GOVERNMENT DEGREE COLLEGE,

RAZOLE-533242

DEPARTMENT OF MATHEMATICS

CERTIFICATE COURSE

FOR

2018-19

“MATHEMATICAL LOGIC &

NORMAL FORMS”

GOVERNMENT DEGREE COLLEGE RAZOLE
EAST GODAVARI DISTRICT

DEPARTMENT OF MATHEMATICS

MINUTES OF THE DEPARTMENT
2018-19

A staff meeting has been conducted in the department on 01-11-2018 and resolved the following issues

- To introduce "certificate course " for the III year students during the year 2018-19.
- To conduct classes for 25 working hours on the syllabus prescribed.
- To approve the syllabus and model paper.
- To conduct external examination for 50 marks as objective questions.

(V S V KRISHNA MURTY)

Govt. Degree College
NAAC 'B' Grade
RAZOLE - E.G.Dt.

GOVERNMENT DEGREE COLLEGE, RAZOLE
EAST GODAVARI DISTRICT

DEPAREMENT OF MATHEMATICS
NOTICE

Razole

12-11-2018

To,

The Principal

Government Degree College

Razole

Sir,

Sub: Government Degree College, Razole – Introduction of Certificate course in "**Mathematical Logic & Normal Forms**" during 2018-19- Proposal submitted for permission–Regarding.

****

I humbly submit that the Department of Mathematics proposes to conduct a Certificate course in "**Mathematical Logic & Normal Forms**" during 2018-19 keeping in view of the need of the students . A resolution has been taken in the Departmental Minutes book.

Hence, I request you to permit us to conduct the said course for the benefit of our students.

Thanking you sir

Yours faithfully,

(VSV KRISHNA MURTY)

GOVERNMENT DEGREE COLLEGE, RAZOLE

EAST GODAVARI DISTRICT

DEPARTMENT OF MATHEMATICS

CERTIFICATE COURSE

IN

MATHEMATICAL LOGIC & NORMAL FORMS

2018-19

OUTCOMES OF THE COURSE:

At the end of the course , the student is expected to learn the following outcomes

- He is able to learn about the notations in statements and the definitions of disjunction, conjunction, conditional and bi conditionals etc.,
- He is able to learn and understand truth tables for various statements
- He learns disjunctive normal forms, conjunctive normal forms.
- He understands Principle Conjunctive Normal forms and Mc- Clusky alogrithm
- He learns about the statement function, variable statement function, variables and quantifiers, predicate formulas

(Lecturer in Mathematics)

Govt. Degree College
NAAC 'B' Grade
RAZOLE - E.G.Dt.

GOVERNMENT DEGREE COLLEGE, RAZOLE
DEPARTMENT OF MATHEMATICS
CERTIFICATE COURSE IN MATHEMATICS
MATHEMATICAL LOGIC & NORMAL FORMS

SYLLABUS

2018-19

Unit I-

Mathematical Logic:

Statements & Notations, Negation, Conjunction, Disjunction, Statement formulas and Truth tables, Conditional and Biconditional, wellformed formulas, Tautologies, Equivalence of formulas, Duality law, Tautological implications, Formulas with distinct Truth Tables, Two state devices and statement Logic

Unit II –

Normal Forms :

Disjunctive Normal Forms, Conjunctive Normal Forms, Principle Disjunctive Normal Forms, Principle Conjunctive Normal Forms, Mc-Clusky algorithm , Rules of inferences, predicates, The statement function, variables and Quantifiers, predicate formulas

SUGGESTED READINGS:

1. A Text Book of Discrete Mathematics & its Applications by Kenneth HRosen

2. A Text Book of Discrete Mathematics by J.P. Tremblay & R.Manohar

Pattern of Examination - Theory (50 marks)

The students have to write the theory examination in the form of Objective type questions for 50 marks in 2 hours.

(VSV KRISHNA MURTY)

Govt. Degree College
NAAC 'B' Grade
RAZOLE - E.G.Dt.

GOVERNMENT DEGREE COLLEGE RAZOLE

DEPAREMENT OF MATHEMATICS

CERTIFICATE COURSE IN

Mathematical Logic & Normal Forms
DURING 2018-19

(NOVEMBER2021 to JANUARY2022)

WORK STATEMENT

Name of the Lecturer : VSV KRISHNA MURTY

Subject :MATHEMATICS

Batch : 1

S.NO	DATE	BATCH TIME	TOPIC	Name of the Lecturer taught
		(4.00 to 5.00 PM)		
1	13-11-2018	1Hr	Statements & Notations	V.S.V. KRISHNA MURTY
2	14-11-2018	1Hr	Negation	V.S.V. KRISHNA MURTY
3	15-11-2018	1Hr	Conjunction	V.S.V. KRISHNA MURTY
4	16-11-2018	1Hr	Disjunction	V.S.V. KRISHNA MURTY
5	17-11-2018	1Hr	Statement formulas and Truth tables	V.S.V. KRISHNA MURTY
6	19-11-2018	1Hr	Conditional and Biconditional	V.S.V. KRISHNA MURTY
7	20-11-2018	1Hr	wellformed formulas	V.S.V. KRISHNA MURTY
8	26-11-2018	1Hr	Tautologies, Fallacy	V.S.V. KRISHNA MURTY
9	27-11-2018	1Hr	Equivalence of formulas	V.S.V. KRISHNA MURTY
10	28-11-2018	1Hr	Duality law	V.S.V. KRISHNA MURTY
11	29-11-2018	1Hr	Tautological implications	V.S.V. KRISHNA MURTY
12	30-11-2018	1Hr	Formulas with distinct Truth Tables	V.S.V. KRISHNA MURTY
13	1/12/2018	1Hr	Two state devices and statement Logic	V.S.V. KRISHNA MURTY
14	4/12/2018	1Hr	Half adder	V.S.V. KRISHNA MURTY
15	5/12/2018	1Hr	Full Adder	V.S.V. KRISHNA MURTY
16	6/12/2018	1Hr	2's Complement adder subtractor	V.S.V. KRISHNA MURTY
17	7/12/2018	1Hr	Disjunctive Normal Forms (Sum ofproducts)	V.S.V. KRISHNA MURTY
18	10/12/2018	1Hr	Conjunctive Normal Forms (Product of Sums)	V.S.V. KRISHNA MURTY
19	11/12/2018	1Hr	Mc-Clusky Algorithm	V.S.V. KRISHNA MURTY
20	12/12/2018	1Hr	Principle Disjunctive Normal Forms	V.S.V. KRISHNA MURTY
21	13/12/2018	1Hr	Principle Conjunctive Normal Forms	V.S.V. KRISHNA MURTY
22	14/12/2018	1Hr	Rules of inferences	V.S.V. KRISHNA MURTY
23	15/12/2018	1Hr	predicates	V.S.V. KRISHNA MURTY
24	17/12/2018	1Hr	The statement function, variables and Quantifiers	V.S.V. KRISHNA MURTY
25	18/12/2018	1Hr	predicate formulas	V.S.V. KRISHNA MURTY

Signature of the Lecturer(s)

Govt. Degree College
NAAC 'B' Grade
RAZOLE - E.G.Dt.

GOVERNMENT DEGREE COLLEGE, RAZOLE, EGDT.
ATTENDANCE PARTICULARS OF THE STUDENTS WHO ATTENDED
CERTIFICATE COURSE IN LOGIC AND NORMAL FORMS
2018-19

			13-11-18	14-11-18	15-11-18	16-11-18	17-11-18	19-11-18	20-11-18	26-11-18	27-11-18	28-11-18	29-11-18	30-11-18	1/12/2018	4/12/2018	5/12/2018	6/12/2018	7/12/2018	##########	##########	##########	14/12/201	15/12/201	17/12/201	18/12/201
S.NO	NAME OF THE STUDENT	REGD .NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1	A.Vinay Kumar	161077101001	P	A	P	P	P	P	A	P	P	P	P	A	P	P	A	P	P	P	P	P	P	P	P	P	P
2	A. Durga Devi	161077101003	P	P	P	P	A	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	A	P
3	B.Durga Bhavani	161077101004	P	A	P	P	P	P	P	A	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	A	P
4	Ch.Anos	161077101006	A	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	A	P	P
5	D.Satyanarayana	161077101008	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
6	G.Harika	161077101010	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P
7	G.Sireesha	161077101011	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P
8	K.Rajakumar	161077101012	P	P	P	P	P	A	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	A	P
9	L.Lakshmi Priya	161077101013	P	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	A	P
10	M.Nagalakshmi	161077101014	P	A	P	P	P	P	A	P	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P
11	M.S Harithavalli	161077101015	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
12	P.Nagendra	161077101016	P	P	P	A	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P
13	P.Sireesha	161077101017	A	P	P	P	P	P	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	A
14	P.Srilakshmi	161077101018	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	A	P	P	P	P	P	P
15	P.Suneetha	161077101020	P	P	P	P	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	A	P	P
16	R.Rani	161077101021	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	A
17	R.S.N.Murty	161077101022	P	P	P	P	A	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P
18	S.D.N.Pradeep Varma	161077101023	A	P	P	P	P	P	P	A	P	P	P	P	P	A	P	P	P	P	P	P	P	A	P	P	P

Govt. Degree College
NAAC 'B' Grade
RAZOLE - E.G.Dt.

(VSV KRISHNA MURTY)

GOVERNMENT DEGREE COLLEGE RAZOLE
DEPARTMENT OF MATHEMATICS
CERTIFICATE COURSE FOR 2018-19
Mathematical Logic & Normal Forms

Time:2Hrs **Max Marks:50**

1. The compound propositions p and q are called logically equivalent if _____ is a tautology. ( )

a) $p \leftrightarrow q$ b) $p \rightarrow q$ c) $\neg (p \vee q)$ d) $\neg p \vee \neg q$

2. $p \rightarrow q$ is logically equivalent to _____ ( )

a) $\neg p \vee \neg q$ b) $p \vee \neg q$ c) $\neg p \vee q$ d) $\neg p \wedge q$

3. $p \vee q$ is logically equivalent to _____ ( )

a) $\neg q \rightarrow \neg p$ b) $q \rightarrow p$ c) $\neg p \rightarrow \neg q$ d) $\neg p \rightarrow q$

4. $\neg (p \leftrightarrow q)$ is logically equivalent to _____ ( )

a) $q \leftrightarrow p$ b) $p \leftrightarrow \neg q$ c) $\neg p \leftrightarrow \neg q$ d) $\neg q \leftrightarrow \neg p$

5. $p \wedge q$ is logically equivalent to _____ ( )

a) $\neg (p \rightarrow \neg q)$ b) $(p \rightarrow \neg q)$ c) $(\neg p \rightarrow \neg q)$ d) $(\neg p \rightarrow q)$

6. Which of the following statement is correct? ( )

a) $p \vee q \equiv q \vee p$ b) $\neg(p \wedge q) \equiv \neg p \vee \neg q$ c) $(p \vee q) \vee r \equiv p \vee (q \vee r)$ d) All of mentioned

7. $p \leftrightarrow q$ is logically equivalent to _____ ( )

a) $(p \rightarrow q) \rightarrow (q \rightarrow p)$ b) $(p \rightarrow q) \vee (q \rightarrow p)$ c) $(p \rightarrow q) \wedge (q \rightarrow p)$ d) $(p \wedge q) \rightarrow (q \wedge p)$

8. $(p \rightarrow q) \wedge (p \rightarrow r)$ is logically equivalent to _____ ( )

a) $p \rightarrow (q \wedge r)$ b) $p \rightarrow (q \vee r)$ c) $p \wedge (q \vee r)$ d) $p \vee (q \wedge r)$

9. $(p \rightarrow r) \vee (q \rightarrow r)$ is logically equivalent to _____ ( )

a) $(p \wedge q) \vee r$ b) $(p \vee q) \rightarrow r$ c) $(p \wedge q) \rightarrow r$ d) $(p \rightarrow q) \rightarrow r$

10. $\neg (p \leftrightarrow q)$ is logically equivalent to _____ ( )

a) $p \leftrightarrow \neg q$ b) $\neg p \leftrightarrow q$ c) $\neg p \leftrightarrow \neg q$ d) $\neg q \leftrightarrow \neg p$

11. As a decision problem, it consists of finding in a finite number of steps whether a statement is____? A)Tautological B) Contradictory C) Satisfiable D) All of the above ( )

12. It may not always be feasible to construct a ____ for a Decision Problem? ( )

A) Dataset B) Truth table C) Data table D) Decision table.

13. If the truth table cannot be created, we consider the ____ to normal forms as an alternative?

A) Addition B) Subtraction C) Reduction D) Division ( )

14. How many types of normal forms are there to which reduction can be performed?

A) 2 B)3 C) 4 D) 5

15. Full form of DNF is -? ( )

A) Disjoining Normal Form B) Disjunctive Normal Form

C) Divisional Normal Form D)Dividend Normal Form

16. Which of the following is/are the type(s) of normal forms to which reduction can be performed?

A) Disjunctive Normal Form B)Conjunctive Normal Form C) Both A and B D)None of the above

17.The logical gates are categorized into _____ ( )

A) One group B) Two groups C) Three groups D) Four groups

18 _____ are basic gates ( )

A) NOT B) NAND C) AND D) NOT, AND, & OR

19). _____ are universal gates ( )

A) NOT B) NAND & NOR C) AND D) NOT, AND, & OR

20). _____ are arithmetic gates ( )

A) NOT B) NAND & NOR C) X-OR & X-NOR D) NOT, AND, & OR

21). _____ are the common forms of complex logic gates ( )

A) OR-AND-Invert (OAI) B) AND-OR-Invert (AOI) C) Both OAI and AOI D) None of the above

22). Who invented Boolean algebra? ( )

A) Bardeen B) Claude Shannon C) George Boole D) None of the above

23). _____ are the alternative form of canonical form ( )

A) Sum of products B) Product of sums C) Both a and b D) None of the above

24). The sum of products canonical forms also known as _____ ( )

A) Min term expansion B) Disjunctive normal form C) Both a and b D) None of the above

25). The product of sums canonical forms also known as _____ ( )
A) Maxterm expansion B) Conjunctive normal form C) Both a and b D) None of the above
26). _____ is an example of identity law ( )
A) a+0=0+a=a B) 1+a=a+1=1 C) ab=ba D) a+(b+c)=(a+b)+c
27). _____ is an example of dominance law ( )
A) a+0=0+a=a B) 1+a=a+1=1 C) ab=ba D) a+(b+c)=(a+b)+c
28). _____ is an example of commutativity law ( )
A) a+0=0+a=a B) 1+a=a+1=1 C) ab=ba D) a+(b+c)=(a+b)+c
29). _____ is an example of associativity law ( )
A) a+0=0+a=a B) 1+a=a+1=1 C) ab=ba D) a+(b+c)=(a+b)+c
30). _____ is an example of distributive law ( )
A) a+0=0+a=a B) 1+a=a+1=1 C) a+bc=(a+b)(a+c) D) a+(b+c)=(a+b)+c
31) Combinational logic is used to _____ ( )
A) Compute outputs B) Compute new states C) Both a and b D) None of the above
32)The sequential logic contains _____ ( )
A) Memory elements B) Memory is provided by feedback C) Both a and b D) None of the above
33). _____ are the methods used to represent negative integer numbers ( )
A) 1's compliment B) Sign magnitude C) 2's compliment D) All of the above
34). How many types of number systems are there? ( )
A) ONE B) TWO C) THREE D) FOUR
35). The base is 16 for _____ number system ( )
A) BINARY B) HEXADECIMAL C) DECIMAL D) OCTAL
36). The American standard code for information interchange has _____ characters
A) 64 B) 25 C) 128 D) NONE OF THE ABOVE ( )
37). What is the standard form of ECDIC? ( )
A) Extended Binary Coded Decimal Interchange Code B) Extended Binary Coded hexadecimal Interchange Code C) Extended Binary Coded Decimal Information Code D) None of the above
38). How many types of parities are there? ( )
A) ONE B) TWO C) THREE D) FOUR
39). The ones complement of binary number 1010 is _____ ( )
A) 0101 B) 101 C) 0110 D) 1110
40). The 2's complement of binary number 1010 is _____ ( )
A) 0101 B) 1010 C) 0110 D) 1110
41). The base is eight for _____ number system ( )
A) Binary B) Hexadecimal C) Decimal D) Octal
42). How many types of IC packages are there? ( )
A) One B) Two C) Three D) Four
43). IC's are categorized into _____ ( )
A) One B) Two C) Three D) Four
44). How many gates does ultra large scale integration contain? ( )
A) 100 gates B) 1000 gates C) 10000 gates D) More than 100,000 gates
45). How many gates does very large-scale integration contain? ( )
A) 100 gates B) 10,000 to 100,000 gates C) 10000 gates D) None of the above
46). How many gates does large-scale integration contain? ( )
A)100 to 10,000 gates B) 10,000 to 100,000 gates C) 10000 gates D) None of the above
47). How many gates does medium-scale integration contain? ( )
A) 100 to 10,000 gates B) 10,000 to 100,000 gates C) 10 to 100 gates D) None of the above
48). How many gates does small-scale integration contain? ( )
A) 100 to 10,000 gates B) 10,000 to 100,000 gates C) 10 to 100 gates D) up to 10 gates
49). The base is ten for _____ number system ( )
A) Binary B) Hexadecimal C) Decimal D) Octal
50). The base is two for _____ number system ( )
A) Binary B) Hexadecimal C) Decimal D) OctaL

Govt. Degree
NAAC 'B'
RAZOLE - E.G.Dt.

(VSV KRISHNA MURTY)

ANSWERS

1 a 2 c 3 d 4 b 5 a 6 d 7 c 8 a 9 c 10 a

11 d

12 b

13 c

14 a

15 b

16 c

17C

18 D

19 B

20 C

21 C

22 C

23 C

24 C

25 C

26 A

27 B

28 C

29 D

30 C

31 C

32 C

33 D

34 D

35 D

36 C

37 A

38 B

39 A

40 C

41 D

42 B

43 B

44 D

45 B

46 A

47 C

48 D

49 C

50 A

GOVERNMNET DEGREE COLLEGE, RAZOLE
EAST GODAVADI DISTRICT

DEPARTMENT OF MATHEMATICS

CERTIFICATE COURSE ON LOGIC & NORMAL FORMS
FOR THE YEAR 2018-19

MARKS OBTAINED IN THE EXAMINATION

S.NO	NAME OF THE STUDENT	GROUP	REGD .NO.	MAX. MARKS 50
1	A.Vinay Kumar	IIIBSC (MPC)	161077101001	32
2	A. Durga Devi	IIIBSC (MPC)	161077101003	38
3	B.Durga Bhavani	IIIBSC (MPC)	161077101004	30
4	Ch.Anos	IIIBSC (MPC)	161077101006	26
5	D.Satyanarayana	IIIBSC (MPC)	161077101008	45
6	G.Harika	IIIBSC (MPC)	161077101010	30
7	G.Sireesha	IIIBSC (MPC)	161077101011	34
8	K.Rajakumar	IIIBSC (MPC)	161077101012	28
9	L.Lakshmi Priya	IIIBSC (MPC)	161077101013	47
10	M.Nagalakshmi	IIIBSC (MPC)	161077101014	25
11	M.S Harithavalli	IIIBSC (MPC)	161077101015	28
12	P.Nagendra	IIIBSC (MPC)	161077101016	26
13	P.Sireesha	IIIBSC (MPC)	161077101017	48
14	P.Srilakshmi	IIIBSC (MPC)	161077101018	40
15	P.Suneetha	IIIBSC (MPC)	161077101020	38
16	R.Rani	IIIBSC (MPC)	161077101021	30
17	R.S.N.Murty	IIIBSC (MPC)	161077101022	24
18	S.D.N.Pradeep Varma	IIIBSC (MPC)	161077101023	23

VSVK

(VSV KRISHNA MURTY)

Govt. Degree College
NAAC 'B' Grade
RAZOLE - E.G.Dt.

GOVERNMENT DEGREE COLLEGE, RAZOLE
EAST GODAVARI

DEPARTMENT OF MATHEMATICS

Razole
19-12-2018

To,
The Principal
Government Degree College
Razole

Sir,

Sub: Government Degree College, Razole – Department of Mathematics - Certificate course in **Mathematical Logic & Normal Forms**-2018-19- Submission of Work done statements and related documents -- Regarding.

****

I humbly submit that the Department of Mathematics has organized a Certificate course from 13-11-2018 to 18-12-2018 under the title "**Mathematical Logic & Normal Forms** "during 2018-19.The statement showing the work done together with the details of number of hours and the name of the faculty taught are submitted herewith.

Thanking you sir

Yours faithfully,

VSVM

(VSV KRISHNA MURTHY)

GOVERNMENT DEGREE COLLEGE, RAZOLE
EAST GODAVARI DISTRICT
DEPARTMENT OF MATHEMATICS

Razole
19-12-2018

To,
The Principal
Government Degree College
Razole

Sir,

Sub: Government Degree College, Razole – Department of Mathematics – Certificate Course in **Mathematical Logic & Normal forms** for 2018-2019 - Submission of Work done statements and related documents -- Regarding.

****

I humbly submit that the Department of Mathematics has organized a Certificate course from 13-011-2018 to 18-12-2018 under the title "**Mathematical Logic & Normal forms"** during 2018-19.The statement showing the work done together with the details of number of hours and the name of the faculty taught are submitted herewith.

Thanking you sir

Yours faithfully,

(VSV KRISHNA MURTHY)
(Lecturer in Mathematics)