે કૂલ એડર બરુ સમજાવો.  (d) Truth table dથા logic circuit સાથે કાર એડર સમજાવો.  (d) Explain 4:1 multiplexer with block diagram, truth table and logic circuit.  (d) Block diagram, truth table dથા logic circuit સાથે 4:1 multiplexer સમજાવો.  (d) Explain full subtractor with block diagram, truth table and logic circuit.  (d) Explain full subtractor with block diagram, truth table and logic circuit.  (e) Explain full subtractor with block diagram, truth table and logic circuit.  (f) Block diagram, truth table dથા logic circuit સાથે 4:1 multiplexer સમજાવો.  (g) Explain full subtractor with block diagram, truth table and logic circuit.  (g) Block diagram, truth table dથા logic circuit સાથે 9.9		<b>(b)</b>	Reduce A'C+BD'+AB'C using K map.	04
implement the simplified form using NOR gate.  (5) K map ની મેદદથી function f=πM(1,5,6,7,11,12,13,15) રિડ્યુસ કરો ૦૭ તથા તેને NOR gate દ્વારા implement કરો.  Q. 4 (a) Explain combinational circuit with block diagram.  Uશ્ચ.4 (અ) Block diagram સાથે combinational circuit સમજાવો.  (b) Give the classification of combinational circuit.  (વ) Combinational circuit નું વર્ગીકરણ આપો.  (c) Explain full adder with block diagram, truth table and logic circuit.  (ક) Block diagram, truth table dથl logic circuit સાથે ફ્લ એડર ૭૭ સમજાવો.  (b) Explain half adder with truth table and logic circuit.  (c) Explain 4:1 multiplexer with block diagram, truth table and logic circuit.  (ધ) Block diagram, truth table dથl logic circuit સાથે કાફ એડર સમજાવો.  (b) Explain 4:1 multiplexer with block diagram, truth table and logic circuit.  (ધ) Block diagram, truth table dથl logic circuit સાથે 4:1 multiplexer અસમજાવો.  (c) Explain full subtractor with block diagram, truth table and logic circuit.  (5) Block diagram, truth table dથl logic circuit સાથે 4:1 multiplexer જે સમજાવો.		(બ)	K map ની મદદથી A'C+BD'+AB'C રિડ્યુસ કરો.	०४
Q. 4 (a) Explain combinational circuit with block diagram.  પશ્ચ.4 (અ) Block diagram સાથે combinational circuit સમજાવો.  (b) Give the classification of combinational circuit.  (c) Explain full adder with block diagram, truth table and logic circuit.  (c) Explain full adder with block diagram, truth table and logic circuit.  (d) Block diagram, truth table dell logic circuit સાથે ફૂલ એડર બુ સમજાવો.  (a) Explain half adder with truth table and logic circuit.  (b) Explain 4:1 multiplexer with block diagram, truth table and logic circuit.  (c) Explain 4:1 multiplexer with block diagram, truth table and logic circuit.  (d) Block diagram, truth table dell logic circuit સાથે 4:1 multiplexer અસમજાવો.  (c) Explain full subtractor with block diagram, truth table and logic circuit.  (d) Block diagram, truth table dell logic circuit સાથે 4:1 multiplexer of the subtractor with block diagram, truth table and logic circuit.  (s) Block diagram, truth table dell logic circuit સાથે 4:1 multiplexer of the subtractor with block diagram, truth table and logic circuit.		(c)	· · · · · · · · · · · · · · · · · · ·	07
Q. 4 (a) Explain combinational circuit with block diagram.  U워. 4 (건) Block diagram 원인 combinational circuit 원부였다.  (b) Give the classification of combinational circuit.  (c) Combinational circuit 및 억원동안 원니다.  (c) Explain full adder with block diagram, truth table and logic circuit.  (S) Block diagram, truth table d익l logic circuit 원인 설식 원동간 연용 원부였다.  (A) OR  Q. 4 (a) Explain half adder with truth table and logic circuit.  (B) Explain half adder with truth table and logic circuit.  (C) Explain 4:1 multiplexer with block diagram, truth table and logic circuit.  (C) Block diagram, truth table d익l logic circuit 원인 4:1 multiplexer 상 원부였다.  (C) Explain full subtractor with block diagram, truth table and logic circuit.  (S) Block diagram, truth table d익l logic circuit 원인 4:1 multiplexer 아저 원보였다.		(ક)	•	09
પશ્ચ.4 (અ) Block diagram સાથે combinational circuit સમજાવો.	0.4	(a)		02
(b) Give the classification of combinational circuit.  (બ) Combinational circuit નું વર્ગીકરણ આપો.  (c) Explain full adder with block diagram, truth table and logic circuit.  (5) Block diagram, truth table dથl logic circuit સાથે ફૂલ એડર અમજાવો.  OR  Q. 4 (a) Explain half adder with truth table and logic circuit.  Uয়. 4 (અ) Truth table dથl logic circuit સાથે હાફ એડર સમજાવો.  (b) Explain 4:1 multiplexer with block diagram, truth table and logic circuit.  (બ) Block diagram, truth table dથl logic circuit સાથે 4:1 multiplexer સમજાવો.  (વ) Explain full subtractor with block diagram, truth table and logic circuit.  (b) Explain full subtractor with block diagram, truth table and logic circuit.  (b) Explain full subtractor with block diagram, truth table and logic circuit.		1 /		
(બ) Combinational circuit નું વર્ગીકરણ આપો.	ж <b>а.</b> 4	, ,		
(c) Explain full adder with block diagram, truth table and logic circuit. (5) Block diagram, truth table તથા logic circuit સાથે ફૂલ એડર લગ્ના સમજાવો.  OR  Q. 4 (a) Explain half adder with truth table and logic circuit.  Uશ્ચ.4 (અ) Truth table તથા logic circuit સાથે હાફ એડર સમજાવો.  (b) Explain 4:1 multiplexer with block diagram, truth table and logic circuit.  (બ) Block diagram, truth table તથા logic circuit સાથે 4:1 multiplexer સમજાવો.  (c) Explain full subtractor with block diagram, truth table and logic circuit.				
(ક) Block diagram, truth table તથા logic circuit સાથે ફ્લ એડર સમજાવો.  OR  Q. 4 (a) Explain half adder with truth table and logic circuit.  Uશ્ચ.4 (અ) Truth table તથા logic circuit સાથે હાફ એડર સમજાવો.  (b) Explain 4:1 multiplexer with block diagram, truth table and logic circuit.  (બ) Block diagram, truth table તથા logic circuit સાથે 4:1 multiplexer સમજાવો.  (c) Explain full subtractor with block diagram, truth table and logic circuit.  (5) Block diagram, truth table તથા logic circuit સાથે 4:0 multiplexer જે ક્લામ જાયા કર્મા હોય કર્મા હોય હોય કર્મા હોય હોય કર્મા હોય			_	
Usuaria (a) Explain half adder with truth table and logic circuit.  Usuaria (અ) Truth table dથા logic circuit સાથે હાફ એડર સમજાવો.  (b) Explain 4:1 multiplexer with block diagram, truth table and logic circuit.  (બ) Block diagram, truth table dથા logic circuit સાથે 4:1 multiplexer સમજાવો.  (c) Explain full subtractor with block diagram, truth table and logic circuit.  (5) Block diagram, truth table dથા logic circuit સાથે			•	
OR Q. 4 (a) Explain half adder with truth table and logic circuit. Uશ્ચ.4 (અ) Truth table dથા logic circuit સાથે હાફ એડર સમજાવો.		(ક)		09
પ્રશ્ન.4 (અ) Truth table તથા logic circuit સાથે હાફ એડર સમજાવો.				
(b) Explain 4:1 multiplexer with block diagram, truth table and logic circuit.  (બ) Block diagram, truth table તથા logic circuit સાથે 4:1 multiplexer સમજાવો.  (c) Explain full subtractor with block diagram, truth table and logic circuit.  (5) Block diagram, truth table તથા logic circuit સાથે	Q. 4	(a)		03
circuit.  (બ) Block diagram, truth table તથા logic circuit સાથે 4:1 multiplexer જ સમજાવો.  (c) Explain full subtractor with block diagram, truth table and logic circuit.  (5) Block diagram, truth table તથા logic circuit સાથે	<b>뇟욂.</b> 4	(અ)	Truth table તથા logic circuit સાથે હાફ એડર સમજાવો.	03
સમજાવો.  (c) Explain full subtractor with block diagram, truth table and logic circuit.  (5) Block diagram, truth table તથા logic circuit સાથે ૦૭		<b>(b)</b>		04
(c) Explain full subtractor with block diagram, truth table and logic circuit.  (5) Block diagram, truth table તથા logic circuit સાથે ૦૭		(બ)		०४
(1) Block diagram, train more with logic entering the		(c)	Explain full subtractor with block diagram, truth table and logic	07
, , , , , , , , , , , , , , , , , , ,		(5)		09

Q.5	(a)	Explain sequential circuit with block diagram.	03
પ્રશ્ન.5	(અ)	Block diagram સાથે sequential circuit સમજાવો.	٥3
	<b>(b)</b>	Explain Distributive law of Boolean algebra.	04
	(બ)	Boolean algebra માટે વિભાજન નો નિયમ સમજાવો.	०४
	(c)	Explain J-K flip flop with logic symbol, logic diagram and truth table.	07
	(ક)	Logic symbol, logic diagram તથા truth table સાથે J-K flip flop સમજાવો.	იტ
		OR	
Q.5	(a)	Write the comparison between combinational and sequential circuit.	03
પ્રશ્ન.5	(અ)	Combinational તથા sequential circuit વચ્ચેની સરખામણી લખો.	०३
	(b)	Explain Associative law of Boolean algebra.	04
	(બ)	Boolean algebra માટે જુથ નો નિયમ સમજાવો.	०४
	(c)	Explain applications of flip flop in detail.	07
	(ક)	Flip flop ના ઉપયોગ વિસ્તાર થી સમજાવો.	იტ