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TELEPHONE SWITCHING EQUIPMENT REPAIRMAN/ELECTRO-MECHANICAL SPEC--ETC(U)
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9 OCCUPATIONAL SURVEY REPORT.
ELECTRONIC PRINCIPLES

Apr-Jun 77



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TELEPHONE SWITCHING EQUIPMENT REPAIRMAN/
ELECTRO-MECHANICAL SPECIALIST

AFSC 36251

11 AFPT-90-362-222
14 September 1977

OCCUPATIONAL SURVEY BRANCH
USAF OCCUPATIONAL MEASUREMENT CENTER
LACKLAND AFB TEXAS 78236

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PREFACE

This report presents a summary of the results of a detailed Air Force Electronic Principles Survey of the Telephone Switching Equipment Repairman/Electro-Mechanical Specialist, AFSC 32651.

The Electronic Principles Inventory (EPI) was developed by Major Thomas J. O'Connor and Mr. Hendrick W. Ruck and the survey data were analyzed by Captain Frederick B. Bower, Jr. All are members of the Occupational Survey Branch, USAF Occupational Measurement Center, Lackland AFB, Texas.

Computer programs for analyzing the data were designed by Dr. Raymond E. Christal, Occupational and Manpower Research Division, Air Force Human Resources Laboratory (AFHRL), and were written by the Project Analysis and Programming Branch, Computational Sciences Division, AFHRL.

Distribution of this report is made upon request to the USAF Occupational Measurement Center, attention of the Chief, Occupational Survey Branch (OMY), Lackland AFB, Texas 78236.

This report has been reviewed and is approved.

JAMES A. TURNER, JR., Colonel, USAF
Commander
USAF Occupational Measurement Center

WALTER E. DRISKILL, Ph.D.
Chief, Occupational Survey Branch
USAF Occupational Measurement Center

ELECTRONIC PRINCIPLES OCCUPATIONAL SURVEY REPORT
TELEPHONE SWITCHING EQUIPMENT REPAIRMAN/
ELECTRO-MECHANICAL SPECIALIST
AFSC 36251

INTRODUCTION

→ This report summarizes the results of the administration of the Electronic Principles Inventory to airmen assigned as Telephone Switching Equipment Repairman/Electro-Mechanical Specialist (AFSC 36251). The data for this report were collected during the period April through June 1977.

This report describes: (1) development and administration of the survey instrument; and (2) electronic principles used by DAFSC 5-skill level personnel both CONUS and overseas and assigned to selected major commands. ↑

DEVELOPMENT OF THE ELECTRONIC PRINCIPLES INVENTORY (EPI)

The EPI was developed by personnel from the Occupational Survey Branch who were well qualified in theoretical physics and electronics, as well as in task analysis and survey development. Over 300 maintenance personnel from SAC, TAC, ADC, MAC, and AFCS participated in the development of the inventory. Representing the five ATC training centers, electronics experts who averaged 12 years of maintenance experience and four years of electronic principles instruction experience spent several weeks refining the EPI. In addition, personnel at the Electrical Engineering Department of the USAF Academy and the Air Force Human Resources Laboratory were consulted during the development of the inventory.

The final version of the EPI used in this survey contained 1,257 items in 62 subject matter areas covering all electronic principles training given at the five ATC technical training centers. Table 1 lists the 62 subject areas.

ADMINISTRATION

The Electronic Principles Inventory was administered by mail to AFSC 36251 airmen worldwide. Responses from 106 individuals represented 13 percent of the total of all AFSC 36251 personnel. Table 2 shows the percentage distribution by major command of the survey incumbents.

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TABLE 1
EPI SUBJECT AREAS

<u>SEQUENCE OF SUBJECT AREAS</u>	<u>SUBJECT AREA TITLE</u>	<u>BEGINNING ITEM NUMBER</u>	<u>GPSUM PAGE NUMBER</u>
1	MATHEMATICS	A1	2
2	DIRECT CURRENT AND VOLTAGE	A15	2
3	RESISTANCE	A24	2
4	MULTIMETER USES	B52	3
5	ALTERNATING CURRENT	B61	4
6	INDUCTORS AND INDUCTIVE REACTANCE	B67	4
7	CAPACITORS AND CAPACITIVE REACTANCE	C92	5
8	TRANSFORMERS	C128	6
9	MAGNETISM	C171	7
10	RCL CIRCUITS	D185	8
11	SERIES AND PARALLEL RESONANCE (TIME CONSTANTS)	D229	10
12	FILTERS	D239	10
13	COUPLING	E261	11
14	SOLDERING	E273	11
15	RELAYS	E295	12
16	MICROPHONES	F314	12
17	SPEAKERS	F327	13
18	OSCILLOSCOPES	F342	13
19	SEMICONDUCTOR DIODES	G354	13
20	TRANSISTORS	G404	15
21	TRANSISTOR AMPLIFIERS	G428	16
22	SOLID-STATE SPECIAL PURPOSE DEVICES	H477	19
23	POWER SUPPLIES	H483	19
24	OSCILLATORS	H512	19
25	MULTIVIBRATORS	I539	20
26	LIMITERS AND CLAMPERS	I555	21
27	ELECTRON TUBES	I565	21
28	ELECTRON TUBE AMPLIFIERS AND CIRCUITS	J609	22
29	SPECIAL PURPOSE ELECTRON TUBES	J616	23
30	HETERODYNING, MODULATION, AND DEMODULATION	J632	23
31	AM SYSTEMS	K638	23
32	FM SYSTEMS	K666	24

TABLE 1 (CONTINUED)

EPI SUBJECT AREAS

<u>SEQUENCE OF SUBJECT AREAS</u>	<u>SUBJECT AREA TITLE</u>	<u>BEGINNING ITEM NUMBER</u>	<u>GPSUM PAGE NUMBER</u>
33	NUMBERING SYSTEMS	K685	25
34	LOGIC FUNCTIONS	L695	25
35	BOOLEAN EQUATIONS	L708	26
36	COUNTERS	L733	27
37	TIMING CIRCUITS	M757	27
38	USE OF SIGNAL GENERATORS	M769	28
39	MOTORS AND GENERATORS	M779	28
40	METER MOVEMENTS	N808	29
41	SATURABLE REACTORS AND MAGNETIC AMPLIFIERS	N818	29
42	WAVESHAPING CIRCUITS	N834	30
43	SINGLE SIDEBAND SYSTEMS	0845	30
44	PULSE MODULATION SYSTEMS	0875	31
45	ANTENNAS	0914	32
46	TRANSMISSION LINES	P953	34
47	WAVEGUIDES AND CAVITY RESONATORS	P984	35
48	MICROWAVE AMPLIFIERS AND OSCILLATORS	P1034	37
49	REGISTERS	Q1110	39
50	STORAGE DEVICES	Q1117	40
51	DIGITAL TO ANALOG CONVERTERS	Q1126	40
52	PHANTASTRONS	Q1140	41
53	SCHMITT TRIGGERS	R1141	41
54	CABLE FABRICATION	R1144	41
55	INPUT/OUTPUT DEVICES	S1146	41
56	PHOTO SENSITIVE DEVICES	S1149	41
57	SYNCHRONOUS VIBRATIONS (CHOPPER CIRCUITS)	S1150	41
58	INFRARED	T1159	41
59	LASERS	T1186	42
60	DISPLAY TUBES	T1220	43
61	PROGRAMMING	U1234	43
62	DB AND POWER RATIOS	U1255	44

TABLE 2
COMMAND REPRESENTATION OF SURVEY SAMPLE

COMMAND	36251	
	PERCENT ASSIGNED	PERCENT OF SAMPLE
ADC	1	2
ATC	2	1
AFCS	94	77
TAC	1	2
USAFE	1	6
OTHER	<u>1</u>	<u>11</u>
TOTAL	100	100

Total Assigned - 733
Total Sampled - 106
Percent Sampled - 13%*

*NOTE: Only a 40 percent sampling of this career specialty had been ordered. Of the booklets distributed only 50 percent were returned resulting in the low percent sampled figure.

PRESENTATION OF RESULTS

Personnel responded "yes" or "no" to the 1,257 electronic principles questions as related to their present job. A Group Summary (GPSUM) computer printout is provided in the Appendix portion of this report. Page 1 of the GPSUM lists the four selected groups identified for this report. Pages 2-44 show the percentage of the incumbents responding to the EPI items. The computer program results display the percent members answering "yes" to the subject area questions. The reader can locate a specific subject area by referring to the Appendix page number as listed in Table 1. For example, the Transformers area results are given on page 6 of the GPSUM. The percentage of survey respondents indicating use of specific electronic principles ranged from high in areas such as Relays (pp. 11-12) and Microphones (p. 12) to low in areas such as Infrared and Lasers (pp. 41-43). Additional AFSC 362X1 data can be obtained upon request to the Chief, Occupational Survey Branch (OMY).

APPENDIX

PCT MORS RESPONDING "YES" BY SELECTED GRPS

GPSUMI PAGE 1

TABULATION OF ELECTRONIC PRINCIPLES UTILIZATION DATA FOR SELECTED GROUPS
IN THE 302XI CAREEN FIELD.

REPORTS ON THE FOLLOWING GROUPS WERE REQUESTED

GROUP IDENTITY =	SPC001	ALL AIRMEN DAFSC 36251	CONTAINING	106 MEMBERS.
GROUP IDENTITY =	SPC002	ALL AIRMEN DAFSC 36251 STATIONED IN CONUS	CONTAINING	71 MEMBERS.
GROUP IDENTITY =	SPC003	ALL AIRMEN DAFSC 36251 STATIONED OVERSEAS	CONTAINING	34 MEMBERS.
GROUP IDENTITY =	SPC004	ALL AIRMEN DAFSC 36251 ASSIGNED TO AFCS	CONTAINING	82 MEMBERS.

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

0Y-TSK

- A 1 A1-01 IN YOUR PRESENT JOB, DO YOU USE INSTRUMENTS, SUCH AS METERS OR OSCILLOSCOPES, IN WHICH IT IS NECESSARY TO AMPLIFY OR ATTENUATE VOLTAGE, RESISTANCE, ETC., BY POWERS OF 10.
- A 2 A1-02 DO YOU USE PUBLICATIONS, SUCH AS A TECHNICAL ORDERS OR MAINTENANCE MANUALS, IN WHICH IT IS NECESSARY FOR YOU TO MULTIPLY OR DIVIDE BY A POWER OF 10 BEFORE YOU CAN APPLY THE INFORMATION FROM THE PUBLICATION IN A USEFUL WAY ON THE JOB.
- A 3 A1-03 DO YOU REARRANGE AND SOLVE FORMULAS OR EQUATIONS.
- A 4 A1-04 DO YOU CALCULATE THE SQUARE ROOT OF A QUANTITY.
- A 5 A1-05 DO YOU SOLVE FOR UNKNOWN QUANTITIES.
- A 6 A1-06 DO YOU CONVERT NUMBERS TO LOGARITHMS.
- A 7 A1-07 DO YOU USE LOGARITHM TABLES IN ANY TYPE OF CALCULATIONS.
- A 8 A1-08 DO YOU SOLVE QUADRATIC EQUATIONS.
- A 9 A1-09 DO YOU USE THE NATURAL SYSTEM OF LOGARITHMS.
- A 10 A1-10 DO YOU PERFORM CALCULATIONS ON VECTOR QUANTITIES.
- A 11 A1-11 DO YOU WORK WITH TRIGONOMETRIC FUNCTIONS SUCH AS SINE, COSINE, OR TANGENT.
- A 12 A1-12 DO YOU DETERMINE AREAS OF PLANE FIGURES.
- A 13 A1-13 DO YOU SOLVE OR USE SIMULTANEOUS EQUATIONS.
- A 14 A1-14 DO YOU SOLVE OR USE PROPORTIONS.
- A 15 A2-01 DO YOU USE THE TERM VOLTAGE OR VOLTS (VT).
- A 16 A2-02 DO YOU USE THE TERM ELECTROMOTIVE FORCE (EMF).
- A 17 A2-03 DO YOU USE THE TERM OHM.
- A 18 A2-04 DO YOU USE THE TERM ION.
- A 19 A2-05 DO YOU USE THE TERM DYNE.
- A 20 A2-06 DO YOU USE THE TERM AMPERE.
- A 21 A2-07 DO YOU USE THE TERM NEUTRON.
- A 22 A2-08 DO YOU USE THE TERM COULOMB.
- A 23 A2-09 DO YOU USE THE TERM PROTON.
- A 24 A3-01 DO YOU WORK WITH RESISTORS IN YOUR PRESENT JOB.
- A 25 A3-02 DO YOU INSPECT RESISTORS.
- A 26 A3-03 DO YOU CLEAN RESISTORS.
- A 27 A3-04 DO YOU ADJUST RESISTORS.
- A 28 A3-05 DO YOU CHECK OHMIC VALUE OR RESISTORS.
- A 29 A3-06 DO YOU REMOVE OR REPLACE RESISTORS.
- A 30 A3-07 DO YOU USE OR REFER TO TEMPERATURE COEFFICIENTS FOR RESISTORS ON ANY TASKS YOU PERFORM.
- A 31 A3-08 DO YOU USE OR REFER TO RESISTOR SYMBOLS SUCH AS FIXED RESISTOR SYMBOLS OR TAPPED RESISTOR SYMBOLS.
- A 32 A3-09 DO YOU IDENTIFY OR CLASSIFY THE RESISTORS YOU WORK WITH AS CARBON, FILLED WIRE, SLIDE TAP, RHEOSTAT, OR POTENTIOMETER.
- A 33 A3-10 DO YOU USE RESISTOR COLOR CODES WHICH INDICATE OHMIC VALUE OF RESISTANCE.

SPC SPC SPC SPC
001 002 003 004

42 46 32 45

17 23 6 20

MATHEMATICS

14 13 18 16

5 4 6 5

10 8 15 11

3 1 6 2

3 1 6 2

5 3 9 5

3 1 6 2

5 3 9 4

8 7 9 7

5 3 9 4

5 3 9 5

6 6 6 6

88 90 82 89

28 28 29 27

91 93 85 91

10 11 9 10

6 6 6 6

88 90 85 89

15 17 12 11

10 11 9 9

15 17 12 12

68 61 82 71

68 62 79 71

29 24 41 30

35 34 38 39

67 69 62 76

73 70 76 77

14 17 9 16

62 62 62 67

56 58 59 63

60 61 59 70

DIRECT CURRENT AND VOLTAGE

RESISTANCE

PCT MEMS RESPONDING *YES* BY SELECTED GMS

GPSUMI PAGE 3

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

0Y-TSK

	SPC 001	SPC 002	SPC 003	SPC 004
A 34 A3-11 DO YOU USE RESISTOR COLOR CODES WHICH INDICATE TOLERANCE.	42	42	41	46
A 35 A3-12 DO YOU USE RESISTOR COLOR CODES WHICH INDICATE FAILURE RATE.	13	13	12	12
A 36 A3-13 DO YOU MAKE DECISIONS IN WHICH YOU MUST DETERMINE HOW TWO OR MORE BATTERIES MUST BE CONNECTED TOGETHER TO ACHIEVE A SPECIFIC VOLTAGE.	36	39	29	38
A 37 A3-14 DO YOU USE OR REFER TO THE SCHEMATIC SYMBOLS WHICH REPRESENT BATTERIES, FUSES, CONDUCTORS, LAMPS, OR SWITCHES	76	72	85	82
A 38 A3-15 DO YOU CALCULATE TOTAL RESISTANCE FOR SERIES RESISTIVE CIRCUITS.	44	46	38	50
A 39 A3-16 DO YOU CALCULATE TOTAL CURRENT FOR SERIES RESISTIVE CIRCUITS.	42	46	35	49
A 40 A3-17 DO YOU CALCULATE INDIVIDUAL VOLTAGE DROPS FOR SERIES RESISTIVE CIRCUITS.	38	41	32	43
A 41 A3-18 DO YOU CALCULATE POWER DISSIPATION FOR SERIES RESISTIVE CIRCUITS.	25	27	24	29
A 42 A3-19 DO YOU CALCULATE TOTAL RESISTANCE FOR SERIES PARALLEL RESISTIVE CIRCUITS.	38	41	32	41
A 43 A3-20 DO YOU CALCULATE TOTAL CURRENT FOR SERIES PARALLEL RESISTIVE CIRCUITS.	38	42	29	44
A 44 A3-21 DO YOU CALCULATE INDIVIDUAL VOLTAGE DROPS FOR SERIES PARALLEL RESISTIVE CIRCUITS.	31	34	26	35
A 45 A3-22 DO YOU CALCULATE INDIVIDUAL BRANCH CURRENTS FOR SERIES PARALLEL RESISTIVE CIRCUITS.	30	32	26	34
A 46 A3-23 DO YOU CALCULATE POWER DISSIPATION FOR SERIES PARALLEL RESISTIVE CIRCUITS.	26	28	24	30
A 47 A3-24 DO YOU CALCULATE TOTAL RESISTANCE FOR PARALLEL RESISTIVE CIRCUITS.	36	38	32	41
A 48 A3-25 DO YOU CALCULATE TOTAL CURRENT FOR PARALLEL RESISTIVE CIRCUITS.	35	38	29	41
A 49 A3-26 DO YOU CALCULATE INDIVIDUAL VOLTAGE DROPS FOR PARALLEL RESISTIVE CIRCUITS.	27	28	26	32
A 50 A3-27 DO YOU CALCULATE INDIVIDUAL BRANCH CURRENTS FOR PARALLEL RESISTIVE CIRCUITS.	27	28	26	32
A 51 A3-28 DO YOU CALCULATE POWER DISSIPATION FOR PARALLEL RESISTIVE CIRCUITS.	25	25	24	28
B 52 B1-01 DO YOU MEASURE RESISTANCE.	89	90	85	91
B 53 B1-02 DO YOU REPAIR OHMMETERS.	8	8	9	9
B 54 B1-03 DO YOU MEASURE VOLTAGE.	91	90	91	93
B 55 B1-04 DO YOU REPAIR VOLTMETERS.	8	7	9	7
B 56 B1-05 DO YOU REPAIR AMMETERS.	8	8	6	9
B 57 B1-06 DO YOU MEASURE CURRENT.	79	82	76	84
B 58 B1-07 DO YOU USE MULTIMETERS.	92	93	91	95
B 59 B1-08 DO YOU DIRECTLY USE A QUANTITY OF CHANGE CALLED A COULOMB.	6	7	3	6
H 60 B1-09 DO YOU READ SCHEMATICS.	89	90	88	89

MULTIMETER USES

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

DY-TSK

		ALTERNATING CURRENT				INDUCTORS AND INDUCTIVE REACTANCE			
		SPC 001	SPC 002	SPC 003	SPC 004				
B	61 62-01 DO YOU USE OR REFER TO THE TERM EFFECTIVE VOLTAGE (RMS).	25	24	26	28				
B	62 62-02 DO YOU USE OR REFER TO THE TERM PEAK TO PEAK VOLTAGE.	23	27	15	26				
B	63 62-03 DO YOU USE OR REFER TO THE TERM AVERAGE VOLTAGE (DC).	36	37	32	44				
B	64 62-04 DO YOU USE OR REFER TO THE TERM AVE LENGTH.	20	21	18	23				
B	65 62-05 DO YOU USE OR REFER TO THE TERM FREQUENCY.	42	41	47	45				
B	66 62-06 DO YOU USE OR REFER TO THE TERM INSTANTANEOUS VALUE.	10	11	9	11				
B	67 63-01 DO YOU WORK WITH INDUCTORS OR CIRCUITS CONTAINING INDUCTORS, CHOKES, OR CHOKE COILS IN YOUR PRESENT JOB.	17	17	18	20				
B	68 63-02 DO YOU INSPECT INDUCTORS.	13	13	15	16				
B	69 63-03 DO YOU CLEAN INDUCTORS.	9	7	15	11				
B	70 63-04 DO YOU ADJUST INDUCTORS.	8	7	9	9				
B	71 63-05 DO YOU REMOVE OR REPLACE INDUCTORS.	16	15	18	18				
B	72 63-06 DO YOU USE OR REFER TO INDUCTANCE.	18	18	18	21				
B	73 63-07 DO YOU USE OR REFER TO HENRIES.	11	13	9	13				
B	74 63-08 DO YOU USE OR REFER TO INDUCTIVE REACTANCE.	14	15	12	16				
B	75 63-09 DO YOU USE OR REFER TO COPPER LOSS IN INDUCTORS.	3	4	0	4				
B	76 63-10 DO YOU USE OR REFER TO HYSTERESIS LOSS IN INDUCTORS.	2	1	3	2				
B	77 63-11 DO YOU USE OR REFER TO EDDY CURRENT LOSS IN INDUCTORS.	4	4	3	5				
B	78 63-12 DO YOU USE OR REFER TO THE GENERAL RULE THAT INDUCTANCE IS PROPORTIONAL TO THE SQUARE OF THE NUMBER OF TURNS OF THE COIL.	6	6	6	6				
B	79 63-13 DO YOU USE OR REFER TO THE GENERAL RULE THAT THE INDUCTANCE OF A COIL IS DIRECTLY PROPORTIONAL TO THE CROSS SECTIONAL AREA OF THE CORE.	7	6	9	7				
B	80 63-14 DO YOU USE OR REFER TO THE GENERAL RULE THAT THE INDUCTANCE OF A COIL IS INVERSELY PROPORTIONAL TO ITS LENGTH.	3	3	3	2				
B	81 63-15 DO YOU USE OR REFER TO THE GENERAL RULE THAT THE INDUCTANCE OF A COIL IS DIRECTLY PROPORTIONAL TO THE PERMEABILITY OF THE CORE MATERIAL.	7	4	12	7				
B	82 63-16 DO YOU CALCULATE INDUCTANCE FOR PARTICULAR INDUCTORS USING FORMULAS.	4	3	6	4				
B	83 63-17 DO YOU CALCULATE THE TOTAL INDUCTANCE FOR INDUCTANCE IN SERIES.	5	4	6	5				
B	84 63-18 DO YOU CALCULATE THE TOTAL INDUCTANCE FOR INDUCTORS IN PARALLEL.	5	4	6	5				
B	85 63-19 DO YOU CALCULATE THE TOTAL INDUCTANCE FOR INDUCTORS IN SERIES-PARALLEL CIRCUITS.	5	4	6	5				
B	86 63-20 DO YOU USE OR REFER TO THE GENERAL RULE THAT CURRENT LAGS VOLTAGE IN AC INDUCTOR CIRCUITS.	7	7	6	7				
B	87 63-21 DO YOU CALCULATE INDUCTIVE REACTANCE.	4	3	6	4				
B	88 63-22 DO YOU USE OR REFER TO THE GENERAL RULE THAT INDUCTIVE REACTANCE IS DIRECTLY PROPORTIONAL TO FREQUENCY.	3	3	3	2				
B	89 63-23 DO YOU WORK WITH POWER INDUCTORS.	5	7	0	6				
B	90 63-24 DO YOU WORK WITH AUDIO FREQUENCY INDUCTORS.	8	7	9	10				
B	91 63-25 DO YOU WORK WITH RADIO FREQUENCY INDUCTORS.	2	1	3	2				

PCT MEMS RESPONDING *YES* BY SELECTED GRPS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

GPSUMI PAGE 5

0Y-TSK

C 92 CI-01 DO YOU WORK WITH CAPACITORS ON CIRCUITS CONTAINING CAPACITORS IN YOUR PRESENT JOB.
C 93 CI-02 DO YOU INSPECT CAPACITORS.
C 94 CI-03 DO YOU CLEAN CAPACITORS.
C 95 CI-04 DO YOU ADJUST CAPACITORS.
C 96 CI-05 DO YOU TEST CAPACITORS.
C 97 CI-06 DO YOU DISCHARGE CAPACITORS.
C 98 CI-07 DO YOU REMOVE OR REPLACE CAPACITORS.
C 99 CI-08 DO YOU USE OR REFER TO DISTRIBUTED CAPACITANCE.
C 100 CI-09 DO YOU USE OR REFER TO ORBITAL STRESS OF ELECTONS IN A DIELECTRIC.
C 101 CI-10 DO YOU USE OR REFER TO FARADS, MICROFARADS, OR PICOFARADS.
C 102 CI-11 DO YOU USE OR REFER TO CAPACITANCE.
C 103 CI-12 DO YOU USE OR REFER TO DIELECTRIC CONSTANT
C 104 CI-13 DO YOU USE OR REFER TO WORKING VOLTAGE RATING OF CAPACITORS
C 105 CI-14 DO YOU USE OR REFER TO CAPACITIVE REACTANCE
C 106 CI-15 DO YOU USE OR REFER TO CAPACITOR COLOR CODES
C 107 CI-16 DO YOU WORK WITH CAPACITORS IN DC CIRCUITS
C 108 CI-17 DO YOU WORK WITH CAPACITORS IN AC CIRCUITS
C 109 CI-18 DO YOU WORK WITH CAPACITORS IN CIRCUITS WITH BOTH DC AND AC
C 110 CI-19 DO YOU WORK WITH CAPACITORS IN DON'T REMEMBER WHICH CIRCUITS
C 111 CI-20 DO YOU CALCULATE CAPACITANCE FOR PARTICULAR CAPACITORS USING FORMULAS
C 112 CI-21 DO YOU USE OR REFER TO THE GENERAL RULE THAT CAPACITANCE OF A CAPACITOR IS DIRECTLY PROPORTIONAL TO THE DIELECTRIC CONSTANT
C 113 CI-22 DO YOU USE OR REFER TO THE GENERAL RULE THAT CAPACITANCE OF A CAPACITOR IS INVERSELY PROPORTIONAL TO THE DIELECTRIC THICKNESS
C 114 CI-23 DO YOU CALCULATE THE TOTAL CAPACITANCE OF CAPACITORS IN SERIES
C 115 CI-24 DO YOU CALCULATE THE TOTAL CAPACITANCE OF CAPACITORS IN PARALLEL
C 116 CI-25 DO YOU CALCULATE THE TOTAL CAPACITANCE OF CAPACITORS IN SERIES-PARALLEL CIRCUITS
C 117 CI-26 DO YOU USE OR REFER TO THE GENERAL RULE THAT CURRENT DOES NOT FLOW THROUGH CAPACITORS, IT ONLY APPEARS TO DO SO
C 118 CI-27 DO YOU USE OR REFER TO THE GENERAL RULE THAT CURRENT LEADS VOLTAGE IN AC CAPACITOR CIRCUITS
C 119 CI-28 DO YOU USE OR REFER TO THE GENERAL RULE THAT CAPACITIVE REACTANCE IS INVERSELY PROPORTIONAL TO FREQUENCY
C 120 CI-29 DO YOU CALCULATE CAPACITIVE REACTANCE

SPC SPC SPC SPC
001 002 003 004

CAPACITORS AND CAPACITIVE REACTANCE

66 63 74 68
58 52 71 60
34 24 56 38
12 11 15 13
58 52 71 59
38 31 53 39
62 59 71 63
8 7 9 9
2 2 3 0 1
37 34 44 41
56 56 56 59
7 6 9 6
24 20 32 26
15 15 15 16
15 20 15 18
64 59 76 66
38 34 47 38
39 34 50 36
14 15 12 16
5 6 3 6
4 4 3 5
5 6 3 6
14 15 12 17
14 15 12 18
15 17 12 20
23 28 12 24
9 11 6 10
6 6 6 7
6 6 6 7

PCT MRS RESPONDING YES BY SELECTED GRPS

GPSUM1 PAGE 6

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

DY-TSK		SPC 001	SPC 002	SPC 003	SPC 004
C 121	C1-J0 DO YOU WORK WITH ROTOR-STATOR (VARIABLE) CAPACITORS	9	13	3	10
C 122	C1-J1 DO YOU WORK WITH COMPRESSION (TRIMMER) CAPACITORS	4	4	3	4
C 123	C1-J2 DO YOU WORK WITH ELECTROLYTIC (FIXED) CAPACITORS	38	35	44	43
C 124	C1-J3 DO YOU WORK WITH PAPER (FIXED) CAPACITORS	40	37	47	44
C 125	C1-J4 DO YOU WORK WITH MICA (FIXED) CAPACITORS	35	31	44	38
C 126	C1-J5 DO YOU WORK WITH CERAMIC (FIXED) CAPACITORS	41	37	50	43
C 127	C1-J6 DO YOU WORK WITH DON'T REMEMBER WHICH TYPE OF CAPACITORS	23	23	24	22
C 128	C2-01 DO YOU WORK WITH TRANSFORMERS IN YOUR PRESENT JOB	19	15	26	18
C 129	C2-02 DO YOU INSPECT TRANSFORMERS	21	20	24	21
C 130	C2-03 DO YOU CLEAN TRANSFORMERS	14	11	21	15
C 131	C2-04 DO YOU ADJUST TRANSFORMERS	13	13	15	13
C 132	C2-05 DO YOU TROUBLESHOOT TRANSFORMERS	18	17	21	20
C 133	C2-06 DO YOU REMOVE OR REPLACE COMPLETE TRANSFORMERS	16	15	18	17
C 134	C2-07 DO YOU REMOVE OR REPLACE TRANSFORMER PARTS, SUCH AS THE PRIMARY WINDING	4	3	6	4
C 135	C2-08 DO YOU MAKE A DISTINCTION BETWEEN MUTUAL INDUCTANCE AND MUTUAL INDUCTANCE (M)	1	1	0	1
C 136	C2-09 DO YOU USE THE SYMBOL FOR MUTUAL INDUCTANCE, M	1	1	0	1
C 137	C2-10 DO YOU REFER TO OR USE THE COEFFICIENT OF COUPLING WHEN WORKING WITH TRANSFORMERS	5	6	3	6
C 138	C2-11 DO YOU CALCULATE TURNS RATIOS FOR TRANSFORMERS USING CURRENT OR VOLTAGE RATIOS	5	6	3	6
C 139	C2-12 DO YOU REFER TO REFLECTED IMPEDANCE WHEN WORKING WITH TRANSFORMERS	3	4	0	4
C 140	C2-13 DO YOU CALCULATE IMPEDANCE INTERACTIONS FOR TRANSFORMERS	3	4	0	4
C 141	C2-14 DO YOU WORK WITH AUTOTRANSFORMERS	3	3	3	2
C 142	C2-15 DO YOU WORK WITH POWER TRANSFORMERS	18	18	18	18
C 143	C2-16 DO YOU WORK WITH AUDIO TRANSFORMERS	14	10	24	15
C 144	C2-17 DO YOU WORK WITH RADIO FREQUENCY TRANSFORMERS	4	3	6	4
C 145	C2-18 DO YOU WORK WITH DON'T REMEMBER WHAT TYPE OF TRANSFORMERS	7	6	9	6
C 146	C2-19 DO YOU CHECK TRANSFORMERS FOR OPEN WINDINGS BY MEASURING RESISTANCE	18	15	24	18
C 147	C2-20 DO YOU CHECK TRANSFORMERS FOR SHORTED WINDINGS BY MEASURING RESISTANCE	17	14	24	17
C 148	C2-21 DO YOU CHECK TRANSFORMERS FOR SHORTED WINDINGS BY MEASURING OUTPUT VOLTAGES	10	10	12	11
C 149	C2-22 DO YOU MEASURE RESISTANCE OF TRANSFORMER WINDINGS TO DETERMINE WHETHER A TRANSFORMER HAS A STEP-UP OR STEP-DOWN TURNS RATIO	9	7	15	9
C 150	C2-23 DO YOU MEASURE OUTPUT VOLTAGE OF TRANSFORMERS TO DETERMINE WHETHER A TRANSFORMER HAS A STEP-UP OR STEP-DOWN TURNS RATIO	10	10	12	11
C 151	C2-24 DO YOU REFER TO BASIC TRANSFORMER SCHEMATIC SYMBOLS FOR TRANSFORMERS	18	14	26	17

TRANSFORMERS

PCT HBRS RESPONDING 'YES' BY SELECTED GRPS

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TASK GROUP SUMMARY PERCENT MEMBERS PERFORMING

01-TSK

	SPC 001	SPC 002	SPC 003	SPC 004
C 152 C2-25 DO YOU REFER TO MULTIPLE SECONDARY-WINDINGS SCHEMATIC SYMBOLS FOR TRANSFORMERS	19	18	21	20
C 153 C2-26 DO YOU REFER TO MULTIPLE TAP SCHEMATIC SYMBOLS FOR TRANSFORMERS	15	11	24	13
C 154 C2-27 DO YOU REFER TO CENTER TAP SCHEMATIC SYMBOLS FOR TRANSFORMERS	14	11	21	13
C 155 C2-28 DO YOU REFER TO AIR CORE SCHEMATIC SYMBOLS FOR TRANSFORMERS	10	11	9	9
C 156 C2-29 DO YOU REFER TO IRON CORE SCHEMATIC SYMBOLS FOR TRANSFORMERS	11	11	12	10
C 157 C2-30 DO YOU REFER TO COMBINATIONS OF THE ABOVE SCHEMATIC SYMBOLS FOR TRANSFORMERS	13	13	15	12
C 158 C2-31 DO YOU DETERMINE PHASE RELATIONSHIPS BETWEEN SECONDARY AND PRIMARY VOLTAGES OF TRANSFORMERS USING SCHEMATIC SYMBOLS	7	4	12	6
C 159 C2-32 DO YOU DETERMINE OR REFER TO THE TYPE OF CORE IN TRANSFORMERS YOU WORK WITH	9	8	12	9
C 160 C2-33 DO YOU REFER TO OR USE THE GENERAL RULE THAT THE TURNS RATIO OF A TRANSFORMER IS EQUAL TO THE VOLTAGE RATIO	6	4	9	5
C 161 C2-34 DO YOU USE OR REFER TO STEP-UP OR STEP-DOWN RATIOS FOR TRANSFORMERS	11	8	18	11
C 162 C2-35 DO YOU CALCULATE VOLTAGE RATIOS FOR TRANSFORMERS USING TURNS RATIOS	4	4	3	4
C 163 C2-36 DO YOU CALCULATE CURRENT RATIOS FOR TRANSFORMERS USING TURNS RATIOS	4	4	3	4
C 164 C2-37 DOES YOUR JOB INVOLVE ANY TASKS DEALING WITH THREE PHASE TRANSFORMERS	4	4	3	4
C 165 C2-38 DO YOU INSPECT THREE PHASE TRANSFORMERS	4	4	3	4
C 166 C2-39 DO YOU CLEAN OR LUBRICATE THREE PHASE TRANSFORMERS	4	4	3	4
C 167 C2-40 DO YOU ADJUST THREE PHASE TRANSFORMERS	3	3	3	2
C 168 C2-41 DO YOU TROUBLESHOOT THREE PHASE TRANSFORMERS	4	4	3	4
C 169 C2-42 DO YOU REMOVE OR REPLACE COMPLETE THREE PHASE TRANSFORMERS	3	3	3	2
C 170 C2-43 DO YOU REMOVE OR REPLACE THREE PHASE TRANSFORMER PARTS SUCH AS WINDINGS	2	1	3	1
C 171 C3-01 DO YOU USE OR REFER TO PERMANENT MAGNETS	25	25	26	26
C 172 C3-02 DO YOU USE OR REFER TO TEMPORARY MAGNETS	32	28	41	35
C 173 C3-03 DO YOU USE OR REFER TO RETENTIVITY OF MAGNETIC MATERIALS	19	18	21	20
C 174 C3-04 DO YOU USE OR REFER TO RELUCTANCE OF MAGNETIC MATERIALS	13	14	12	15
C 175 C3-05 DO YOU USE OR REFER TO PERMEABILITY OF MAGNETIC MATERIALS	14	15	12	16
C 176 C3-06 DO YOU USE OR REFER TO RESIDUAL MAGNETISM	54	54	56	54
C 177 C3-07 DO YOU USE OR REFER TO MAGNETIC LINES OF FORCE OR FLUX	24	24	24	23
C 178 C3-08 DO YOU USE OR REFER TO WEBER'S THEORY OF MAGNETISM	5	6	3	4

MAGNETISM

PCT MEMBERS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

GP'SUM PAGE 4

BY-TSK

C 179 C3-09 DO YOU USE OR REFER TO DOMAIN THEORY OF MAGNETISM
C 180 C3-10 DO YOU USE OR REFER TO MAGNETIC INDUCTION
C 181 C3-11 DO YOU USE OR REFER TO FLUX DENSITY
C 182 C3-17 DO YOU USE OR REFER TO THE GENERAL RULE THAT FOR
MAGNETIC POLES, LIKE POLES REPEL AND UNLIKE POLES ATTRACT
C 183 C3-13 DO YOU USE THE LEFT HAND THUMB RULE TO FIND THE
DIRECTION OF MAGNETIC FIELDS ABOUT STRAIGHT WIRES
C 184 C3-14 DO YOU USE THE LEFT HAND THUMB RULE TO FIND THE NORTH
POLE OF A CURRENT CARRYING COIL

SPC SPC SPC SPC
001 002 003 004

4 4 3 4
25 23 32 23
5 6 3 4
39 41 35 39
15 15 15 13
13 15 9 13

C 185 D1-01 DO YOU WORK WITH MCL, LR, RCL CIRCUITS IN YOUR
PRESENT JOB

C 186 D1-02 DO YOU USE OR REFER TO VECTORS WHEN WORKING WITH MCL
CIRCUITS

C 187 D1-03 DO YOU USE OR REFER TO PYTHAGOREAN THEOREM WHEN
WORKING WITH RCL CIRCUITS

C 188 D1-04 DO YOU USE OR REFER TO SINE WHEN WORKING WITH RCL
CIRCUITS

C 189 D1-05 DO YOU USE OR REFER TO COSINE WHEN WORKING WITH RCL
CIRCUITS

C 190 D1-06 DO YOU USE OR REFER TO TANGENT WHEN WORKING WITH MCL
CIRCUITS

C 191 D1-07 DO YOU USE OR REFER TO WATTS WHEN WORKING WITH RCL
CIRCUITS

C 192 D1-08 DO YOU USE OR REFER TO TRUE POWER (PT) WHEN WORKING
WITH RCL CIRCUITS

C 193 D1-09 DO YOU USE OR REFER TO MAXIMUM POWER (PM) WHEN
WORKING WITH RCL CIRCUITS

C 194 D1-10 DO YOU USE OR REFER TO AVERAGE POWER (PAVE) WHEN
WORKING WITH RCL CIRCUITS

C 195 D1-11 DO YOU USE OR REFER TO APPARENT POWER (PA) WHEN
WORKING WITH RCL CIRCUITS

C 196 D1-12 DO YOU USE OR REFER TO POWER FACTOR (PF) WHEN WORKING
WITH RCL CIRCUITS

C 197 D1-13 DO YOU USE OR REFER TO RESONANT CIRCUITS WHEN
WORKING WITH RCL CIRCUITS

C 198 D1-14 DO YOU USE OR REFER TO BANDWIDTH WHEN WORKING WITH
RCL CIRCUITS

C 199 D1-15 DO YOU USE OR REFER TO SELECTIVITY WHEN WORKING WITH
RCL CIRCUITS

C 200 D1-16 DO YOU USE OR REFER TO RESONANT FREQUENCY WHEN
WORKING WITH RCL CIRCUITS

C 201 D1-17 DO YOU USE OR REFER TO HALF POWER POINTS WHEN
WORKING WITH RCL CIRCUITS

C 202 D1-18 DO YOU USE OR REFER TO HANDPASS REGION WHEN WORKING
WITH RCL CIRCUITS

C 203 D1-19 DO YOU USE OR REFER TO CIRCUIT W WHEN WORKING WITH
RCL CIRCUITS

RCL CIRCUITS

4 4 3 5

1 1 0 1

1 1 0 1

2 3 0 2

2 3 0 2

1 1 0 1

2 3 0 2

1 1 0 1

2 3 0 2

1 1 0 1

2 3 0 2

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PCT MEMS RESPONDING 'YES' BY SELECTED GRPS

GPSUMI PAGE 9

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

UY-TSK

	SPC 001	SPC 002	SPC 003	SPC 004
U 204 DI-20 DO YOU USE OH REFER TO TANK CIRCUITS WHEN WORKING WITH RCL CIRCUITS	1	1	0	1
U 205 DI-21 DO YOU DETERMINE VALUES OF TRIGONOMETRIC FUNCTIONS USING FORMULAS	1	1	0	1
U 206 DI-22 DO YOU DRAW VOLTAGE, CURRENT, OR IMPEDANCE VECTOR DIAGRAMS FOR CIRCUITS	2	1	3	1
U 207 DI-23 DO YOU CALCULATE TOTAL IMPEDANCE FOR CAPACITIVE CIRCUITS	2	3	0	2
U 208 DI-24 DO YOU CALCULATE PHASE ANGLES BETWEEN IMPEDANCE AND RESISTANCE IN CAPACITIVE CIRCUITS	1	1	0	1
U 209 DI-25 DO YOU CALCULATE TOTAL IMPEDANCE FOR SERIES RCL CIRCUITS	2	3	0	2
U 210 DI-26 DO YOU CALCULATE IMPEDANCE ANGLES FOR SERIES RCL CIRCUITS	1	1	0	1
U 211 DI-27 DO YOU CALCULATE APPARENT POWER (PA) FOR SERIES RCL CIRCUITS	2	3	0	2
U 212 DI-28 DO YOU CALCULATE TRUE POWER (PT) FOR SERIES RCL CIRCUITS	1	1	0	1
U 213 DI-29 DO YOU CALCULATE POWER FACTORS (PF) FOR SERIES RCL CIRCUITS	2	3	0	2
U 214 DI-30 DO YOU CALCULATE TOTAL CURRENT FOR PARALLEL RCL CIRCUITS	2	3	0	2
U 215 DI-31 DO YOU CALCULATE IMPEDANCE ANGLES FOR PARALLEL RCL CIRCUITS	1	1	0	1
U 216 DI-32 DO YOU CALCULATE TOTAL IMPEDANCE FOR PARALLEL RCL CIRCUITS USING THE ASSUMED VOLTAGE METHOD	1	1	0	1
U 217 DI-33 DO YOU CALCULATE TOTAL IMPEDANCE FOR PARALLEL RCL CIRCUITS USING OHM'S LAW	2	3	0	2
U 218 DI-34 DO YOU CHECK CAPACITORS USING OHMMETERS	6	7	3	6
U 219 DI-35 DO YOU CHECK CAPACITORS USING SUBSTITUTION	3	4	0	2
U 220 DI-36 DO YOU CHECK INDUCTORS USING OHMMETERS	4	6	0	4
U 221 DI-37 DO YOU CHECK INDUCTORS USING SUBSTITUTION	3	3	3	2
U 222 DI-38 DO YOU USE OH REFER TO THE GENERAL RULE THAT $\theta = \theta_1$, $\theta_2 = \theta_1$, AND $\theta_3 = \theta_1$ FOR RESONANT CIRCUITS	1	1	0	1
U 223 DI-39 DO YOU CALCULATE RESONANT FREQUENCIES FOR RCL CIRCUITS	1	1	0	1
U 224 DI-40 DO YOU USE OH REFER TO THE GENERAL RULE THAT IMPEDANCE IS MINIMUM AND CURRENT MAXIMUM AT THE RESONANT FREQUENCY FOR SERIES RCL CIRCUITS	2	3	0	2
U 225 DI-41 DO YOU USE OH REFER TO THE GENERAL RULE THAT LINE CURRENT IS MINIMUM AND IMPEDANCE MAXIMUM AT RESONANT FREQUENCY FOR PARALLEL RCL CIRCUITS	2	3	0	2
U 226 DI-42 DO YOU USE OH REFER TO THE GENERAL RULE THAT HALF POWER POINTS ARE AT 70.7 PERCENT OF THE PEAK CURRENT VALUE	1	1	0	1
U 227 DI-43 DO YOU USE OH REFER TO THE GENERAL RULE THAT BANDWIDTH IS INVERSELY PROPORTIONAL TO Q	1	1	0	1
U 228 DI-44 DO YOU DETERMINE HOW CHANGES IN FREQUENCY, RESISTANCE, CAPACITANCE, OR INDUCTANCE WILL AFFECT CURRENT OR PHASE ANGLES FOR RCL CIRCUITS	1	1	0	1

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

BY-TSK

	SPC 001	SPC 002	SPC 003	SPC 004
U 229 02-01 IN YOUR PRESENT JOB, DO YOU WORK WITH, USE, OR REFER TO SERIES OR PARALLEL RESONANT CIRCUITS OR TIME CONSTANTS	3	4	0	4
U 230 02-02 DO YOU WORK WITH, USE, OR REFER TO TIME CONSTANTS	2	3	0	2
U 231 02-03 DO YOU WORK WITH, USE, OR REFER TO AVAILABLE VOLTAGE	2	3	0	2
U 232 03-04 DO YOU WORK WITH, USE, OR REFER TO TRANSIENT INTERVALS	2	3	0	2
U 233 02-05 DO YOU USE OR REFER TO THE GENERAL RULE THAT A CAPACITOR IS FULLY CHARGED (OR DISCHARGED) AFTER FIVE (5) TIME CONSTANTS (TC)	2	3	0	2
U 234 02-06 DO YOU USE OR REFER TO UNIVERSAL TIME CONSTANT CHARTS	3	3	3	2
U 235 02-07 DO YOU USE EQUATIONS OR FORMULAS TO DETERMINE CIRCUIT CURRENT OR COMPONENT VOLTAGES AFTER A SPECIFIC TIME FOR RC OR LR CIRCUITS	3	3	3	2
U 236 02-08 DO YOU USE EQUATIONS OR FORMULAS TO DETERMINE THE TIME REQUIRED FOR CIRCUIT CURRENT OR COMPONENT VOLTAGES TO REACH SPECIFIC VALUES FOR RC OR LR CIRCUITS	3	3	3	2
U 237 02-09 DO YOU USE EQUATIONS OR FORMULAS TO DETERMINE COMPONENT VALUES REQUIRED FOR CIRCUIT CURRENT AND COMPONENT VOLTAGES TO REACH SPECIFIC VALUES IN SPECIFIC TIMES	3	3	3	2
U 238 02-10 DO YOU USE OR REFER TO THE GENERAL RULE THAT CURRENT IN LR CIRCUITS REACHES ITS MINIMUM VALUE (OR ZERO) AFTER FIVE (5) TIME CONSTANTS	3	3	3	2
U 239 03-01 DO YOU WORK WITH CIRCUITS USED AS FILTERS IN YOUR PRESENT JOB	4	4	3	4
U 240 03-02 DO YOU INSPECT FILTER CIRCUITS	4	4	3	4
U 241 03-03 DO YOU CLEAN FILTER CIRCUITS	4	3	6	2
U 242 03-04 DO YOU ALIGN OR ADJUST FILTER CIRCUITS	3	3	3	2
U 243 03-05 DO YOU TROUBLESHOOT TO THE FILTER CIRCUIT LEVEL	4	4	3	4
U 244 03-06 DO YOU TROUBLESHOOT TO COMPONENT PARTS	4	4	3	4
U 245 03-07 DO YOU REMOVE OR REPLACE THE COMPLETE FILTER CIRCUIT	4	4	3	2
U 246 03-08 DO YOU REMOVE OR REPLACE FILTER CIRCUIT COMPONENT PARTS	4	4	3	4
U 247 03-09 DO YOU WORK WITH LOW PASS FILTERS	4	4	3	4
U 248 03-10 DO YOU WORK WITH HIGH PASS FILTERS	4	4	3	4
U 249 03-11 DO YOU WORK WITH BANDPASS FILTERS	3	3	3	2
U 250 03-12 DO YOU WORK WITH BAND-REJECT FILTERS	3	3	3	2
U 251 03-13 DON'T REMEMBER WHICH TYPE OF FILTER YOU WORK WITH	4	3	6	2
U 252 03-14 DO YOU WORK WITH L-SECTION FILTER CONFIGURATION	2	3	0	2
U 253 03-15 DO YOU WORK WITH T-SECTION FILTER CONFIGURATION	1	1	0	1
U 254 03-16 DO YOU WORK WITH PI-SECTION FILTER CONFIGURATION	1	1	0	1
U 255 03-17 DON'T REMEMBER WHICH TYPE FILTER CONFIGURATION	2	1	3	1
U 256 03-18 DO THE FILTERS YOU WORK WITH USE PARALLEL RESONANT CIRCUITS	2	3	0	2
U 257 03-19 DO THE FILTERS YOU WORK WITH USE SERIES-PARALLEL CIRCUITS	3	4	0	4
U 258 03-20 DO THE FILTERS YOU WORK WITH USE SERIES RESONANT CIRCUITS	2	3	0	2

FILTERS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

DY-TSK

SPC SPC SPC SPC
001 002 003 004

259 03-21 DON'T REMEMBER WHICH TYPE OF BASIC CIRCUIT
 260 03-22 DO YOU USE EQUATIONS OR FORMULAS TO DETERMINE
 CAPACITANCE OR INDUCTANCE VALUES REQUIRED FOR SPECIFIC
 FILTERS
 261 E1-01 DO YOU WORK WITH COUPLING DEVICES IN YOUR PRESENT JOB
 262 E1-02 DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO
 THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH RC
 COUPLING
 263 E1-03 DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO
 THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH
 IMPEDANCE COUPLING
 264 E1-04 DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO
 THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH
 TRANSFORMER COUPLING
 265 E1-05 DO YOU TROUBLESHOOT CIRCUITS WHICH HAVE COMPONENTS
 WHICH PERFORM RC COUPLING
 266 E1-06 DO YOU TROUBLESHOOT CIRCUITS WHICH HAVE COMPONENTS
 WHICH PERFORM IMPEDANCE COUPLING
 267 E1-07 DO YOU TROUBLESHOOT CIRCUITS WHICH HAVE COMPONENTS
 WHICH PERFORM TRANSFORMER COUPLING
 268 E1-08 DO YOU WORK WITH DIRECTLY COUPLED CIRCUITS
 269 E1-09 DO YOU WORK WITH CAPACITIVE-RESISTIVE COUPLED
 CIRCUITS
 270 E1-10 DO YOU WORK WITH CAPACITIVE-INDUCTIVE COUPLED
 CIRCUITS
 271 E1-11 DO YOU WORK WITH TRANSFORMER COUPLED CIRCUITS
 272 E1-12 DON'T REMEMBER WHICH TYPE OF COUPLING CIRCUITS
 273 E2-01 IN YOUR PRESENT JOB, DO YOU PERFORM SOLDERING
 TECHNIQUES OR INSPECT OR EVALUATE SOLDERED CONNECTIONS
 274 E2-02 DO YOU SELECT TYPE OF SOLDER TO USE
 275 E2-03 DO YOU ADD FLUX TO CONNECTIONS
 276 E2-04 DO YOU CLEAN CONNECTIONS USING SOLVENTS
 277 E2-05 DO YOU STRIP INSULATION FROM WIRES
 278 E2-06 DO YOU CONNECT OR DISCONNECT HEAT SINKS
 279 E2-07 DO YOU BEND OR SHAPE WIRES OR LEADS
 280 E2-08 DO YOU CUT WIRES
 281 E2-09 DO YOU FILE OR SHAPE SOLDERING IRON TIPS
 282 E2-10 DO YOU TIN SOLDERING IRON TIPS
 283 E2-11 DO YOU CLEAN SOLDERING IRON TIPS
 284 E2-12 DO YOU CLEAN ELECTRICAL SURFACES USING ERASERS
 285 E2-13 DO YOU TIN OR PRE-TIN CONDUCTORS
 286 E2-14 DO YOU INSPECT SOLDERED CONNECTIONS
 287 E2-15 DO YOU DESOLDER CONNECTIONS BY PICKING
 288 E2-16 DO YOU DESOLDER CONNECTIONS USING VACUUM DESOLDERING
 TOOLS
 289 E2-17 DO YOU CUT COMPONENT LEADS TO REMOVE COMPONENTS
 290 E2-18 DO YOU CRUSH COMPONENTS FOR REMOVAL

COUPLING

SOLDERING

PCT MEMS RESPONDING 'YES' BY SELECTED GRPS

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TASK GROUP SUMMARY PERCENT MEMBERS PERFORMING

BY-TSK

SPC SPC SPC SPC
001 002 003 004

E 291 E2-19 DO YOU MAKE HANDWIRE CONNECTIONS
E 292 E2-20 DO YOU MAKE PRINTED CIRCUIT BOARD CONNECTIONS
E 293 E2-21 DO YOU SOLDER PASSIVE COMPONENTS SUCH AS RESISTORS OR CAPACITORS ON PRINTED CIRCUIT BOARDS
E 294 E2-22 DO YOU SOLDER ACTIVE COMPONENTS SUCH AS SOLID-STATE DIODES OR TRANSISTORS ON PRINTED CIRCUIT BOARDS

E 295 E3-01 DO YOU WORK WITH RELAYS ON YOUR PRESENT JOB

E 296 E3-02 DO YOU ADJUST RELAYS

E 297 E3-03 DO YOU CLEAN RELAYS

E 298 E3-04 DO YOU INSPECT RELAYS

E 299 E3-05 DO YOU REMOVE OR REPLACE COMPLETE RELAYS

E 300 E3-06 DO YOU REMOVE OR REPLACE PARTS OR RELAYS

E 301 E3-07 DO YOU TROUBLESHOOT RELAYS

E 302 E3-08 DO YOU STRAIGHTEN RELAY CONTACTS

E 303 E3-09 DO YOU PERFORM TASKS ON RELAY CONTACTS

E 304 E3-10 DO YOU PERFORM TASKS ON RELAY COILS

E 305 E3-11 DO YOU PERFORM TASKS ON RELAY COILS

E 306 E3-12 DO YOU PERFORM TASKS ON RELAY ARMATURES

E 307 E3-13 DO YOU PERFORM TASKS ON RELAY SPRINGS

E 308 E3-14 DO YOU USE OR REFER TO SINGLE POLE, SINGLE THROW (SPST), NORMALLY OPEN (NO) SCHEMATIC SYMBOLS FOR RELAYS

E 309 E3-15 DO YOU USE OR REFER TO SINGLE POLE, SINGLE THROW (SPST), NORMALLY CLOSED (NC) SCHEMATIC SYMBOLS FOR RELAYS

E 310 E3-16 DO YOU USE OR REFER TO SINGLE POLE, DOUBLE THROW (SPDT) SCHEMATIC SYMBOLS FOR RELAYS

E 311 E3-17 DO YOU USE OR REFER TO DOUBLE POLE, DOUBLE THROW (DPDT) SCHEMATIC SYMBOLS FOR RELAYS

E 312 E3-18 DO YOU USE OR REFER TO OTHER RELAY SYMBOLS SCHEMATIC SYMBOLS FOR RELAYS

E 313 E3-19 DO YOU CHECK ELECTRICAL CONTINUITY OF COILS BY MEASURING RESISTANCE

F 314 F1-01 IN YOUR PRESENT JOB, DO YOU PERFORM ANY TASKS DEALING WITH MICROPHONES

F 315 F1-02 DO YOU INSPECT MICROPHONES

F 316 F1-03 DO YOU CLEAN MICROPHONES

F 317 F1-04 DO YOU OPERATE MICROPHONES

F 318 F1-05 DO YOU TROUBLESHOOT AS FAR AS CHECKING WIRE CONNECTIONS BUT DO NOT TROUBLESHOOT DOWN TO COMPONENT PARTS OR MICROPHONES

F 319 F1-06 DO YOU TROUBLESHOOT DOWN TO MICROPHONE PARTS

F 320 F1-07 DO YOU REMOVE OR REPLACE COMPLETE MICROPHONES

F 321 F1-08 DO YOU REMOVE OR REPLACE MICROPHONE PARTS

F 322 F1-09 DO YOU PERFORM TASKS ON CARBON MICROPHONES

F 323 F1-10 DO YOU PERFORM TASKS ON CAPACITOR MICROPHONES

F 324 F1-11 DO YOU PERFORM TASKS ON CRYSTAL MICROPHONES

F 325 F1-12 DO YOU PERFORM TASKS ON DYNAMIC MICROPHONES

F 326 F1-13 DO YOU PERFORM TASKS ON VELOCITY RIBBON MICROPHONES

RELAYS

MICROPHONES

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

GPSUM PAGE 13

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

DT-TSK

SPC SPC SPC SPC
001 002 003 004

F 327 F2-01 IN YOUR PRESENT JOB, DO YOU PERFORM ANY TASKS DEALING

WITH SPEAKERS

F 328 F2-02 DO YOU INSPECT SPEAKERS

F 329 F2-03 DO YOU CLEAN SPEAKERS

F 330 F2-04 DO YOU OPERATE SPEAKERS

F 331 F2-05 DO YOU TROUBLESHOOT AS FAR AS CHECKING WIRE

CONNECTIONS BUT DO NOT TROUBLESHOOT DOWN TO COMPONENT

PARTS OF SPEAKERS

F 332 F2-06 DO YOU TROUBLESHOOT DOWN TO SPEAKER PARTS

F 333 F2-07 DO YOU REMOVE OR REPLACE COMPLETE SPEAKERS

F 334 F2-08 DO YOU REMOVE OR REPLACE SPEAKER PARTS

F 335 F2-09 DO YOU PERFORM ANY TASKS ON SPEAKER CONES

F 336 F2-10 DO YOU PERFORM ANY TASKS ON SPEAKER SPIDERS

F 337 F2-11 DO YOU PERFORM ANY TASKS ON SPEAKER FIELD COILS

F 338 F2-12 DO YOU PERFORM ANY TASKS ON SPEAKER VOICE COILS

F 339 F2-13 DO YOU PERFORM ANY TASKS ON SPEAKER PERMANENT MAGNETS

F 340 F2-14 DO YOU PERFORM ANY TASKS ON SPEAKER ELECTROMAGNETS

F 341 F2-15 DO YOU PERFORM ANY TASKS ON SPEAKER SOFT IRON CORES

F 342 F3-01 DO YOU USE OSCILLOSCOPES IN YOUR PRESENT JOB

F 343 F3-02 DO YOU USE OSCILLOSCOPES TO PERFORM OPERATIONAL

CHECKS

F 344 F3-03 DO YOU USE OSCILLOSCOPES TO PERFORM ALIGNMENTS OR

ADJUSTMENTS

F 345 F3-04 DO YOU USE OSCILLOSCOPES TO TROUBLESHOOT ELECTRONIC

CIRCUITS

F 346 F3-05 DO YOU USE OSCILLOSCOPES TO MEASURE FREQUENCY

F 347 F3-06 DO YOU USE OSCILLOSCOPES TO MEASURE TIME

F 348 F3-07 DO YOU USE OSCILLOSCOPES TO OBSERVE LISAJOUS PATTERNS

F 349 F3-08 DO YOU USE OSCILLOSCOPES TO OBSERVE SIGNALS WHILE

UTILIZING ATTENUATOR PROBES

F 350 F3-09 DO YOU USE OSCILLOSCOPES TO MAKE FREQUENCY OR TIME

MEASUREMENTS USING DELAY TIME MULTIPLIERS

F 351 F3-10 DO YOU USE OSCILLOSCOPES TO MEASURE AC VOLTAGE

F 352 F3-11 DO YOU USE OSCILLOSCOPES TO MEASURE OR OBSERVE

SIGNALS AFTER FIRST ADJUSTING THE GAIN AND DC BAL CONTROLS

F 353 F3-12 DO YOU USE OSCILLOSCOPES TO MEASURE DC VOLTAGE

G 354 G1-01 DO YOU WORK WITH SEMICONDUCTOR DIODES IN YOUR PRESENT

JOB

G 355 G1-02 DO YOU INSPECT DIODES

G 356 G1-03 DO YOU REMOVE OR REPLACE DIODES

G 357 G1-04 DO YOU CHECK DIODES USING AN INSTRUMENT

G 358 G1-05 DO YOU USE ENERGY LEVEL DIAGRAMS IN YOUR WORK WITH

DIODES

G 359 G1-06 DO YOU USE PN JUNCTION DIODE CHARACTERISTIC CURVES,

TOGETHER WITH VALUES OF FORWARD AND REVERSE BIAS VOLTAGE,

TO COMPUTE FORWARD OR REVERSE BIAS RESISTANCE

G 360 G1-07 DO YOU COMPUTE FORWARD OR REVERSE BIAS RESISTANCE FOR

DIODES

SPEAKERS

OSCILLOSCOPES

SEMICONDUCTOR DIODES

PCT MEMS RESPONDING 'YES' BY SELECTED GMPs

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TASK GROUP SUMMARY PERCENT MEMBERS PERFORMING

04-TSK

	SPC 001	SPC 002	SPC 003	SPC 004
361 G1-08 DO YOU USE OR REFER TO THE GENERAL RULE THAT TEMPERATURE CAN AFFECT THE OPERATION OF DIODES	16	17	15	18
362 G1-09 DO YOU IDENTIFY SEMICONDUCTOR DIODES AS OPPOSED TO OTHER ELECTRONIC COMPONENTS, SUCH AS RESISTORS, BASED ON THEIR PHYSICAL APPEARANCE	19	17	24	23
363 G1-10 DO YOU REFER TO OR DO YOU DETERMINE THE GENERAL EFFECTS OF DOPING ON CURRENT FLOW	4	6	0	5
364 G1-11 DO YOU USE OR REFER TO MEASUREMENTS OF FORWARD BIAS RESISTANCE	6	8	0	7
365 G1-12 DO YOU USE OR REFER TO DIODE COLOR CODING	8	10	3	7
366 G1-13 DO YOU USE OR REFER TO CENTRIFUGAL FORCE OF AN ELECTRON IN ORBIT AROUND A NUCLEUS	1	1	0	1
367 G1-14 DO YOU USE OR REFER TO CENTRIPETAL FORCE OF AN ELECTRON IN ORBIT AROUND A NUCLEUS	1	1	0	1
368 G1-15 DO YOU USE OR REFER TO DIODE NUMBERING SYSTEM, SUCH AS IN 538	12	11	15	15
369 G1-16 DO YOU USE OR REFER TO KINETIC ENERGY OF AN ELECTRON MOVING IN ORBIT	1	1	0	1
370 G1-17 DO YOU USE OR REFER TO POTENTIAL ENERGY OF AN ELECTRON MOVING IN ORBIT	1	1	0	1
371 G1-18 DO YOU USE OR REFER TO MEASUREMENTS OF REVERSE BIAS RESISTANCE	7	10	0	9
372 G1-19 DO YOU USE OR REFER TO NUMBER OF ELECTRONS IN A PARTICULAR SHELL OR ORBIT	1	1	0	1
373 G1-20 DO YOU USE OR REFER TO PERMISSIBLE ENERGY LEVELS OF AN ORBITING ELECTRON	1	1	0	1
374 G1-21 DO YOU USE OR REFER TO FORBIDDEN ENERGY LEVELS OF AN ORBITING ELECTRON	1	1	0	1
375 G1-22 DO YOU USE OR REFER TO VALENCE ELECTRONS (THOSE IN THE OUTERMOST SHELL)	1	1	0	1
376 G1-23 DO YOU USE OR REFER TO ATOMIC NUMBER (TOTAL NUMBER OF ELECTRONS IN ATOM)	1	1	0	1
377 G1-24 DO YOU USE OR REFER TO SYMBOLS ON THE DIODE WHICH INDICATE THE CATHODE END	18	18	18	21
378 G1-25 DO YOU NEED TO KNOW WHICH MATERIALS ARE USED IN THE CONSTRUCTION OF DIODES SUCH AS GERMANIUM OR SILICON	5	6	3	6
379 G1-26 DO YOU NEED TO KNOW THAT SEMICONDUCTORS HAVE NEGATIVE TEMPERATURE COEFFICIENTS OF RESISTANCE (AS TEMPERATURE INCREASES RESISTANCE DECREASES)	8	10	3	9
380 G1-27 DO YOU USE OR REFER TO PN JUNCTION DIODE CHARACTERISTIC CURVES, SUCH AS VOLTAGE - CURRENT	4	6	0	4
381 G1-28 DO YOU DETERMINE WHETHER PN JUNCTION DIODES ARE FORWARD BIASED OR REVERSE BIASED WHEN YOU READ OR INTERPRET CIRCUIT DIAGRAMS	8	10	3	9
382 G1-29 DO YOU USE OR REFER TO VALENCE BAND IN SEMICONDUCTOR MATERIALS	2	3	0	2

PCT MMS RESPONDING 'YES' BY SELECTED GRPS

GPSUMI PAGE 15

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

DY-TSK		SPC 001	SPC 002	SPC 003	SPC 004
380	GI-30 DO YOU USE OR REFER TO FORBIDDEN BAND IN SEMICONDUCTOR MATERIALS	2	3	0	2
384	GI-31 DO YOU USE OR REFER TO CONDUCTION BAND IN SEMICONDUCTOR MATERIALS	2	3	0	2
385	GI-32 DO YOU USE OR REFER TO COVALENT BONDING IN SEMICONDUCTOR MATERIALS	3	4	0	4
386	GI-33 DO YOU USE OR REFER TO ELECTRON-HOLE PAIR CREATED IN SEMICONDUCTORS	1	1	0	1
387	GI-34 DO YOU USE OR REFER TO ELECTRON FLOW OR HOLE FLOW IN SEMICONDUCTORS	2	3	0	2
388	GI-35 DO YOU USE OR REFER TO DONOR IMPURITY IN SEMICONDUCTORS	2	3	0	2
389	GI-36 DO YOU USE OR REFER TO ACCEPTOR IMPURITY IN SEMICONDUCTORS	2	3	0	2
390	GI-37 DO YOU USE OR REFER TO P-TYPE SEMICONDUCTOR MATERIAL	7	10	0	7
391	GI-38 DO YOU USE OR REFER TO N-TYPE SEMICONDUCTOR MATERIAL	7	10	0	7
392	GI-39 DO YOU USE OR REFER TO MAJORITY CARRIERS IN SEMICONDUCTORS	3	4	0	4
393	GI-40 DO YOU USE OR REFER TO MINORITY CARRIERS IN SEMICONDUCTORS	2	3	0	2
394	GI-41 DO YOU USE OR REFER TO JUNCTION RECOMBINATION IN SEMICONDUCTORS	3	4	0	4
395	GI-42 DO YOU USE OR REFER TO DEPLETION REGION IN SEMICONDUCTORS	2	3	0	2
396	GI-43 DO YOU USE OR REFER TO RELATIONSHIP BETWEEN BARRIER HEIGHT AND DIFFERENCE OF POTENTIAL	2	3	0	2
397	GI-44 DO YOU USE OR REFER TO THE 10:1 BACK TO FRONT RESISTANCE RATIO FOR DIODES	8	11	3	11
398	GI-45 DO YOU USE OR REFER TO BARRIER HEIGHT IN SEMICONDUCTORS	1	1	0	1
399	GI-46 DO YOU USE OR REFER TO DIODE SUBSTITUTION INFORMATION	8	10	6	11
400	GI-47 DO YOU USE OR REFER TO MAXIMUM AVERAGE FORWARD CURRENT DIODE RATINGS	3	4	0	4
401	GI-48 DO YOU USE OR REFER TO PEAK RECURRENT FORWARD CURRENT DIODE RATINGS	3	4	0	4
402	GI-49 DO YOU USE OR REFER TO MAXIMUM SURGE CURRENT DIODE RATINGS	4	6	0	5
403	GI-50 DO YOU USE OR REFER TO PEAK REVERSE (INVERSE) VOLTAGE DIODE RATINGS	4	6	0	5
404	GI-51 DO YOU WORK WITH TRANSISTORS IN YOUR PRESENT JOB.	11	14	6	13
405	GI-52 DO YOU INSPECT TRANSISTORS	9	14	0	11
406	GI-53 DO YOU REMOVE OR REPLACE TRANSISTORS	8	13	0	10
407	GI-54 DO YOU CHECK TRANSISTORS USING AN INSTRUMENT	8	13	0	10
408	GI-55 DO YOU USE OR REFER TO EMITTER - BASE (EB) FORWARD AND REVERSE RESISTANCE MEASUREMENTS	6	8	0	7
409	GI-56 DO YOU USE OR REFER TO COLLECTOR - BASE (CB) FORWARD AND REVERSE RESISTANCE MEASUREMENTS	7	8	3	7

TRANSISTORS

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

GPSUMJ PAGE 16

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

DT-TSK

SPC SPC SPC SPC
001 002 003 004

410 G2-07 DO YOU USE OR REFER TO EMITTER - COLLECTOR (EC) RESISTANCE MEASUREMENTS 7 8 3 7

411 G2-08 DO YOU USE OR REFER TO HOW BIASING AFFECTS THE PHYSICAL BARRIER WIDTH OF THE EMITTER - BASE JUNCTION 4 4 3 4

412 G2-09 DO YOU USE OR REFER TO HOW BIASING AFFECTS THE PHYSICAL BARRIER WIDTH OF THE COLLECTOR - BASE JUNCTION 5 6 3 5

413 G2-10 DO YOU USE OR REFER TO THE PHYSICAL SIZE OF THE TRANSISTOR STRUCTURE (COLLECTOR, BASE AND EMITTER) 6 7 3 6

414 G2-11 DO YOU USE OR REFER TO LEAKAGE CURRENT (ICBO) IN A TRANSISTOR 5 6 3 5

415 G2-12 DO YOU USE OR REFER TO TRANSISTOR SCHEMATIC SYMBOLS 11 13 9 12

416 G2-13 DO YOU USE OR REFER TO TRANSISTOR NOTATION SUCH AS Q1, Q2, Q3, ETC 10 11 9 11

417 G2-14 DO YOU USE OR REFER TO TRANSISTOR SUBSTITUTION INFORMATION 7 8 3 7

418 G2-15 DO YOU USE OR REFER TO THE GENERAL RULE THAT THE TRANSISTOR BASE CURRENT IS NORMALLY SIGNIFICANTLY SMALLER THAN THE EMITTER CURRENT IE USUALLY IS BEING 2 TO 8 PERCENT OF IE) 2 3 0 2

419 G2-16 DO YOU USE THE INFORMATION THAT THE EFFECT OF EMITTER BASE VOLTAGE ON BASE CURRENT IS THE CONTROLLING FACTOR FOR TRANSISTORS 4 6 0 5

420 G2-17 DO YOU USE THE GENERAL RULE THAT LEAKAGE CURRENT (ICBO) IN A TRANSISTOR INCREASES AS TEMPERATURE INCREASES 2 3 0 2

421 G2-18 DO YOU USE OR REFER TO TRANSISTOR CHARACTERISTIC CURVES 1 1 0 1

422 G2-19 DO YOU USE OR REFER TO BETA TRANSISTOR GAINS 1 1 0 1

423 G2-20 DO YOU USE OR REFER TO ALPHA TRANSISTOR GAINS 1 1 0 1

424 G2-21 DO YOU USE OR REFER TO GAMMA TRANSISTOR GAINS 1 1 0 1

425 G2-22 DO YOU CALCULATE BETA TRANSISTOR GAINS 1 1 0 1

426 G2-23 DO YOU CALCULATE ALPHA TRANSISTOR GAINS 1 1 0 1

427 G2-24 DO YOU CALCULATE GAMMA TRANSISTOR GAINS 1 1 0 1

428 G3-01 DO YOU WORK WITH TRANSISTOR AMPLIFIERS IN YOUR PRESENT JOB 8 6 11

429 G3-02 DO YOU INSPECT TRANSISTOR AMPLIFIERS 4 4 3 5

430 G3-03 DO YOU ALIGN OR ADJUST TRANSISTOR AMPLIFIERS 8 8 6 10

431 G3-04 DO YOU TROUBLESHOOT TO THE AMPLIFIER CIRCUIT LEVEL 8 8 6 11

432 G3-05 DO YOU TROUBLESHOOT TO AMPLIFIER COMPONENTS 3 4 0 4

433 G3-06 DO YOU REMOVE OR REPLACE THE COMPLETE AMPLIFIER 7 7 6 9

434 G3-07 DO YOU REMOVE OR REPLACE AMPLIFIER COMPONENTS 3 4 0 4

435 G3-08 DO YOU USE OR REFER TO (COMMON EMITTER) THE CHANGE IN COLLECTOR CURRENT WHICH RESULTS FROM A CHANGE IN BASE CURRENT 2 3 0 2

436 G3-09 DO YOU USE OR REFER TO (COMMON EMITTER) THE CALCULATIONS NECESSARY TO MEASURE THE SPECIFIC CHANGE IN COLLECTOR CURRENT WHICH RESULTS FROM A SPECIFIC CHANGE IN BASE CURRENT 1 1 0 1

TRANSISTOR AMPLIFIERS

PCT MBRS RESPONDING 'YES' BY SELECTED GNPS

GPSUM PAGE 17

TASK GROUP SUMMARY PERCENT MEMBERS PERFORMING

		01-TSK							
		SPC 001	SPC 002	SPC 003	SPC 004				
437	G3-10 DO YOU USE OR REFER TO (COMMON EMITTER) THE CHANGE IN COLLECTOR VOLTAGE WHICH RESULTS FROM A CHANGE IN BASE CURRENT	2	3	0	2				
438	G3-11 DO YOU USE OR REFER TO (COMMON EMITTER) THE CALCULATIONS NECESSARY TO MEASURE THE SPECIFIC CHANGE IN COLLECTOR VOLTAGE WHICH RESULTS FROM A SPECIFIC CHANGE IN BASE CURRENT	1	1	0	1				
439	G3-12 DO YOU USE OR REFER TO (COMMON EMITTER) THE CHANGE IN BASE CURRENT WHICH RESULTS FROM AN INPUT SIGNAL	1	1	0	1				
440	G3-13 DO YOU USE OR REFER TO (COMMON EMITTER) THE CALCULATIONS NECESSARY TO MEASURE THE SPECIFIC CHANGE IN BASE CURRENT WHICH RESULTS FROM A SPECIFIC INPUT SIGNAL	1	1	0	1				
441	G3-14 DO YOU USE THE LOAD-LINE METHOD OF ANALYSIS IN YOUR CIRCUIT ANALYSIS (THIS METHOD REQUIRES YOU TO PLOT A LOAD-LINE ON A TRANSISTOR CHARACTERISTIC CURVE)	1	1	0	1				
442	G3-15 DO YOU USE OR REFER TO THE OPERATING POINT Q (QUIESCENT POINT) FOR A TRANSISTOR	1	1	0	1				
443	G3-16 DO YOU CALCULATE THE SPECIFIC QUIESCENT POINT FOR A PARTICULAR TRANSISTOR	1	1	0	1				
444	G3-17 DO YOU MEASURE VOLTAGE GAIN USED IN THE COMMON EMITTER CONFIGURATION	3	3	3	4				
445	G3-18 DO YOU MEASURE CURRENT GAIN USED IN THE COMMON EMITTER CONFIGURATION	2	3	0	2				
446	G3-19 DO YOU MEASURE POWER GAIN USED IN THE COMMON EMITTER CONFIGURATION	2	3	0	2				
447	G3-20 DO YOU CALCULATE THE VOLTAGE GAIN FOR SPECIFIC TRANSISTORS USING A FORMULA THAT IS, DO YOU DIVIDE THE CHANGE IN BASE-EMITTER VOLTAGE INTO THE CHANGE THE BASE COLLECTOR VOLTAGE TO DETERMINE THE VOLTAGE GAIN	1	1	0	1				
448	G3-21 DO YOU CALCULATE THE CURRENT GAIN FOR SPECIFIC TRANSISTORS USING A FORMULA THAT IS, DO YOU DIVIDE THE CHANGE IN BASE CURRENT INTO THE CHANGE IN COLLECTOR CURRENT TO DETERMINE THE CURRENT GAIN	1	1	0	1				
449	G3-22 DO YOU CALCULATE THE POWER GAIN FOR A SPECIFIC TRANSISTOR USING A FORMULA THAT IS, DO YOU MULTIPLY THE CURRENT GAIN TIMES THE VOLTAGE GAIN TO DETERMINE THE POWER GAIN	1	1	0	1				
450	G3-23 DO YOU NEED TO KNOW THAT MORE COLLECTOR CURRENT IS GENERATED WITH LESS COLLECTOR VOLTAGE AS TEMPERATURE INCREASES (THIS AFFECTS THE STATIC OPERATING POINT Q) OF THE TRANSISTOR)	2	3	0	2				
451	G3-24 DO YOU COMPUTE THE STATIC OPERATING POINT (Q) OF A TRANSISTOR AT DIFFERENT TEMPERATURES	2	3	0	2				
452	G3-25 DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH EMITTER (SWAMPING) RESISTOR STABILIZATION	1	1	0	1				
453	G3-26 DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH SELF-BIAS STABILIZATION	1	1	0	1				

PCT MBMS RESPONDING 'YES' BY SELECTED GMPs

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

CPSUM1 PAGE 1A

UY-TSK

	SPC 001	SPC J02	SPC 003	SPC 004
454 G3-27 DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH THERMISTOR STABILIZATION	2	3	0	2
455 G3-28 DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH FORWARD BIAS DIODE STABILIZATION	1	1	0	1
456 G3-29 DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH REVERSE BIAS DIODE STABILIZATION	1	1	0	1
457 G3-30 DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH DOUBLE DIODE STABILIZATION	1	1	0	1
458 G3-31 DO YOU TROUBLESHOOT CIRCUITS WHICH HAVE COMPONENTS WHICH PERFORM EMITTER (SWAMPING) RESISTOR STABILIZATION	1	1	0	1
459 G3-32 DO YOU TROUBLESHOOT CIRCUITS WHICH HAVE COMPONENTS WHICH PERFORM SELF-BIAS STABILIZATION	1	1	0	1
460 G3-33 DO YOU TROUBLESHOOT CIRCUITS WHICH HAVE COMPONENTS WHICH PERFORM THERMISTOR STABILIZATION	1	1	0	1
461 G3-34 DO YOU TROUBLESHOOT CIRCUITS WHICH HAVE COMPONENTS WHICH PERFORM FORWARD BIAS DIODE STABILIZATION	1	1	0	1
462 G3-35 DO YOU TROUBLESHOOT CIRCUITS WHICH HAVE COMPONENTS WHICH PERFORM REVERSE BIAS DIODE STABILIZATION	1	1	0	1
463 G3-36 DO YOU TROUBLESHOOT CIRCUITS WHICH HAVE COMPONENTS WHICH PERFORM DOUBLE DIODE STABILIZATION	1	1	0	1
464 G3-37 DO YOU IDENTIFY AMPLITUDE DISTORTION FOR TRANSISTOR CIRCUITS	2	3	0	2
465 G3-38 DO YOU TROUBLESHOOT TRANSISTOR CIRCUITS TO FIND THE CAUSES OF AMPLITUDE DISTORTION	2	3	0	2
466 G3-39 DO YOU IDENTIFY FREQUENCY DISTORTION FOR TRANSISTOR CIRCUITS	1	1	0	1
467 G3-40 DO YOU IDENTIFY PHASE DISTORTION FOR TRANSISTOR CIRCUITS	1	1	0	1
468 G3-41 DO YOU TROUBLESHOOT TRANSISTOR CIRCUITS TO FIND THE CAUSES OF PHASE DISTORTION	1	1	0	1
469 G3-42 DO YOU TROUBLESHOOT TRANSISTOR CIRCUITS TO FIND THE CAUSES OF FREQUENCY DISTORTION	1	1	0	1
470 G3-43 DO YOU NEED TO KNOW THE DEGENERATIVE EFFECTS ON THE CIRCUIT CAUSED BY CHANGING EMITTER RESISTANCE FOR TRANSISTOR AMPLIFIERS IN THE COMMON COLLECTOR CONFIGURATION	1	1	0	1
471 G3-44 DO YOU DETERMINE THE CLASS OF OPERATION FOR AMPLIFIERS IN ORDER TO TROUBLESHOOT AMPLIFIER CIRCUITS	1	1	0	1
472 G3-45 DO YOU TROUBLESHOOT OR REPAIR PARAPHASE AMPLIFIERS	1	1	0	1
473 G3-46 DO YOU TROUBLESHOOT OR REPAIR PUSH-PULL AMPLIFIERS	2	3	0	2
474 G3-47 DO YOU TROUBLESHOOT OR REPAIR COMPLEMENTARY SYMMETRY CIRCUITS	2	3	0	2
475 G3-48 DO YOU TROUBLESHOOT OR REPAIR COMPOUND-CONNECTED AMPLIFIERS	1	1	0	1

PCT MEMS RESPONDING 'YES' BY SELECTED GRPS

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TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

UY-TSK

SPC SPC SPC SPC
001 002 003 004

G 476 G3-49 DO YOU TROUBLESHOOT OR REPAIR CASCADE-CONNECTED AMPLIFIERS

H 477 H1-01 DO YOU USE OR REFER TO VARACTORS

H 478 H1-02 DO YOU USE OR REFER TO TUNNEL DIODES

H 479 H1-03 DO YOU USE OR REFER TO FIELD EFFECT TRANSISTORS (FET)

H 480 H1-04 DO YOU USE OR REFER TO UNIJUNCTION TRANSISTORS

H 481 H1-05 DO YOU USE OR REFER TO ZENER DIODES

H 482 H1-06 DO YOU USE OR REFER TO INTEGRATED CIRCUITS

H 483 H2-01 IN YOUR PRESENT JOB, DO YOU WORK WITH POWER SUPPLIES

H 484 H2-02 DO YOU INSPECT POWER SUPPLIES

H 485 H2-03 DO YOU CLEAN POWER SUPPLIES

H 486 H2-04 DO YOU ALIGN OR ADJUST POWER SUPPLIES

H 487 H2-05 DO YOU TROUBLESHOOT TO POWER SUPPLY CIRCUIT LEVEL

H 488 H2-06 DO YOU TROUBLESHOOT TO POWER SUPPLY COMPONENTS

H 489 H2-07 DO YOU REMOVE OR REPLACE COMPLETE POWER SUPPLIES

H 490 H2-08 DO YOU REMOVE OR REPLACE POWER SUPPLY COMPONENTS

H 491 H2-09 DO YOU WORK WITH HALF-WAVE RECTIFIERS

H 492 H2-10 DO YOU WORK WITH FULL-WAVE RECTIFIERS OTHER THAN

BRIDGE RECTIFIERS

H 493 H2-11 DO YOU WORK WITH BRIDGE RECTIFIERS

H 494 H2-12 DO YOU WORK WITH THREE-PHASE RECTIFIERS

H 495 H2-13 DO YOU USE OR REFER TO INPUT VOLTAGE

H 496 H2-14 DO YOU USE OR REFER TO INPUT FREQUENCY

H 497 H2-15 DO YOU USE OR REFER TO PEAK OUTPUT VOLTAGE

H 498 H2-16 DO YOU USE OR REFER TO AVERAGE OUTPUT VOLTAGE

H 499 H2-17 DO YOU USE OR REFER TO RIPPLE AMPLITUDE

H 500 H2-18 DO YOU USE OR REFER TO RIPPLE FREQUENCY

H 501 H2-19 DO YOU USE OR REFER TO PEAK REVERSE (INVERSE) VOLTAGE

H 502 H2-20 DO YOU USE OR REFER TO SHAPE OF OUTPUT WAVEFORMS

H 503 H2-21 DO YOU USE OR REFER TO EFFECTIVE OUTPUT VOLTAGE

H 504 H2-22 DO YOU WORK WITH CIRCUITS WHICH EMPLOY CAPACITIVE

FILTERS

H 505 H2-23 DO YOU WORK WITH CIRCUITS WHICH EMPLOY INDUCTIVE

FILTERS

H 506 H2-24 DO YOU WORK WITH CIRCUITS WHICH EMPLOY CAPACITIVE

INPUT L-TYPE FILTERS

H 507 H2-25 DO YOU WORK WITH CIRCUITS WHICH EMPLOY INDUCTIVE

INPUT L-TYPE FILTERS

H 508 H2-26 DO YOU WORK WITH CIRCUITS WHICH EMPLOY LC PI-TYPE

FILTERS

H 509 H2-27 DO YOU WORK WITH CIRCUITS WHICH EMPLOY RC PI-TYPE

FILTERS

H 510 H2-28 DO YOU WORK WITH CIRCUITS WHICH EMPLOY CONSTANT

REMEMBER WHICH TYPE OF FILTER

H 511 H2-29 DO YOU HAVE THE OPTION OF REPLACING ONE TYPE OF

FILTER WITH A DIFFERENT TYPE FILTER

H 512 H3-01 DO YOU WORK WITH OSCILLATORS IN YOUR PRESENT JOB

SOLID-STATE SPECIAL PURPOSE DEVICES

POWER SUPPLIES

OSCILLATORS

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

Task Group	SPC 001	SPC J02	SPC 003	SPC 004
513 H3-02 DO YOU INSPECT OSCILLATORS	9	8	12	12
514 H3-03 DO YOU ALIGN OR ADJUST OSCILLATORS	10	8	15	13
515 H3-04 DO YOU REMOVE OR REPLACE COMPLETE OSCILLATORS	3	4	15	11
516 H3-05 DO YOU REMOVE OR REPLACE OSCILLATOR COMPONENTS	7	4	12	9
517 H3-06 DO YOU TROUBLESHOOT TO OSCILLATOR CIRCUIT LEVEL	3	3	3	4
518 H3-07 DO YOU TROUBLESHOOT TO OSCILLATOR COMPONENTS	5	4	6	6
519 H3-08 DO YOU USE OR REFER TO FEEDBACK	4	6	0	5
520 H3-09 DO YOU USE OR REFER TO FREQUENCY DETERMINING DEVICES (FDD)	8	8	6	10
521 H3-10 DO YOU USE OR REFER TO AMPLITUDE STABILITY	3	4	0	4
522 H3-11 DO YOU USE OR REFER TO FREQUENCY STABILITY	1	1	0	1
523 H3-12 DO YOU USE OR REFER TO DAMPING	1	1	0	1
524 H3-13 DO YOU USE OR REFER TO REGENERATIVE FEEDBACK	1	1	0	1
525 H3-14 DO YOU USE OR REFER TO PIEZOELECTRIC EFFECT	2	3	0	2
526 H3-15 DO YOU USE OR REFER TO CRITICAL DAMPING	2	3	0	2
527 H3-16 DO YOU USE OR REFER TO UNDER DAMPING	2	3	0	2
528 H3-17 DO YOU USE OR REFER TO OVER DAMPING	4	4	3	5
529 H3-18 DO YOU WORK WITH OSCILLATORS WHICH USE LC TANK CIRCUITS AS FDD	5	6	3	6
530 H3-19 DO YOU WORK WITH OSCILLATORS WHICH USE RC NETWORKS AS FDD	2	3	0	2
531 H3-20 DO YOU WORK WITH OSCILLATORS WHICH USE CRYSTALS AS FDD	6	6	6	7
532 H3-21 DO YOU WORK WITH OSCILLATORS WHICH USE DON'T REMEMBER WHICH TYPE OF FDD	1	1	0	1
533 H3-22 DO YOU WORK WITH SERIES HARTLEY SINUSOIDAL OSCILLATORS	1	1	0	1
534 H3-23 DO YOU WORK WITH SHUNT HARTLEY SINUSOIDAL OSCILLATORS	1	1	0	1
535 H3-24 DO YOU WORK WITH COLPITTS SINUSOIDAL OSCILLATORS	1	1	0	1
536 H3-25 DO YOU WORK WITH CLAPP SINUSOIDAL OSCILLATORS	1	1	0	1
537 H3-26 DO YOU WORK WITH HULLER SINUSOIDAL OSCILLATORS	1	1	0	1
538 H3-27 DO YOU WORK WITH DON'T REMEMBER WHICH TYPE OF OSCILLATORS	9	10	9	12
539 11-01 DO YOU WORK WITH MULTIVIBRATORS IN YOUR PRESENT JOB	1	1	0	1
540 11-02 DO YOU INSPECT WAVE GENERATING OR SHAPING CIRCUITS	1	1	0	1
541 11-03 DO YOU ALIGN OR ADJUST WAVE GENERATING OR SHAPING CIRCUITS	1	1	0	1
542 11-04 DO YOU CALIBRATE WAVE GENERATING OR SHAPING CIRCUITS	1	1	0	1
543 11-05 DO YOU TROUBLESHOOT TO WAVE GENERATING OR SHAPING CIRCUITS	1	1	0	1
544 11-06 DO YOU TROUBLESHOOT TO WAVE GENERATING OR SHAPING CIRCUIT COMPONENTS	1	1	0	1
545 11-07 DO YOU REMOVE OR REPLACE COMPLETE WAVE GENERATING OR SHAPING CIRCUITS	1	1	0	1
546 11-08 DO YOU REMOVE OR REPLACE WAVE GENERATING OR SHAPING COMPONENTS	1	1	0	1
547 11-09 DO YOU WORK WITH MULTIVIBRATORS WHICH CONTAIN LC TANK CIRCUITS	1	1	0	1

MULTIVIBRATORS

PCT MBS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

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DI-TSK

SPC SPC SPC SPC
001 002 003 004

1 548 11-10 DO YOU WORK WITH MULTIVIBRATORS WHICH CONTAIN RC NETWORKS
1 549 11-11 DO YOU WORK WITH MULTIVIBRATORS WHICH CONTAIN CRYSTALS
1 550 11-12 DO YOU WORK WITH MULTIVIBRATORS WHICH CONTAIN DON'T REMEMBER WHICH TYPE OF FOD
1 551 11-13 DO YOU WORK WITH ASTABLE MULTIVIBRATORS
1 552 11-14 DO YOU WORK WITH MONOSTABLE MULTIVIBRATORS
1 553 11-15 DO YOU WORK WITH BISTABLE MULTIVIBRATORS
1 554 11-16 DO YOU WORK WITH DON'T REMEMBER WHICH TYPE MULTIVIBRATORS
1 555 12-01 DO YOU WORK WITH LIMITERS OR CLAMPERS IN YOUR PRESENT JOB
1 556 12-02 DO YOU WORK WITH SERIES DIODE LIMITERS
1 557 12-03 DO YOU WORK WITH SHUNT DIODE LIMITERS
1 558 12-04 DO YOU WORK WITH LIMITERS WITH BIAS
1 559 12-05 DO YOU WORK WITH ZENER DIODE LIMITERS
1 560 12-06 DO YOU WORK WITH TRANSISTOR LIMITERS
1 561 12-07 DO YOU WORK WITH DON'T KNOW WHICH TYPE OF LIMITERS
1 562 12-08 DO YOU WORK WITH BASIC DIODE CLAMPING CIRCUITS
1 563 12-09 DO YOU WORK WITH DIODE CLAMPING CIRCUITS WITH BIAS
1 564 12-10 DO YOU WORK WITH DON'T KNOW WHICH TYPE OF CLAMPING CIRCUIT
1 565 13-01 IN YOUR PRESENT JOB, DO YOU WORK ON EQUIPMENT WHICH CONTAINS ELECTRON TUBES
1 566 13-02 DO YOU CHECK ELECTRON TUBES TO SEE IF THEY ARE GOOD
1 567 13-03 DO YOU USE TUBE TESTERS TO CHECK ELECTRON TUBES
1 568 13-04 DO YOU USE MULTIMETERS TO CHECK ELECTRON TUBES
1 569 13-05 DO YOU USE SCOPES TO CHECK ELECTRON TUBES
1 570 13-06 DO YOU USE SUBSTITUTION TO CHECK ELECTRON TUBES
1 571 13-07 DO YOU USE OR REFER TO CUTOFF
1 572 13-08 DO YOU USE OR REFER TO PEAK INVERSE VOLTAGE RATING
1 573 13-09 DO YOU USE OR REFER TO PEAK CURRENT RATING
1 574 13-10 DO YOU USE OR REFER TO TRANSIT TIME
1 575 13-11 DO YOU USE OR REFER TO PLATE DISSIPATION RATING
1 576 13-12 DO YOU USE OR REFER TO SATURATION
1 577 13-13 DO YOU USE OR REFER TO DC PLATE RESISTANCE
1 578 13-14 DO YOU COMPUTE ACTUAL VALUES OF THE DC PLATE RESISTANCE FOR ELECTRON TUBES
1 579 13-15 DO YOU USE OR REFER TO PLATE VOLTAGE
1 580 13-16 DO YOU USE OR REFER TO PLATE CURRENT
1 581 13-17 DO YOU USE OR REFER TO GRID VOLTAGE
1 582 13-18 DO YOU USE OR REFER TO GRID CURRENT
1 583 13-19 DO YOU USE OR REFER TO CATHODE VOLTAGE
1 584 13-20 DO YOU USE OR REFER TO CATHODE CURRENT
1 585 13-21 DO YOU USE OR REFER TO THE TRIODE AMPLIFICATION FACTOR (THE AMPLIFICATION FACTOR FOR TRIODES IS DEFINED AS THE RATIO OF CHANGE IN PLATE VOLTAGE TO A CHANGE IN GRID VOLTAGE)

LIMITERS AND CLAMPERS

ELECTRON TUBES

PCT NBSRS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMINGSPC SPC SPC SPC
UU1 UU2 UU3 UU4

UY-TSK

1 586 13-22 DO YOU CALCULATE ACTUAL VALUES OF TRIODE
AMPLIFICATION FACTORS 2 3 0 2

1 587 13-23 DO YOU USE OR REFER TO MULTIGRID (TETRODE, PENTODE,
ETC) AMPLIFICATION FACTORS 2 3 0 2

1 588 13-24 DO YOU USE OR REFER TO ELECTRON TUBE TRANSCONDUCTANCE
(μ , WHICH IS MEASURED IN MHOS) 1 1 0 1

1 589 13-25 DO YOU CALCULATE ACTUAL VALUES OF ELECTRON TUBE
TRANSCONDUCTANCES 1 1 0 1

1 590 13-26 DO YOU USE OR REFER TO THE ELECTRON TUBE PARAMETER
CALLED AC PLATE RESISTANCE 2 3 0 2

1 591 13-27 DO YOU CALCULATE ACTUAL VALUES OF AC PLATE
RESISTANCE 2 3 0 2

1 592 13-28 DO YOU USE OR REFER TO ELECTRON TUBE INTERELECTRODE
CAPACITANCE 2 3 0 2

1 593 13-29 DO YOU USE OR REFER TO CHARACTERISTIC CURVES IN YOUR
WORK WITH ELECTRON TUBES 2 3 0 2

1 594 13-30 DO YOU USE CHARACTERISTIC CURVES TO SELECT PLATE
VOLTAGE FOR A SPECIFIED BIAS 2 3 0 2

1 595 13-31 DO YOU USE CHARACTERISTIC CURVES TO SELECT PLATE
CURRENT FOR A SPECIFIED BIAS 2 3 0 2

1 596 13-32 DO YOU USE CHARACTERISTIC CURVES TO SELECT BIAS
REQUIRED FOR CUTOFF 2 3 0 2

1 597 13-33 DO YOU USE CHARACTERISTIC CURVES TO SELECT BIAS
REQUIRED FOR SATURATION 2 3 0 2

1 598 13-34 DO YOU USE OR REFER TO ELECTRON TUBE AMPLIFIER GAIN 3 3 3 2

1 599 13-35 DO YOU USE OR REFER TO ELECTRON TUBE AMPLIFIER
EFFICIENCY 3 4 0 4

1 600 13-36 DO YOU USE TEST TUBE CHECKERS TO DETERMINE ELECTRON
TUBE AMPLIFIER GAIN 6 7 3 7

1 601 13-37 DO YOU USE MULTIMETERS TO DETERMINE ELECTRON TUBE
AMPLIFIER GAIN 3 4 0 4

1 602 13-38 DO YOU USE OSCILLOSCOPES TO DETERMINE ELECTRON TUBE
AMPLIFIER GAIN 3 4 0 4

1 603 13-39 DO YOU USE CHARACTERISTIC CURVES TO DETERMINE
ELECTRON TUBE AMPLIFIER GAIN 2 3 0 2

1 604 13-40 DO YOU CALCULATE ANY ELECTRON TUBE CAPACITANCES SUCH
AS INPUT CAPACITANCE 1 1 0 1

1 605 13-41 DO YOU USE OR REFER TO TUBE SOCKET NOTATION 5 7 0 6

1 606 13-42 DO YOU USE OR REFER TO PIN NUMBERING SYSTEMS 8 11 0 10

1 607 13-43 DO YOU USE OR REFER TO THE TYPE OF MATERIAL OR THE
OPERATING TEMPERATURE OF THE EMITTING SURFACE IN THE
ELECTRON TUBES YOU WORK ON 2 3 0 2

1 608 13-44 DO YOU USE OR REFER TO TUBE SUBSTITUTION MATERIAL
SUCH AS MANUALS OR CHARTS 5 7 0 6

J 609 J1-01 DO YOU WORK WITH ELECTRON TUBE AMPLIFIERS OR CIRCUITS 5 6 3 5

J 610 J1-02 DO YOU DETERMINE THE CLASS OF OPERATION FOR ELECTRON
TUBE AMPLIFIERS IN ORDER TO TROUBLESHOOT AMPLIFIER
CIRCUITS 3 3 3 2

ELECTRON TUBE AMPLIFIERS
AND CIRCUITS

PCT MBRS RESPONDING *YES* BY SELECTED GRPS.

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TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

0Y-TSK

SPC SPC SPC SPC
001 002 003 004

J 611 J1-03 DO YOU TROUBLESHOOT OR REPAIR PARAPHASE AMPLIFIERS 2 3 0 2
J 612 J1-04 DO YOU TROUBLESHOOT OR REPAIR PUSH-PULL AMPLIFIERS 2 3 0 2
J 613 J1-05 DO YOU TROUBLESHOOT OR REPAIR COMPOUND-CONNECTED 1 1 0 1
AMPLIFIERS
J 614 J1-06 DO YOU TROUBLESHOOT OR REPAIR CASCADE-CONNECTED 2 3 0 2
AMPLIFIERS
J 615 J1-07 DO YOU TROUBLESHOOT OR REPAIR ION-T KNOWN WHICH TYPE 5 6 3 5
OF AMPLIFIER

J 616 J2-01 DO YOU WORK WITH GAS TUBES (HOT CATHODE OR COLD 3 3 3 4
CATHODE)
J 617 J2-02 DO YOU WORK WITH CATHODE-RAY TUBES 3 4 0 4
J 618 J2-03 DO YOU USE OR REFER TO THE CHARACTERISTICS OF BEAM 1 1 0 1
POWER TUBES
J 619 J2-04 DO YOU TROUBLESHOOT OR REPAIR CIRCUITS IN WHICH BEAM 1 1 0 1
POWER TUBES ARE USED
J 620 J2-05 DO YOU USE OR REFER TO THE CHARACTERISTICS OF 1 1 0 1
THYRATONS
J 621 J2-06 DO YOU TROUBLESHOOT OR REPAIR CIRCUITS IN WHICH 1 1 0 1
THYRATONS ARE USED
J 622 J2-07 DO YOU USE OR REFER TO THE PRINCIPLES OF OPERATION OF 2 3 0 2
ELECTRON GUNS OF CATHODE-RAY TUBES (CRT)
J 623 J2-08 DO YOU USE OR REFER TO THE PRINCIPLES OF OPERATION OF 2 3 0 2
ELECTROMAGNETIC DEFLECTION SYSTEMS OF CATHODE-RAY TUBES
(CRT)

SPECIAL PURPOSE ELECTRON TUBES

J 624 J2-09 DO YOU USE OR REFER TO THE PRINCIPLES OF OPERATION OF 1 1 0 1
ELECTROSTATIC DEFLECTION SYSTEMS OF CATHODE-RAY TUBES
(CRT)
J 625 J2-10 DO YOU USE OR REFER TO PHOSPHOR SCREENS 2 3 0 2
J 626 J2-11 DO YOU USE OR REFER TO AQUADAG COATINGS 1 1 0 1
J 627 J2-12 DO YOU USE OR REFER TO ELECTRON OPTICS 1 1 0 1
J 628 J2-13 DO YOU USE OR REFER TO PERSISTENCE 1 1 0 1
J 629 J2-14 DO YOU USE OR REFER TO DECAY TIMES 1 1 0 1
J 630 J2-15 DO YOU USE OR REFER TO FLUORESCENCE 1 1 0 1
J 631 J2-16 DO YOU USE OR REFER TO PHOSPHORESCENCE 1 1 0 1
J 632 J3-01 DO YOU WORK ON TRANSMIT OR RECEIVE SYSTEMS IN YOUR 8 7 4 6
PRESENT JOB

J 633 J3-02 DO YOU PERFORM TASKS ON FREQUENCY CONVERTERS 4 4 3 5
J 634 J3-03 DO YOU PERFORM TASKS ON FREQUENCY MIXERS 2 3 0 2
J 635 J3-04 DO YOU USE OR REFER TO THE HETERODYNING OF SIGNALS 1 1 0 1
IN YOUR WORK WITH TRANSMIT OR RECEIVE SYSTEMS
J 636 J3-05 DO YOU PERFORM TASKS ON REACTANCE MODULATORS 1 1 0 1
J 637 J3-06 DO YOU PERFORM TASKS ON MODULATED OSCILLATORS 1 1 0 1
K 638 K1-01 DO YOU WORK ON AM TRANSMIT OR RECEIVE SYSTEMS IN YOUR 1 1 0 1
PRESENT JOB
K 639 K1-02 DO YOU INSPECT AM TRANSMIT OR RECEIVE SYSTEMS 1 1 0 1
K 640 K1-03 DO YOU CLEAN AM TRANSMIT OR RECEIVE SYSTEMS 1 1 0 1
K 641 K1-04 DO YOU ALIGN OR ADJUST AM TRANSMIT OR RECEIVE SYSTEMS 1 1 0 1

HETERODYNING, MODULATION, AND
DEMODULATION

AM SYSTEMS

PCT MBRS RESPONDING *YES* BY SELECTED GRPS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

J
 DY-TSK
 K 642 K1-05 DO YOU TROUBLESHOOT TO AM TRANSMIT OR RECEIVE SYSTEMS 1 1 0 1
 K 643 K1-06 DO YOU TROUBLESHOOT TO AM TRANSMIT OR RECEIVE 1 1 0 1
 COMPONENTS
 K 644 K1-07 DO YOU REMOVE OR REPLACE AM TRANSMIT OR RECEIVE 1 1 0 1
 SYSTEMS
 K 645 K1-08 DO YOU REMOVE OR REPLACE AM TRANSMIT OR RECEIVE 1 1 0 1
 COMPONENTS
 K 646 K1-09 DO YOU PERFORM TASKS ON RF OSCILLATORS 1 1 0 1
 K 647 K1-10 DO YOU PERFORM TASKS ON RF AMPLIFIERS 1 1 0 1
 K 648 K1-11 DO YOU PERFORM TASKS ON AUDIO AMPLIFIERS 1 1 0 1
 K 649 K1-12 DO YOU PERFORM TASKS ON POWER AMPLIFIERS 1 1 0 1
 K 650 K1-13 DO YOU PERFORM TASKS ON LOCAL OSCILLATORS 1 1 0 1
 K 651 K1-14 DO YOU PERFORM TASKS ON IF AMPLIFIERS 1 1 0 1
 K 652 K1-15 DO YOU PERFORM TASKS ON DETECTORS 1 1 0 1
 K 653 K1-16 DO YOU PERFORM TASKS ON DON'T REMEMBER WHICH AM STAGE 1 1 0 1
 K 654 K1-17 DO YOU USE OR REFER TO AMPLITUDE STABILIZATION IN 1 1 0 1
 TRANSMITTERS
 K 655 K1-18 DO YOU USE OR REFER TO FREQUENCY STABILIZATION IN 1 1 0 1
 TRANSMITTERS
 K 656 K1-19 DO YOU USE OR REFER TO SENSITIVITY OF RECEIVERS 1 1 0 1
 K 657 K1-20 DO YOU USE OR REFER TO SELECTIVITY OF RECEIVERS 1 1 0 1
 K 658 K1-21 DO YOU USE OR REFER TO 2ND HARMONIC DISTORTION 1 1 0 1
 K 659 K1-22 DO YOU USE OR REFER TO HANDPASS DISTORTION 1 1 0 1
 K 660 K1-23 DO YOU USE OR REFER TO SQUARE LAW DISTORTION 1 1 0 1
 K 661 K1-24 DO YOU USE OR REFER TO CO-CHANNEL INTERFERENCE 1 1 0 1
 K 662 K1-25 DO YOU USE OR REFER TO IMAGE FREQUENCIES IN RECEIVERS 1 1 0 1
 K 663 K1-26 DO YOU USE OR REFER TO SIGNAL TO IMAGE RATIOS OR 1 1 0 1
 IMAGE REJECTION RATIOS
 K 664 K1-27 DO YOU TRACE SIGNALS ON CURRENT PATHS THROUGH AM 1 1 0 1
 TRANSMITTER SCHEMATIC DIAGRAMS
 K 665 K1-28 DO YOU TRACE SIGNALS ON CURRENT PATHS THROUGH AM 1 1 0 1
 RECEIVER SCHEMATIC DIAGRAMS
 K 666 K2-01 DO YOU WORK WITH FM TRANSMIT OR RECEIVE SYSTEMS IN 1 1 0 1
 YOUR PRESENT JOB
 K 667 K2-02 DO YOU INSPECT FM TRANSMIT OR RECEIVE SYSTEMS 1 1 0 1
 K 668 K2-03 DO YOU CLEAN FM TRANSMIT OR RECEIVE SYSTEMS 1 1 0 1
 K 669 K2-04 DO YOU ALIGN FM TRANSMIT OR RECEIVE SYSTEMS 1 1 0 1
 K 670 K2-05 DO YOU TROUBLESHOOT TO FM TRANSMIT OR RECEIVE 1 1 0 1
 SYSTEMS
 K 671 K2-06 DO YOU TROUBLESHOOT TO FM TRANSMIT OR RECEIVE 1 1 0 1
 COMPONENTS
 K 672 K2-07 DO YOU REMOVE OR REPLACE FM TRANSMIT OR RECEIVE 1 1 0 1
 SYSTEMS
 K 673 K2-08 DO YOU REMOVE OR REPLACE FM TRANSMIT OR RECEIVE 1 1 0 1
 COMPONENTS
 K 674 K2-09 DO YOU PERFORM TASKS ON AUDIO AMPLIFIERS 1 1 0 1
 K 675 K2-10 DO YOU PERFORM TASKS ON FREQUENCY MULTIPLIERS 1 1 0 1

FM SYSTEMS

PLT MBRS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

DT-TSK	SPC 001	SPC 002	SPC 003	SPC 004
K 676 K2-11 DO YOU PERFORM TASKS ON DRIVERS (INTERMEDIATE AMPLIFIERS)	1	1	0	1
K 677 K2-12 DO YOU PERFORM TASKS ON POWER AMPLIFIERS	1	1	0	1
K 678 K2-13 DO YOU PERFORM TASKS ON RF AMPLIFIERS	1	1	0	1
K 679 K2-14 DO YOU PERFORM TASKS ON FREQUENCY CONVERTERS	2	1	3	2
K 680 K2-15 DO YOU PERFORM TASKS ON IF AMPLIFIERS	1	1	0	1
K 681 K2-16 DO YOU PERFORM TASKS ON LIMITERS	1	1	0	1
K 682 K2-17 DO YOU PERFORM TASKS ON FREQUENCY DISCRIMINATORS	1	1	0	1
K 683 K2-18 DO YOU TRACE SIGNALS OR CURRENT PATHS THROUGH SCHEMATIC DIAGRAMS OF FM TRANSMITTERS	1	1	0	1
K 684 K2-19 DO YOU TRACE SIGNALS OR CURRENT PATHS THROUGH SCHEMATIC DIAGRAMS OF FM RECEIVERS	1	1	0	1
K 685 K3-01 DO YOU CONVERT DECIMAL (BASE 10) NUMBERS TO OCTAL (BASE 8) NUMBERS	2	1	3	2
K 686 K3-02 DO YOU CONVERT DECIMAL NUMBERS TO BINARY (BASE 2) NUMBERS	3	3	3	4
K 687 K3-03 DO YOU CONVERT OCTAL NUMBERS TO DECIMAL NUMBERS	2	1	3	2
K 688 K3-04 DO YOU CONVERT OCTAL NUMBERS TO BINARY NUMBERS	2	1	3	2
K 689 K3-05 DO YOU CONVERT BINARY NUMBERS TO DECIMAL NUMBERS	4	4	3	5
K 690 K3-06 DO YOU CONVERT BINARY NUMBERS TO OCTAL NUMBERS	2	1	3	2
K 691 K3-07 DO YOU ADD BINARY NUMBERS TO GET A SUM	5	6	3	5
K 692 K3-08 DO YOU SUBTRACT BINARY NUMBERS USING THE END-AROUND-CARRY METHOD	4	4	3	4
K 693 K3-09 DO YOU SUBTRACT BINARY NUMBERS USING THE DIRECT SUBTRACTION METHOD	5	6	3	5
K 694 K3-10 DO YOU ADD OCTAL NUMBERS TO GET A SUM	4	4	3	4
L 695 L1-01 IN YOUR PRESENT JOB, DO YOU PERFORM ANY TASKS RELATING TO LOGIC FUNCTIONS	2	1	3	2
L 696 L1-02 DO YOU CONSTRUCT TRUTH TABLES FOR AND LOGIC SYMBOLS	2	1	3	2
L 697 L1-03 DO YOU CONSTRUCT TRUTH TABLES FOR OR LOGIC SYMBOLS	2	1	3	2
L 698 L1-04 DO YOU CONSTRUCT TRUTH TABLES FOR AND OR LOGIC SYMBOLS WITH STATE INDICATORS	2	1	3	2
L 699 L1-05 DO YOU CONSTRUCT TRUTH TABLES FOR EXCLUSIVE OR LOGIC SYMBOLS OR GATES	2	1	3	2
L 700 L1-06 DO YOU USE OR REFER TO TRUTH TABLES FOR AND LOGIC SYMBOLS OR GATES	2	1	3	2
L 701 L1-07 DO YOU USE OR REFER TO TRUTH TABLES FOR OR LOGIC SYMBOLS OR GATES	2	1	3	2
L 702 L1-08 DO YOU USE OR REFER TO TRUTH TABLES FOR AND OR OR LOGIC SYMBOLS WITH STATE INDICATORS	2	1	3	2
L 703 L1-09 DO YOU USE OR REFER TO TRUTH TABLES FOR EXCLUSIVE OR LOGIC SYMBOLS	2	1	3	2
L 704 L1-10 DO YOU USE OR REFER TO LOGIC SYMBOLS FOR AND GATES	2	1	3	2
L 705 L1-11 DO YOU USE OR REFER TO LOGIC SYMBOLS FOR OR GATES	2	1	3	2
L 706 L1-12 DO YOU USE OR REFER TO LOGIC SYMBOLS FOR NAND OR NOR GATES	2	1	3	2

NUMBERING SYSTEMS

LOGIC FUNCTIONS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

UY-TSK

SPC SPC SPC SPC
001 002 003 004

L 707 L1-13 DO YOU USE OR REFER TO LOGIC SYMBOLS FOR EXCLUSIVE OR GATES	2	1	3	2
L 708 L2-01 IN YOUR PRESENT JOB, DO YOU PERFORM ANY TASKS RELATING TO BOOLEAN EQUATIONS, LOGIC DIAGRAMS, OR LOGIC CIRCUITS	2	1	3	2
L 709 L2-02 DO YOU DRAW LOGIC SYMBOLS FOR DIRECT COUPLED TRANSISTOR LOGIC (DCTL) CIRCUITS	1	1	0	1
L 710 L2-03 DO YOU CONSTRUCT TRUTH TABLES FOR CURRENT MODE LOGIC (CML) CIRCUITS	1	1	0	1
L 711 L2-04 DO YOU DRAW LOGIC DIAGRAMS FROM GIVEN BOOLEAN EQUATIONS	2	1	3	2
L 712 L2-05 DO YOU MEASURE INPUTS OR OUTPUTS OF LOGIC GATES	2	1	3	2
L 713 L2-06 DO YOU DEVELOP OR ANALYZE BOOLEAN EQUATIONS IN THE PROCESS OF TROUBLESHOOTING DIGITAL CIRCUITS	2	1	3	2
L 714 L2-07 DO YOU ANALYZE LOGIC CIRCUITS BY USING BOOLEAN ALGEBRA	2	1	3	2
L 715 L2-08 DO YOU USE OR REFER TO LOGIC SYMBOLS FOR DIRECT COUPLED TRANSISTOR LOGIC (DCTL) CIRCUIT GATES	1	1	0	1
L 716 L2-09 DO YOU USE OR REFER TO TRUTH TABLES FOR CURRENT MODE LOGIC (CML) CIRCUITS	1	1	0	1
L 717 L2-10 DO YOU USE OR REFER TO LOGIC DIAGRAMS CONSISTING OF MORE THAN ONE GATE	2	1	3	2
L 718 L2-11 DO YOU COMPUTE SUM AND CARRY EXPRESSIONS FOR SERIAL HALF OR FULL ADDER LOGIC DIAGRAMS	2	1	3	2
L 719 L2-12 DO YOU TRACE DATA FLOW THROUGH PARALLEL FULL ADDER LOGIC DIAGRAMS	2	1	3	2
L 720 L2-13 DO YOU WORK WITH ASTABLE (FREE RUNNING) MULTIVIBRATORS	2	1	3	2
L 721 L2-14 DO YOU WORK WITH BISTABLE (FLIP-FLOP) MULTIVIBRATORS	2	1	3	2
L 722 L2-15 DO YOU WORK WITH MONOSTABLE (ONE-SHOT) MULTIVIBRATORS	3	3	3	4
L 723 L2-16 DO YOU USE OR REFER TO FLIP-FLOP MULTIVIBRATOR SYMBOLS	3	3	3	4
L 724 L2-17 DO YOU USE OR REFER TO SINGLE-SHOT MULTIVIBRATOR SYMBOLS	3	3	3	4
L 725 L2-18 DO YOU USE OR REFER TO FLIP-FLOP CIRCUIT DIAGRAMS	2	1	3	2
L 726 L2-19 DO YOU USE OR REFER TO FLIP-FLOP TRUTH TABLES	2	1	3	2
L 727 L2-20 DO YOU USE OR REFER TO COMPLEMENTED FLIP-FLOP LOGIC SYMBOLS	2	1	3	2
L 728 L2-21 DO YOU USE OR REFER TO COMPLEMENTING FLIP-FLOP LOGIC SYMBOLS	2	1	3	2
L 729 L2-22 DO YOU MEASURE OUTPUT WAVESHAPES OF LOGIC CIRCUITS	2	1	3	2
L 730 L2-23 DO YOU TRACE DATA FLOW THROUGH COMPLEMENTED FLIP-FLOP SCHEMATIC DIAGRAMS	2	1	3	2
L 731 L2-24 DO YOU TRACE DATA FLOW THROUGH COMPLEMENTING FLIP-FLOP SCHEMATIC DIAGRAMS	2	1	3	2
L 732 L2-25 DO YOU CONSTRUCT TRUTH TABLES FOR J-K FLIP-FLOP LOGIC SYMBOLS	2	1	3	2

BOOLEAN EQUATIONS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

UY-TSK

UY-TSK	SPC				COUNTERS
	001	002	003	004	
L 733 L3-01 DO YOU WORK WITH DIGITAL COUNTERS IN YOUR PRESENT JOB	4	4	3	5	
L 734 L3-02 DO YOU USE OR REFER TO UP-COUNTERS	3	4	0	4	
L 735 L3-03 DO YOU USE OR REFER TO DOWN-COUNTERS	1	1	0	1	
L 736 L3-04 DO YOU USE OR REFER TO SERIAL COUNTERS	2	3	0	2	
L 737 L3-05 DO YOU USE OR REFER TO PARALLEL COUNTERS	1	1	0	1	
L 738 L3-06 DO YOU USE OR REFER TO RING COUNTERS	2	3	0	2	
L 739 L3-07 DO YOU USE OR REFER TO DECADE COUNTERS	2	3	0	2	
L 740 L3-08 DO YOU USE OR REFER TO COUNT DETECT CIRCUITS	2	3	0	1	
L 741 L3-09 DO YOU USE OR REFER TO DOWN CLOCKS	1	1	0	1	
L 742 L3-10 DO YOU USE OR REFER TO UP CLOCKS	1	1	0	1	
L 743 L3-11 DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF UP-COUNTERS HAVING COMPLEMENTED FLIP-FLOPS	1	1	0	1	
L 744 L3-12 DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF SERIAL UP- OR DOWN-COUNTERS HAVING COMPLEMENTING FLIP-FLOPS	1	1	0	1	
L 745 L3-13 DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF DECADE COUNTERS	1	1	0	1	
L 746 L3-14 DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF RING COUNTERS	1	1	0	1	
L 747 L3-15 DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF SERIAL UP-COUNTERS FEEDING A PARALLEL STORAGE REGISTER	1	1	0	1	
L 748 L3-16 DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF SHIFT REGISTERS	1	1	0	1	
L 749 L3-17 DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF OTHER TYPE OF COUNTERS	2	1	3	2	
L 750 L3-18 DO YOU COMPUTE THE BINARY COUNT AFTER SPECIFIC INPUT PULSES FOR UP-COUNTERS HAVING COMPLEMENTED FLIP-FLOPS	1	1	0	1	
L 751 L3-19 DO YOU COMPUTE THE BINARY COUNT AFTER SPECIFIC INPUT PULSES FOR SERIAL UP- OR DOWN-COUNTERS HAVING COMPLEMENTING FLIP-FLOPS	1	1	0	1	
L 752 L3-20 DO YOU COMPUTE THE BINARY COUNT AFTER SPECIFIC INPUT PULSES FOR SERIAL UP-COUNTERS FEEDING A PARALLEL STORAGE REGISTERS	1	1	0	1	
L 753 L3-21 DO YOU COMPUTE THE BINARY COUNT AFTER SPECIFIC INPUT PULSES FOR OTHER TYPES OF COUNTERS	1	1	0	1	
L 754 L3-22 DO YOU CONSTRUCT TRUTH TABLES FROM LOGIC DIAGRAMS OF DECADE COUNTERS	1	1	0	1	
L 755 L3-23 DO YOU DETERMINE THE STATE OF EACH FLIP-FLOP IN RING COUNTERS FOR SPECIFIC INPUT PULSES	1	1	0	1	
L 756 L3-24 DO YOU DETERMINE THE APPROPRIATE AND GATE NECESSARY IN COUNT DETECT CIRCUITS TO INDICATE A REQUIRED COUNT	1	1	0	1	
M 757 M1-01 DO YOU WORK WITH SAWTOOTH WAVE GENERATORS	3	3	3	4	
M 758 M1-02 DO YOU WORK WITH TRAPEZOIDAL WAVE GENERATORS	3	3	3	4	
M 759 M1-03 DO YOU WORK WITH PULSED OSCILLATORS WITH REGENERATIVE FEEDBACK	2	1	3	2	
M 760 M1-04 DO YOU WORK WITH PULSED OSCILLATORS WITHOUT REGENERATIVE FEEDBACK	2	1	3	2	

PCT MBRS RESPONDING 'YES' BY SELECTED GMPs

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TASK GROUP SUMMARY PERCENT MEMBERS PERFORMING

BY-TASK

SPC SPC SPC SPC
001 002 003 004

M 761 M1-05 DO YOU WORK WITH BLOCKING OSCILLATORS
M 762 M1-06 DO YOU USE OR REFER TO RISE TIME
M 763 M1-07 DO YOU USE OR REFER TO FALL OR FLYBACK TIME
M 764 M1-08 DO YOU USE OR REFER TO SWEEP TIME
M 765 M1-09 DO YOU USE OR REFER TO ELECTRICAL LENGTH OF SAWTOOTH
WAVEFORMS
M 766 M1-10 DO YOU USE OR REFER TO PHYSICAL LENGTH OF SAWTOOTH
WAVEFORMS
M 767 M1-11 DO YOU USE OR REFER TO LINEAR SLOPE OF SAWTOOTH
WAVEFORMS
M 768 M1-12 DO YOU USE OR REFER TO GATE LENGTH OF SAWTOOTH
WAVEFORMS

M 769 M2-01 DO YOU USE SIGNAL GENERATORS IN YOUR PRESENT JOB
M 770 M2-02 DO YOU PERFORM OPERATIONAL CHECKS WHILE USING SIGNAL
GENERATORS
M 771 M2-03 DO YOU PERFORM PERIODIC MAINTENANCE SUCH AS
ADJUSTING, ALIGNING, OR CALIBRATING WHILE USING SIGNAL
GENERATORS

M 772 M2-04 DO YOU TROUBLESHOOT TO AN ASSEMBLY OR SUBASSEMBLY
WHILE USING SIGNAL GENERATORS
M 773 M2-05 DO YOU TROUBLESHOOT TO THE SMALLEST REPLACEABLE
COMPONENT WHILE USING SIGNAL GENERATORS
M 774 M2-06 DO YOU USE AUDIO SINE-WAVE GENERATORS
M 775 M2-07 DO YOU USE AUDIO NON-SINUSOIDAL WAVE GENERATORS SUCH
AS SQUARE WAVE, TRIANGLE, PULSE, OR SPIKE
M 776 M2-08 DO YOU USE RF GENERATORS LESS THAN 1,000 MH
M 777 M2-09 DO YOU USE RF GENERATORS GREATER THAN 1,000 MH
M 778 M2-10 DO YOU USE OTHER SPECIAL PURPOSE OR MULTI-FUNCTION
GENERATORS

M 779 M3-01 IN YOUR PRESENT JOB, DO YOU PERFORM ANY TASKS DEALING
WITH ALTERNATING CURRENT OR DIRECT CURRENT MOTORS OR
GENERATORS

M 780 M3-02 DO YOU INSPECT MOTORS
M 781 M3-03 DO YOU CLEAN OR LUBRICATE MOTORS
M 782 M3-04 DO YOU OPERATE MOTORS
M 783 M3-05 DO YOU REMOVE OR REPLACE COMPLETE MOTORS
M 784 M3-06 DO YOU REMOVE OR REPLACE MOTOR PARTS
M 785 M3-07 DO YOU TROUBLESHOOT AS FAR AS CHECKING WIRE
CONNECTIONS OF MOTORS
M 786 M3-08 DO YOU TROUBLESHOOT DOWN TO COMPONENT PARTS OF MOTORS
M 787 M3-09 DO YOU PERFORM ANY TASKS ON FIELD COILS
M 788 M3-10 DO YOU PERFORM ANY TASKS ON ARMATURES
M 789 M3-11 DO YOU PERFORM ANY TASKS ON ROTORS
M 790 M3-12 DO YOU PERFORM ANY TASKS ON BRUSHES
M 791 M3-13 DO YOU PERFORM ANY TASKS ON SLIP RINGS
M 792 M3-14 DO YOU PERFORM ANY TASKS ON COMMUTATORS
M 793 M3-15 DO YOU PERFORM ANY TASKS ON POLE PIECES

USE OF SIGNAL GENERATORS

MOTORS AND GENERATORS

PCT MBS RESPONDING 'YES' BY SELECTED GRPS

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TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

UY-TSK

SPC SPC SPC SPC
UOI UO2 UO3 UO4

N 794 M3-16 DO YOU DETERMINE OR MEASURE THE MAGNITUDE OF THE FORCE OR TORQUE CREATED BY A MOTOR
N 795 M3-17 DO YOU DETERMINE OR MEASURE THE DIRECTION OF THE MECHANICAL FORCE OR TORQUE CREATED BY A MOTOR
N 796 M3-18 DO YOU DETERMINE OR MEASURE THE MAGNITUDE OR DIRECTION OF THE INDUCED VOLTAGE IN MOTORS
N 797 M3-19 DO YOU WORK WITH SYNCHRONOUS MOTORS
N 798 M3-20 DO YOU WORK WITH INDUCTION MOTORS
N 799 M3-21 DO YOU WORK WITH SPLIT-PHASE MOTORS
N 800 M3-22 DO YOU WORK WITH SOME COMBINATION OF THE ABOVE MOTORS
N 801 M3-23 DO YOU INSPECT GENERATORS
N 802 M3-24 DO YOU CLEAN OR LUBRICATE GENERATORS
N 803 M3-25 DO YOU OPERATE GENERATORS
N 804 M3-26 DO YOU REMOVE OR REPLACE COMPLETE GENERATORS
N 805 M3-27 DO YOU REMOVE OR REPLACE GENERATOR PARTS
N 806 M3-28 DO YOU TROUBLESHOOT AS FAR AS CHECKING WIRE CONNECTIONS OF GENERATORS
N 807 M3-29 DO YOU TROUBLESHOOT DOWN TO COMPONENT PARTS OF GENERATORS
N 808 N1-01 DO YOU WORK WITH METERS IN YOUR PRESENT JOB
N 809 N1-02 DO YOU CONCEPTUALIZE OR CONSIDER THE FUNCTIONS OF PERMANENT MAGNETS
N 810 N1-03 DO YOU CONCEPTUALIZE OR CONSIDER THE FUNCTIONS OF MOVING COILS
N 811 N1-04 DO YOU CONCEPTUALIZE OR CONSIDER THE FUNCTIONS OF SPIRAL SPRINGS
N 812 N1-05 DO YOU READ METER SCALES
N 813 N1-06 DO YOU EXTEND THE RANGE OF AMMETERS
N 814 N1-07 DO YOU ZERO OHMMETERS
N 815 N1-08 DO YOU ZERO VOLTMETERS
N 816 N1-09 DO YOU EXTEND THE RANGE OF VOLTMETERS
N 817 N1-10 DO YOU USE OR REFER TO VOLTMETER SENSITIVITY (EXPRESSED IN UNITS OF OHMS PER VOLT)
N 818 N2-01 DO YOU WORK WITH SATURABLE REACTORS OR MAGNETIC AMPLIFIERS IN YOUR PRESENT JOB
N 819 N2-02 DO YOU INSPECT MAGNETIC AMPLIFIERS OR SATURABLE REACTORS
N 820 N2-03 DO YOU CLEAN MAGNETIC AMPLIFIERS OR SATURABLE REACTORS
N 821 N2-04 DO YOU ADJUST MAGNETIC AMPLIFIERS OR SATURABLE REACTORS
N 822 N2-05 DO YOU TROUBLESHOOT MAGNETIC AMPLIFIERS OR SATURABLE REACTORS
N 823 N2-06 DO YOU REMOVE OR REPLACE MAGNETIC AMPLIFIERS OR SATURABLE REACTORS
N 824 N2-07 DO YOU REMOVE OR REPLACE MAGNETIC AMPLIFIER OR SATURABLE REACTOR COMPONENTS

METER MOVEMENTS

SATURABLE REACTORS AND MAGNETIC AMPLIFIERS

PCT MEMS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

UY-TSK

SPC SPC SPC SPC
001 002 003 004

N 825 N2-08 DO YOU USE OR REFER TO HYSTERESIS CURVES OR LOOPS 1 1 0 1
N 826 N2-09 DO YOU INTERPRET SCHEMATIC DRAWINGS TO DEVELOP OUTPUT 1 1 0 1
WAVEFORMS ACROSS REACTOR WINDINGS OR LOAD RESISTORS OF
SINGLE WINDING SATURABLE REACTORS
N 827 N2-10 DO YOU MEASURE OUTPUT WAVEFORMS ACROSS REACTOR 1 1 0 1
WINDINGS OR LOAD RESISTORS OF SINGLE WINDING SATURABLE
REACTORS
N 828 N2-11 DO YOU INTERPRET SCHEMATIC DRAWINGS TO DEVELOP OUTPUT 1 1 0 1
WAVEFORMS FOR MAGNETIC AMPLIFIERS
N 829 N2-12 DO YOU USE OR REFER TO COERCIVE FORCE IN SATURABLE 1 1 0 1
REACTORS
N 830 N2-13 DO YOU USE OR REFER TO RESIDUAL MAGNETISM IN 1 1 0 1
SATURABLE REACTORS
N 831 N2-14 DO YOU USE OR REFER TO FLUX DENSITY IN SATURABLE 1 1 0 1
REACTORS
N 832 N2-15 DO YOU USE OR REFER TO POINT OF SATURATION IN 1 1 0 1
SATURABLE REACTORS
N 833 N2-16 DO YOU USE OR REFER TO SATURABLE REACTOR SCHEMATIC 1 1 0 1
SYMBOLS
N 834 N3-01 DO YOU WORK WITH WAVESHAPING CIRCUITS IN YOUR PRESENT 2 3 0 2
JOB
N 835 N3-02 DO YOU USE OR REFER TO TRANSIENT INTERVALS 2 3 0 2
N 836 N3-03 DO YOU USE OR REFER TO PULSE WIDTH (PW) 2 3 0 2
N 837 N3-04 DO YOU USE OR REFER TO PULSE RECURRENCE TIME (PRT) 2 3 0 2
N 838 N3-05 DO YOU USE OR REFER TO PULSE RECURRENCE FREQUENCY 2 3 0 2
(PRF)
N 839 N3-06 DO YOU USE OR REFER TO DIFFERENTIATING CIRCUITS 2 3 0 2
N 840 N3-07 DO YOU USE OR REFER TO INTEGRATING CIRCUITS 2 3 0 2
N 841 N3-08 DO YOU USE OR REFER TO THE CLASSIFICATION OF TIME 2 3 0 2
CONSTANTS (TC) AS LONG, MEDIUM, OR SHORT
N 842 N3-09 DO YOU DETERMINE WHETHER AN LM OR RC CIRCUIT IS 2 3 0 2
DIFFERENTIATING OR INTEGRATING BASED ON THE TIME CONSTANT
AND OUTPUT CONFIGURATION
N 843 N3-10 DO YOU WORK WITH SQUARE WAVE GENERATORS 1 1 0 1
N 844 N3-11 DO YOU WORK WITH RECTANGULAR WAVE GENERATORS 1 1 0 1
N 845 N3-01 DO YOU WORK ON SINGLE SIDEBAND SYSTEMS IN YOUR 1 1 0 1
PRESENT JOB
O 846 01-02 DO YOU INSPECT SSB TRANSMIT OR RECEIVE SYSTEMS 1 1 0 1
O 847 01-03 DO YOU CLEAN SSB TRANSMIT OR RECEIVE SYSTEMS 1 1 0 1
O 848 01-04 DO YOU ALIGN SSB TRANSMIT OR RECEIVE SYSTEMS 1 1 0 1
O 849 01-05 DO YOU TROUBLESHOOT TO SSB TRANSMIT OR RECEIVE 1 1 0 1
SYSTEMS
O 850 01-06 DO YOU TROUBLESHOOT TO SSB TRANSMIT OR RECEIVE 1 1 0 1
COMPONENTS
O 851 01-07 DO YOU REMOVE OR REPLACE SSB TRANSMIT OR RECEIVE 1 1 0 1
SYSTEMS
O 852 01-08 DO YOU REMOVE OR REPLACE SSB TRANSMIT OR RECEIVE 1 1 0 1
COMPONENTS

WAVESHAPING CIRCUITS

SINGLE SIDEBAND SYSTEMS

PCT MBRs RESPONDING 'YES' BY SELECTED GRPS

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TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

DT-TSK

SPC SPC SPC SPC
001 002 003 004

0 853 01-09 DO YOU PERFORM TASKS ON SSB AUDIO AMPLIFIERS
0 854 01-10 DO YOU PERFORM TASKS ON SSB BALANCED MODULATORS
0 855 01-11 DO YOU PERFORM TASKS ON SSB CARRIER OSCILLATORS
0 856 01-12 DO YOU PERFORM TASKS ON SSB LC FILTERS
0 857 01-13 DO YOU PERFORM TASKS ON SSB CRYSTAL FILTERS
0 858 01-14 DO YOU PERFORM TASKS ON SSB MECHANICAL FILTERS
0 859 01-15 DO YOU PERFORM TASKS ON SSB OSCILLATORS
0 860 01-16 DO YOU PERFORM TASKS ON SSB MIXERS
0 861 01-17 DO YOU PERFORM TASKS ON SSB DRIVERS
0 862 01-18 DO YOU PERFORM TASKS ON SSB POWER AMPLIFIERS
0 863 01-19 DO YOU PERFORM TASKS ON SSB RF AMPLIFIERS
0 864 01-20 DO YOU PERFORM TASKS ON SSB FREQUENCY CONVERTERS
0 865 01-21 DO YOU PERFORM TASKS ON SSB IF AMPLIFIERS
0 866 01-22 DO YOU PERFORM TASKS ON SSB DEMODULATORS
0 867 01-23 DO YOU PERFORM TASKS ON SSB DON'T REMEMBER WHICH SSB
SYSTEM STAGLS
0 868 01-24 DO YOU USE OR REFER TO SELECTIVE FADING
0 869 01-25 DO YOU USE OR REFER TO PEAK POWER
0 870 01-26 DO YOU USE OR REFER TO FREQUENCY STABILITY
0 871 01-27 DO YOU USE OR REFER TO RESPONSE CURVES FOR
BANDWIDTH FILTERS
0 872 01-28 DO YOU CALCULATE PEAK POWER ON EFFECTIVE POWER OF SSB
TRANSMITTERS
0 873 01-29 DO YOU TRACE SIGNALS OR CURRENT PATHS THROUGH SSB
TRANSMITTER SCHEMATIC DIAGRAMS
0 874 01-30 DO YOU TRACE SIGNALS OR CURRENT PATHS THROUGH SSB
RECEIVER SCHEMATIC DIAGRAMS
0 875 02-01 DO YOU WORK ON PULSE MODULATION SYSTEMS IN YOUR
PRESENT JOB
0 876 02-02 DO YOU INSPECT PULSE MODULATION SYSTEMS
0 877 02-03 DO YOU CLEAN PULSE MODULATION SYSTEMS
0 878 02-04 DO YOU ALIGN PULSE MODULATION SYSTEMS
0 879 02-05 DO YOU TROUBLESHOOT TO PULSE MODULATION SYSTEMS
0 880 02-06 DO YOU TROUBLESHOOT TO PULSE MODULATION SYSTEM
COMPONENTS
0 881 02-07 DO YOU REMOVE OR REPLACE PULSE MODULATION SYSTEMS
0 882 02-08 DO YOU REMOVE OR REPLACE PULSE MODULATION SYSTEM
COMPONENTS
0 883 02-09 DO YOU WORK ON PULSE-AMPLITUDE MODULATION (PAM)
SYSTEMS
0 884 02-10 DO YOU WORK ON PULSE-DURATION MODULATION (PDM)
SYSTEMS
0 885 02-11 DO YOU WORK ON PULSE-POSITION MODULATION (PPM)
SYSTEMS
0 886 02-12 DO YOU WORK ON PULSE-CODE MODULATION (PCM) SYSTEMS
0 887 02-13 DO YOU WORK ON LINE PULSING MODULATION SYSTEMS
0 888 02-14 DO YOU WORK ON DON'T REMEMBER WHICH TYPE OF
MODULATION SYSTEM

PULSE MODULATION SYSTEMS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

SPC SPC SPC SPC
001 002 003 004

0Y-TSK

0 889 02-15 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM
POWER SUPPLIES

0 890 02-16 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM
CHARGING CHOKES AND CHARGING DIODES

0 891 02-17 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM
PULSE FORMING NETWORKS

0 892 02-18 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM
TIMERS

0 893 02-19 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM
SWITCHES SUCH AS GAS THYRATRONS

0 894 02-20 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM
PULSE TRANSFORMERS

0 895 02-21 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM
TRANSMITTER TUBES

0 896 02-22 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM RF
AMPLIFIERS

0 897 02-23 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM
FREQUENCY CONVERTERS

0 898 02-24 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM
IF AMPLIFIERS

0 899 02-25 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM
DETECTORS

0 900 02-26 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM
VIDEO AMPLIFIERS

0 901 02-27 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM
POWER VIDEO AMPLIFIERS

0 902 02-28 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM
DON'T REMEMBER WHICH PULSE MODULATION SYSTEM STAGES

0 903 02-29 DO YOU USE OR REFER TO PULSE RECURRENCE FREQUENCY
(PRF)

0 904 02-30 DO YOU USE OR REFER TO PULSE RECURRENCE TIME (PRT)

0 905 02-31 DO YOU USE OR REFER TO PULSE WIDTH (PW)

0 906 02-32 DO YOU USE OR REFER TO PULSE SHAPE

0 907 02-33 DO YOU USE OR REFER TO PEAK POWER

0 908 02-34 DO YOU USE OR REFER TO AVERAGE POWER

0 909 02-35 DO YOU CALCULATE PULSE RECURRENCE TIME (PRT) OR PULSE
RECURRENCE FREQUENCY (PRF)

0 910 02-36 DO YOU MEASURE PULSE RECURRENCE TIME (PRT) OR PULSE
RECURRENCE FREQUENCY (PRF)

0 911 02-37 DO YOU USE FORMULAS TO CALCULATE AVERAGE POWER OR
PEAK POWER OF PULSE MODULATION TRANSMIT SYSTEMS

0 912 02-38 DO YOU TRACE SIGNALS OR CURRENT PATHS THROUGH PULSE
MODULATION TRANSMITTER SCHEMATIC DIAGRAMS

0 913 02-39 DO YOU TRACE SIGNALS OR CURRENT PATHS THROUGH PULSE
MODULATION RECEIVER SCHEMATIC DIAGRAMS

0 914 03-01 DO YOU WORK WITH ANTENNAS IN YOUR PRESENT JOB

0 915 03-02 DO YOU INSPECT ANTENNAS

ANTENNAS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

BY-TSK

SPC	SPC	SPC	SPC	SPC
001	002	003	004	004
0 916	03-03	DO YOU CLEAN ANTENNAS	1	0
0 917	03-04	DO YOU PHYSICALLY ALIGN ANTENNAS	1	0
0 918	03-05	DO YOU ELECTRICALLY ALIGN ANTENNAS	1	0
0 919	03-06	DO YOU TROUBLESHOOT TO ANTENNAS	1	0
0 920	03-07	DO YOU TROUBLESHOOT TO ANTENNA COMPONENTS	1	0
0 921	03-08	DO YOU REMOVE OR INSTALL ANTENNAS	1	0
0 922	03-09	DO YOU REMOVE OR REPLACE COMPONENTS OF ANTENNAS	1	0
0 923	03-10	DO YOU USE OR REFER TO TECHNICAL DATA CONTAINING REPRESENTATIONS OF ELECTRIC FIELD LINES	1	0
0 924	03-11	DO YOU USE OR REFER TO TECHNICAL DATA CONTAINING REPRESENTATIONS OF MAGNETIC FIELD LINES	1	0
0 925	03-12	DO YOU DETERMINE THE DIRECTION OF THE MAGNETIC LINES IN RELATION TO THE ELECTRIC LINES OF FORCE FOR ANTENNAS	1	0
0 926	03-13	DO YOU USE OR REFER TO THE GENERAL RULE THAT ANTENNAS WHICH ARE OF CORRECT LENGTH (HALF-WAVE) ACT AS INDUCTIVE LOADS TO THE GENERATOR	1	0
0 927	03-14	DO YOU USE OR REFER TO THE GENERAL RULE THAT ANTENNAS WHICH ARE LONGER THAN A HALF-WAVE ACT AS INDUCTIVE LOADS TO THE GENERATOR	1	0
0 928	03-15	DO YOU USE OR REFER TO THE GENERAL RULE THAT ANTENNAS WHICH ARE SHORTER THAN A HALF-WAVE ACT AS CAPACITIVE LOADS TO THE GENERATOR	1	0
0 929	03-16	DO YOU WORK WITH HERTZ ANTENNAS	1	0
0 930	03-17	DO YOU WORK WITH MARCONI ANTENNAS	1	0
0 931	03-18	DO YOU WORK WITH BROADSIDE ARRAYS	1	0
0 932	03-19	DO YOU WORK WITH END-FIRE ARRAYS	1	0
0 933	03-20	DO YOU WORK WITH CIRCULAR ARRAYS	1	0
0 934	03-21	DO YOU WORK WITH COLLINER ARRAYS	1	0
0 935	03-22	DO YOU USE OR REFER TO THE TERM ELECTROMAGNETIC INDUCTION FIELDS WHEN WORKING WITH ANTENNAS	1	0
0 936	03-23	DO YOU MEASURE ELECTROMAGNETIC INDUCTION FIELDS OF ANTENNAS	1	0
0 937	03-24	DO YOU USE OR REFER TO THE TERM ELECTROMAGNETIC RADIATION FIELDS WHEN WORKING WITH ANTENNAS	1	0
0 938	03-25	DO YOU MEASURE ELECTROMAGNETIC RADIATION FIELDS OF ANTENNAS	1	0
0 939	03-26	DO YOU USE OR REFER TO THE TIME PHASE OF ELECTRIC (E) AND MAGNETIC (H) COMPONENTS IN ANTENNA RADIATION	1	0
0 940	03-27	DO YOU USE OR REFER TO THE TIME PHASE OF ELECTRIC (E) AND MAGNETIC (H) COMPONENTS IN ANTENNA INDUCTION FIELD	1	0
0 941	03-28	ARE ANY OF THE ANTENNAS YOU WORK ON LINEARLY POLARIZED	1	0
0 942	03-29	ARE ANY OF THE ANTENNAS YOU WORK ON CIRCULARLY POLARIZED	1	0
0 943	03-30	DO YOU MEASURE OR DETERMINE THE POLARITY OF ANTENNAS YOU WORK ON	1	0
0 944	03-31	DO YOU CONSTRUCT, OR MAKE THE CALCULATIONS NECESSARY TO CONSTRUCT, ANTENNAS OF CORRECT LENGTH FOR SPECIFIC WAVELENGTHS	1	0

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

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TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

UY-TSK

	SPC 001	SPC 002	SPC 003	SPC 004
0 945 03-32 DO THE ANTENNA ARRAYS YOU WORK WITH CONTAIN PARASITIC ELEMENTS	1	1	0	1
0 946 03-33 DO THE ANTENNA ARRAYS YOU WORK WITH CONTAIN PARASITIC ELEMENTS SERVING AS DIRECTORS	1	1	0	1
0 947 03-34 DO THE ANTENNA ARRAYS YOU WORK WITH CONTAIN PARASITIC ELEMENTS SERVING AS REFLECTORS	1	1	0	1
0 948 03-35 DO THE ANTENNA ARRAYS YOU WORK WITH CONTAIN DUNIT	1	1	0	1
0 949 03-36 DO YOU WORK ON UNIDIRECTIONAL ANTENNAS	1	1	0	1
0 950 03-37 DO YOU WORK ON BIDIRECTIONAL ANTENNAS	1	1	0	1
0 951 03-38 DO YOU WORK ON DUNIT REMEMBER THE DIRECTIONALITY	1	1	0	1
0 952 03-39 DO YOU WORK WITH ROTAR ANTENNA ARRAYS	1	1	0	1
P 953 PI-01 IN YOUR PRESENT JOB DO YOU WORK WITH TRANSMISSION LINES (TRANSMISSION LINES ARE DEFINED TO INCLUDE LEADS BETWEEN RECEIVERS AND ANTENNAS, TELEPHONE LEADS, AS WELL AS HIGH VOLTAGE POWER LINES, ETC. DO NOT CONSIDER WAVEGUIDES AS TRANSMISSION LINES)	74	75	71	76
P 954 PI-02 DO YOU REFER TO OH USE COPPER LOSS ON 12R LOSS IN TRANSMISSION LINES	9	13	3	12
P 955 PI-03 DO YOU REFER TO OR USE SKIN EFFECTS OF HIGH FREQUENCY CURRENTS IN TRANSMISSION LINES	6	4	9	6
P 956 PI-04 DO YOU REFER TO OH USE RADIATION LOSS IN TRANSMISSION LINES	4	6	0	5
P 957 PI-05 DO YOU USE OR REFER TO DIELECTRIC LOSS IN TRANSMISSION LINES	9	13	3	12
P 958 PI-06 DO YOU USE OR REFER TO LEAKAGE LOSSES IN TRANSMISSION LINES	23	25	18	24
P 959 PI-07 DO YOU WORK WITH TWISTED PAIR TRANSMISSION LINES	57	58	53	57
P 960 PI-08 DO YOU WORK WITH TWIN LEAD TRANSMISSION LINES	42	39	44	39
P 961 PI-09 DO YOU WORK WITH OPEN TWO-WIRE TRANSMISSION LINES	27	32	18	29
P 962 PI-10 DO YOU WORK WITH FLEXIBLE COAXIAL CABLE TRANSMISSION LINES	13	14	12	15
P 963 PI-11 DO YOU WORK WITH RIGID COAXIAL CABLE TRANSMISSION LINES	7	8	3	7
P 964 PI-12 DO YOU TROUBLESHOOT TRANSMISSION LINES	66	65	66	70
P 965 PI-13 DO YOU ANALYZE VOLTAGE OR CURRENT WAVEFORMS IN TRANSMISSION LINES TO DETERMINE THE TYPE OF TERMINATION (OPEN, SHORTED, CAPACITIVE, INDUCTIVE)	17	15	18	21
P 966 PI-14 DO YOU SELECT APPROPRIATE TRANSMISSION LINES TERMINATIONS TO ACHIEVE DESIRED WAVEFORMS	5	4	6	6
P 967 PI-15 DO YOU USE OR REFER TO SCHEMATIC SYMBOLS FOR LINE TERMINATIONS IN TERMS OF CIRCUIT TERMINATIONS	30	34	24	34
P 968 PI-16 DO YOU MEASURE STANDING WAVE RATIOS (SWR) OF TRANSMISSION LINES	1	1	0	1
P 969 PI-17 DO YOU CALCULATE STANDING WAVE RATIOS (SWR) OF TRANSMISSION LINES	1	1	0	1
P 970 PI-18 DO YOU PERFORM THE CALCULATIONS NECESSARY TO DETERMINE THE IMPEDANCE AND LENGTH OF QUARTER - WAVELENGTH MATCHING TRANSFORMERS TO MATCH TRANSMISSION LINES TO LOADS	3	3	3	4

TRANSMISSION LINES

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

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TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

		SPC 001	SPC 002	SPC 003	SPC 004
P 971 P1-19 DO YOU WORK WITH TRANSMISSION LINES WHICH ARE MATCHED TO LOADS USING MATCHING TRANSFORMERS		14	11	21	15
P 972 P1-20 DO YOU WORK WITH TRANSMISSION LINES WHICH ARE MATCHED TO LOADS USING DELTA MATCHING		3	4	0	4
P 973 P1-21 DO YOU SELECT THE TYPE OF TRANSMISSION LINE NEEDED FOR PARTICULAR JOBS WITHOUT REFERRING TO TECHNICAL DATA		9	10	9	7
P 974 P1-22 DO YOU USE OR REFER TO THE TERM CHARACTERISTIC IMPEDANCE (Z0) OF TRANSMISSION LINES		9	8	12	12
P 975 P1-23 DO YOU CALCULATE THE CHARACTERISTIC IMPEDANCE (Z0) OF TRANSMISSION LINES		5	4	6	6
P 976 P1-24 DO YOU USE OR REFER TO THE TERM CUTOFF FREQUENCY OF TRANSMISSION LINES		6	6	6	7
P 977 P1-25 DO YOU USE OR REFER TO THE TERM VELOCITY FACTOR (K) OF TRANSMISSION LINES		1	1	0	1
P 978 P1-26 DO YOU COMPUTE THE ELECTRICAL LENGTH OF TRANSMISSION LINES FOR PARTICULAR FREQUENCIES		3	4	0	4
P 979 P1-27 DO YOU CONSTRUCT TRANSMISSION LINES OF PARTICULAR ELECTRICAL LENGTH FOR GIVEN FREQUENCIES		2	3	0	2
P 980 P1-28 DO YOU USE OR REFER TO THE GENERAL RULE THAT AS THE FREQUENCY INCREASES AND THE PHYSICAL LENGTH OF TRANSMISSION LINES REMAIN CONSTANT, THE ELECTRICAL LENGTH INCREASES		6	7	3	7
P 981 P1-29 DO YOU WORK WITH NONRESONANT (FLAT) TRANSMISSION LINES		16	18	12	18
P 982 P1-30 DO YOU WORK WITH RESONANT TRANSMISSION LINES		8	10	6	10
P 983 P1-31 DO YOU WORK WITH TRANSMISSION LINES WHICH ARE MATCHED TO LOADS USING STUB MATCHING		2	1	3	2
P 984 P2-01 DO YOU WORK WITH WAVEGUIDES OR CAVITY RESONATORS IN YOUR PRESENT JOB		1	1	0	1
P 985 P2-02 DO YOU INSPECT WAVEGUIDES OR CAVITY RESONATORS		1	1	0	1
P 986 P2-03 DO YOU CLEAN WAVEGUIDES OR CAVITY RESONATORS		1	1	0	1
P 987 P2-04 DO YOU BEND WAVEGUIDES OR CAVITY RESONATORS		1	1	0	1
P 988 P2-05 DO YOU TWIST WAVEGUIDES OR CAVITY RESONATORS		1	1	0	1
P 989 P2-06 DO YOU PRESSURIZE WAVEGUIDES OR CAVITY RESONATORS		1	1	0	1
P 990 P2-07 DO YOU PURGE WAVEGUIDES OR CAVITY RESONATORS		1	1	0	1
P 991 P2-08 DO YOU TROUBLESHOOT WAVEGUIDES OR CAVITY RESONATORS		1	1	0	1
P 992 P2-09 DO YOU REMOVE OR INSTALL COMPLETE WAVEGUIDES		1	1	0	1
P 993 P2-10 DO YOU REMOVE OR INSTALL WAVEGUIDE SECTIONS		1	1	0	1
P 994 P2-11 DO YOU REMOVE OR INSTALL DUMMY LOADS		1	1	0	1
P 995 P2-12 DO YOU REMOVE OR INSTALL E BENDS		1	1	0	1
P 996 P2-13 DO YOU REMOVE OR INSTALL H BENDS		1	1	0	1
P 997 P2-14 DO YOU REMOVE OR INSTALL OTHER BENDS		1	1	0	1
P 998 P2-15 DO YOU REMOVE OR INSTALL CHORE JOINTS		1	1	0	1
P 999 P2-16 DO YOU REMOVE OR INSTALL ROTATING JOINTS		1	1	0	1
P1000 P2-17 DO YOU REMOVE OR INSTALL DIRECTIONAL COUPLERS		1	1	0	1
P1001 P2-18 DO YOU REMOVE OR INSTALL BIDIRECTIONAL COUPLERS		1	1	0	1
P1002 P2-19 DO YOU USE OR REFER TO "A" WALL OF WAVEGUIDES		1	1	0	1

WAVEGUIDES AND CAVITY RESONATORS

PCT MEMS RESPONDING "YES" BY SELECTED GRPS

GPSUM1 PAGE 36

TASK GROUP SUMMARY PERCENT MEMBERS PERFORMING

DY-TSK		SPC 001	SPC 002	SPC 003	SPC 004
P1003	P2-20 DO YOU USE OR REFER TO "B" WALL OF WAVEGUIDES	1	1	0	1
P1004	P2-21 DO YOU USE OR REFER TO CUTOFF FREQUENCY OF WAVEGUIDES	1	1	0	1
P1005	P2-22 DO YOU USE OR REFER TO FREQUENCY-DETERMINING WALL OF WAVEGUIDES	1	1	0	1
P1006	P2-23 DO YOU USE OR REFER TO POWER-DETERMINING WALL OF WAVEGUIDES	1	1	0	1
P1007	P2-24 DO YOU USE OR REFER TO ELECTRIC FIELD BOUNDARY CONDITIONS	2	3	0	2
P1008	P2-25 DO YOU USE OR REFER TO MAGNETIC FIELD BOUNDARY CONDITIONS	1	1	0	1
P1009	P2-26 DO YOU USE OR REFER TO DUPLEXER FIELD BOUNDARY CONDITIONS	1	1	0	1
P1010	P2-27 DO YOU USE OR REFER TO THE GENERAL RULE THAT MOST WAVEGUIDES ARE MADE WITH A "B" WALL SIZE OF .7 WAVELENGTHS OF THE OPERATING FREQUENCY	1	1	0	1
P1011	P2-28 DO YOU USE OR REFER TO THE GENERAL RULE THAT MOST "A" WALLS RANGE FROM .2 TO .5 WAVELENGTHS IN SIZE, WITH .35 USED AS AN AVERAGE	1	1	0	1
P1012	P2-29 ARE YOU CONCERNED WITH THE MATERIAL (SUCH AS BRASS) WHICH WAVEGUIDES ARE MADE OF	1	1	0	1
P1013	P2-30 DO YOU COMPUTE THE LENGTH OF A WAVEGUIDE FOR SPECIFIC INSTALLATION	1	1	0	1
P1014	P2-31 DO YOU USE THE RIGHT HAND RULE TO DETERMINE THE DIRECTION OF PROPAGATION, DIRECTION OF "E" FIELD, OR DIRECTION OF "H" FIELD IN WAVEGUIDES	1	1	0	1
P1015	P2-32 DO YOU USE OR REFER TO THE TIME PHASE OF PEAK "E" OR "H" LINES IN WAVEGUIDES	1	1	0	1
P1016	P2-33 DO YOU MEASURE THE TIME PHASE OF "E" OR "H" LINES IN WAVEGUIDES	1	1	0	1
P1017	P2-34 DO YOU USE OR REFER TO THE SPACE QUADRATURE OF "E" OR "H" LINES IN WAVEGUIDES	1	1	0	1
P1018	P2-35 ARE HIGH POWER PROBES USED ON WAVEGUIDES OR CAVITY RESONATORS YOU WORK WITH	1	1	0	1
P1019	P2-36 ARE LOW POWER PROBES USED ON WAVEGUIDES OR CAVITY RESONATORS YOU WORK WITH	1	1	0	1
P1020	P2-37 ARE LOOPS USED ON WAVEGUIDES OR CAVITY RESONATORS YOU WORK WITH	1	1	0	1
P1021	P2-38 ARE APERTURES (WINDOWS OR TRISES) USED ON WAVEGUIDES OR CAVITY RESONATORS YOU WORK WITH	1	1	0	1
P1022	P2-39 ARE DON'T REMEMBER THE KIND OF ENERGY COUPLING USED ON WAVEGUIDES OR CAVITY RESONATORS YOU WORK WITH	1	1	0	1
P1023	P2-40 DO YOU DETERMINE WHERE PROBES SHOULD BE MOUNTED IN WAVEGUIDES OR CAVITY RESONATORS WITHOUT REFERRING TO TECHNICAL DATA	1	1	0	1
P1024	P2-41 DO YOU DETERMINE THE POSITIONING OF LOOPS IN WAVEGUIDES OR CAVITY RESONATORS WITHOUT REFERRING TO TECHNICAL DATA	1	1	0	1

PCT MBS RESPONDING *YES* BY SELECTED GRPS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

SPC SPC SPC SPC
001 002 003 004

DT-YSK

PI025 P2-42 DO YOU DETERMINE THE POSITIONING OR SIZE OF APERTURES
IN WAVEGUIDES OR CAVITY RESONATORS WITHOUT REFERRING TO
TECHNICAL DATA

PI026 P2-43 ARE CHORE JOINTS USED IN WAVEGUIDES OR CAVITY
RESONATORS YOU WORK WITH

PI027 P2-44 ARE ROTATING JOINTS USED IN WAVEGUIDES OR CAVITY
RESONATORS YOU WORK WITH

PI028 P2-45 ARE DON'T REMEMBER THE KIND OF JOINTS USED IN
WAVEGUIDES OR CAVITY RESONATORS YOU WORK WITH

PI029 P2-46 DO YOU TUNE CAVITY RESONATORS USING CAPACITIVE TUNING

PI030 P2-47 DO YOU TUNE CAVITY RESONATORS USING INDUCTIVE TUNING

PI031 P2-48 DO YOU TUNE CAVITY RESONATORS USING VOLUME TUNING

PI032 P2-49 DO YOU TUNE CAVITY RESONATORS USING DON'T REMEMBER
THE METHOD OF TUNING

PI033 P2-50 DO YOU MEASURE THE FREQUENCY OF SIGNALS IN CAVITY
RESONATORS

PI034 P3-01 IN YOUR PRESENT JOB DO YOU WORK WITH KLYSTRONS,
TRAVELING WAVE TUBES (TWT), PARAMETRIC AMPLIFIERS, OR
MAGNETRONS

PI035 P3-02 DO YOU USE OR REFER TO INTERELECTRODE CAPACITANCE

PI036 P3-03 DO YOU USE OR REFER TO ELECTRON TRANSIT TIME

PI037 P3-04 DO YOU USE OR REFER TO LEAD INDUCTANCE

PI038 P3-05 DO YOU USE OR REFER TO RF LOSSES IN EXTERNAL
CIRCUITRY

PI039 P3-06 DO YOU USE OR REFER TO PRINCIPLE OF ELECTRON VELOCITY
MODULATION

PI040 P3-07 DO YOU USE OR REFER TO ELECTRON BUNCHING

PI041 P3-08 DO YOU WORK WITH TWO-CAVITY KLYSTRONS

PI042 P3-09 DO YOU WORK WITH THREE-CAVITY KLYSTRONS

PI043 P3-10 DO YOU WORK WITH REFLEX KLYSTRONS

PI044 P3-11 DO YOU WORK WITH TRAVELING-WAVE TUBES (TWT)

PI045 P3-12 DO YOU WORK WITH NONDEGENERATIVE PARAMETRIC
AMPLIFIERS

PI046 P3-13 DO YOU WORK WITH UP-CONVERTER PARAMETRIC AMPLIFIERS

PI047 P3-14 DO YOU WORK WITH MAGNETRONS

PI048 P3-15 DO YOU INSPECT KLYSTRONS OR TWT

PI049 P3-16 DO YOU CLEAN KLYSTRONS OR TWT

PI050 P3-17 DO YOU TUNE KLYSTRONS OR TWT ELECTRICALLY

PI051 P3-18 DO YOU TUNE KLYSTRONS OR TWT MECHANICALLY

PI052 P3-19 DO YOU PERFORM OPERATIONAL CHECKS OF KLYSTRONS OR
TWT

PI053 P3-20 DO YOU TROUBLESHOOT KLYSTRONS OR TWT

PI054 P3-21 DO YOU REMOVE OR REPLACE COMPLETE KLYSTRON OR TWT

PI055 P3-22 DO YOU REMOVE OR REPLACE KLYSTRON OR TWT COMPONENTS

PI056 P3-23 DO YOU INSPECT PARAMETRIC AMPLIFIERS

PI057 P3-24 DO YOU CLEAN PARAMETRIC AMPLIFIERS

PI058 P3-25 DO YOU ADJUST PARAMETRIC AMPLIFIERS

MICROWAVE AMPLIFIERS AND
OSCILLATORS

PCT MEMS RESPONDING 'YES' BY SELECTED GRPS

SPSUMI PAGE 38

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

BY-TSK

	SPC 001	SPC J02	SPC 003	SPC 004
P1059 P3-26 DO YOU TUNE PARAMETRIC AMPLIFIERS	1	1	0	1
P1060 P3-27 DO YOU PERFORM OPERATIONAL CHECKS OF PARAMETRIC AMPLIFIERS	1	1	0	1
P1061 P3-28 DO YOU TROUBLESHOOT PARAMETRIC AMPLIFIERS	1	1	0	1
P1062 P3-29 DO YOU REMOVE OR REPLACE COMPLETE PARAMETRIC AMPLIFIER	1	1	0	1
P1063 P3-30 DO YOU REMOVE OR REPLACE PARAMETRIC AMPLIFIER COMPONENTS	1	1	0	1
P1064 P3-31 DO YOU INSPECT MAGNETRONS	1	1	0	1
P1065 P3-32 DO YOU CLEAN MAGNETRONS	1	1	0	1
P1066 P3-33 DO YOU ADJUST MAGNETRONS	1	1	0	1
P1067 P3-34 DO YOU TUNE MAGNETRONS	1	1	0	1
P1068 P3-35 DO YOU PERFORM OPERATIONAL CHECKS OF MAGNETRONS	1	1	0	1
P1069 P3-36 DO YOU TROUBLESHOOT MAGNETRONS	1	1	0	1
P1070 P3-37 DO YOU REMOVE OR REPLACE COMPLETE MAGNETRON	1	1	0	1
P1071 P3-38 DO YOU REMOVE OR REPLACE MAGNETRON COMPONENTS	1	1	0	1
P1072 P3-39 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TWO-CAVITY KLYSTRONS COLLECTOR PLATES	1	1	0	1
P1073 P3-40 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TWO-CAVITY KLYSTRONS CATCHER CAVITIES	1	1	0	1
P1074 P3-41 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TWO-CAVITY KLYSTRONS CATCHER GRIDS	1	1	0	1
P1075 P3-42 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TWO-CAVITY KLYSTRONS FEEDBACK LOOPS	1	1	0	1
P1076 P3-43 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TWO-CAVITY KLYSTRONS DRIFT SPACES	1	1	0	1
P1077 P3-44 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TWO-CAVITY KLYSTRONS BUNCHER GRIDS	1	1	0	1
P1078 P3-45 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TWO-CAVITY KLYSTRONS BUNCHER CAVITIES	1	1	0	1
P1079 P3-46 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TWO-CAVITY KLYSTRONS CONTROL GRIDS	1	1	0	1
P1080 P3-47 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TWO-CAVITY KLYSTRONS CATHODES	1	1	0	1
P1081 P3-48 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF REFLEX KLYSTRON REPELLER (REFLECTOR) PLATES	1	1	0	1
P1082 P3-49 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF REFLEX KLYSTRON GRIDS	1	1	0	1
P1083 P3-50 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF REFLEX KLYSTRON GRID CAVITY GAPS	1	1	0	1
P1084 P3-51 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF REFLEX KLYSTRON RESONANT CAVITIES	1	1	0	1
P1085 P3-52 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF REFLEX KLYSTRON MAGNETIC COUPLING LOOPS	1	1	0	1
P1086 P3-53 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF REFLEX KLYSTRON FILAMENTS	1	1	0	1
P1087 P3-54 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF REFLEX KLYSTRON CATHODES	1	1	0	1

PCT MBMS RESPONDING 'YES' BY SELECTED GNPS

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TASK GROUP SUMMARY PERCENT MEMBERS PERFORMING

TASK	DY-TSK				SPC			
	001	002	003	004	001	002	003	004
P1088 P3-55 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF REFLEX KLYSTRON OUTPUT LEADS	1	1	0	1				
P1089 P3-56 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TRAVELING-WAVE TUBES FILAMENTS	1	1	0	1				
P1090 P3-57 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TRAVELING-WAVE TUBES CATHODES	1	1	0	1				
P1091 P3-58 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TRAVELING-WAVE TUBES MODULATOR GRIDS	1	1	0	1				
P1092 P3-59 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TRAVELING-WAVE TUBES ANODES	1	1	0	1				
P1093 P3-60 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TRAVELING-WAVE TUBES HELICES	1	1	0	1				
P1094 P3-61 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TRAVELING-WAVE TUBES COLLECTORS	1	1	0	1				
P1095 P3-62 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TRAVELING-WAVE TUBES MAGNETS	1	1	0	1				
P1096 P3-63 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TRAVELING-WAVE TUBES ATTENUATORS	1	1	0	1				
P1097 P3-64 DO YOU PERFORM TASKS ON PARAMETRIC AMPLIFIER FERRITE CIRCULATORS	1	1	0	1				
P1098 P3-65 DO YOU PERFORM TASKS ON PARAMETRIC AMPLIFIER SIGNAL CAVITIES	1	1	0	1				
P1099 P3-66 DO YOU PERFORM TASKS ON PARAMETRIC AMPLIFIER IDLER CAVITIES	1	1	0	1				
P1100 P3-67 DO YOU PERFORM TASKS ON PARAMETRIC AMPLIFIER VARACTOR DIODES	1	1	0	1				
P1101 P3-68 DO YOU PERFORM TASKS ON PARAMETRIC AMPLIFIER FERRITE ISOLATORS	1	1	0	1				
P1102 P3-69 DO YOU PERFORM TASKS ON PARAMETRIC AMPLIFIER REVERSE-BIAS BATTERIES	1	1	0	1				
P1103 P3-70 DO YOU PERFORM TASKS ON ANODES	1	1	0	1				
P1104 P3-71 DO YOU PERFORM TASKS ON ANODE COOLING PINS	1	1	0	1				
P1105 P3-72 DO YOU PERFORM TASKS ON COUPLING LOOPS	1	1	0	1				
P1106 P3-73 DO YOU PERFORM TASKS ON HEATER LEADS	1	1	0	1				
P1107 P3-74 DO YOU PERFORM TASKS ON RESONANT CAVITIES	1	1	0	1				
P1108 P3-75 DO YOU PERFORM TASKS ON CATHODES	1	1	0	1				
P1109 P3-76 DO YOU PERFORM TASKS ON MAGNETS	1	1	0	1				
P1110 Q1-01 DO YOU USE OR REFER TO STORAGE REGISTERS	2	1	3	2				
P1111 Q1-02 DO YOU USE OR REFER TO SHIFT REGISTERS	2	1	3	2				
P1112 Q1-03 DO YOU USE OR REFER TO LOGIC SYMBOLS OF SHIFT REGISTERS	2	1	3	2				
P1113 Q1-04 DO YOU USE OR REFER TO LOGIC SYMBOLS OF STORAGE REGISTERS	2	1	3	2				
P1114 Q1-05 DO YOU TRACE THE DATA FLOW THROUGH LOGIC DIAGRAMS OF SHIFT REGISTERS	2	1	3	2				
P1115 Q1-06 DO YOU TRACE THE DATA FLOW THROUGH LOGIC DIAGRAMS OF OTHER TYPE OF REGISTERS	4	4	3	4				

REGISTERS

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

GP SUM PAGE NO

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

DY-TSK

SPC SPC SPC SPC
001 002 003 004

Q110 Q1-07 DO YOU DETERMINE THE STATE OF EACH FLIP-FLOP OF A
SHIFT REGISTER AFTER A SPECIFIED NUMBER OF SHIFT PULSES
HAVE PASSED

Q111 Q2-01 DO YOU WORK WITH DIGITAL COUNTERS, REGISTERS, OR
STORAGE DEVICES IN YOUR PRESENT JOB

Q118 Q2-02 DO YOU USE OR REFER TO DELAY LINES

Q119 Q2-03 DO YOU USE OR REFER TO MAGNETIC CORES

Q120 Q2-04 DO YOU USE OR REFER TO MAGNETIC DRUMS

Q121 Q2-05 DO YOU USE OR REFER TO MAGNETIC TAPES

Q122 Q2-06 DO YOU USE OR REFER TO ACCESS TIME OR SPEED ON
MEMORY SYSTEMS

Q123 Q2-07 DO YOU USE OR REFER TO WORD CAPACITY OF MEMORY
SYSTEMS

Q124 Q2-08 DO YOU USE OR REFER TO VOLATILITY OF MEMORY SYSTEMS

Q125 Q2-09 DO YOU USE OR REFER TO LOGIC SYMBOL OF DELAY LINES

Q126 Q3-01 IN YOUR PRESENT JOB, DO YOU WORK WITH DIGITAL-TO-
ANALOG (D/A) CONVERTERS, ANALOG-TO-DIGITAL (A/D)
CONVERTERS, OR BINARY-TO-DECIMAL READOUT CONVERTERS

Q127 Q3-02 DO YOU COMPUTE OUTPUT VOLTAGES FOR ELECTROMECHANICAL
DIGITAL-TO-ANALOG (D/A) CONVERTERS FOR GIVEN INPUT
VOLTAGES

Q128 Q3-03 DO YOU USE OR REFER TO THE GENERAL RULE THAT THE
COUNT IN ELECTROMECHANICAL DIGITAL-TO-ANALOG (D/A)
CONVERTERS IS DETERMINED BY ADDING THE DENOMINATORS OF THE
RESISTORS

Q129 Q3-04 DO YOU COMPUTE ANALOG VOLTAGES FOR GIVEN BINARY
COUNTS IN ELECTRONIC DIGITAL-TO-ANALOG (D/A) CONVERTERS

Q130 Q3-05 DO YOU PERFORM SAMPLE FUNCTION TASKS ON VARIABLE TIME
ANALOG-TO-DIGITAL (A/D) CONVERTER CIRCUITS

Q131 Q3-06 DO YOU PERFORM HOLD FUNCTION TASKS ON VARIABLE TIME
ANALOG-TO-DIGITAL (A/D) CONVERTER CIRCUITS

Q132 Q3-07 DO YOU PERFORM COMPARE FUNCTION TASKS ON VARIABLE
TIME ANALOG-TO-DIGITAL (A/D) CONVERTER CIRCUITS

Q133 Q3-08 DO YOU PERFORM DIGITIZE FUNCTION TASKS ON VARIABLE
TIME ANALOG-TO-DIGITAL (A/D) CONVERTER CIRCUITS

Q134 Q3-09 DO YOU PERFORM DON'T REMEMBER HIGH FUNCTION TASKS
ON VARIABLE TIME ANALOG-TO-DIGITAL (A/D) CONVERTER
CIRCUITS

Q135 Q3-10 DO YOU USE OR REFER TO SAMPLE FUNCTION OF A/D
CONVERTERS

Q136 Q3-11 DO YOU USE OR REFER TO HOLD FUNCTION OF A/D
CONVERTERS

Q137 Q3-12 DO YOU USE OR REFER TO COMPARE FUNCTION OF A/D
CONVERTERS

Q138 Q3-13 DO YOU USE OR REFER TO DIGITAL FUNCTION OF A/D
CONVERTERS

Q139 Q3-14 DO YOU PERFORM ANY TASKS ON MECHANICAL ANALOG-TO-
DIGITAL (A/D) CONVERTERS

STORAGE DEVICES

DIGITAL TO ANALOG CONVERTERS

PCT MEMS RESPONDING 'YES' BY SELECTED GRPS

GPSUM PAGE 41

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

0Y-TSK

SPC SPC SPC SPC
001 002 003 004

PHANTASTRONS

SCHMITT TRIGGERS

CABLE FABRICATION

INPUT/OUTPUT DEVICES

PHOTO SENSITIVE DEVICES

SYNCHRONOUS VIBRATIONS
(CHOPPER CIRCUITS)

INFRARED

M1140 M1-01 DO YOU WORK WITH PHANTASTRON CIRCUITRY IN YOUR
PRESENT JOB

M1141 M2-01 IN YOUR PRESENT JOB DO YOU WORK WITH SCHMITT TRIGGER
CIRCUITS

M1142 M2-02 DO YOU TRACE DATA FLOW THROUGH SCHMITT TRIGGER
SCHEMATIC DIAGRAMS

M1143 M2-03 DO YOU USE OR REFER TO SCHMITT TRIGGER LOGIC SYMBOLS

M1144 M3-01 IN YOUR PRESENT JOB DO YOU FABRICATE MULTICONDUCTOR
CABLES

M1145 M3-02 DO YOU FABRICATE COAXIAL CABLES

M1146 M1-01 IN YOUR PRESENT JOB DO YOU PERFORM ANY TASKS ON
VISUAL HEADOUT SYSTEMS

M1147 M1-02 DO YOU PERFORM ANY TASKS ON MIXIE LIGHTS OR MIXIE
LIGHT DECODER SYSTEMS

M1148 M1-03 DO YOU ANALYZE MIXIE LIGHT DECODER SYSTEMS USING
BOOLEAN ALGEBRA

M1149 M2-01 DO YOU WORK WITH PHOTO TUBES IN YOUR PRESENT JOB

M1150 M3-01 IN YOUR PRESENT JOB DO YOU WORK WITH CHOPPER CIRCUITS

M1151 M3-02 DO YOU MEASURE EXCITATION FREQUENCIES

M1152 M3-03 DO YOU MEASURE VOLTAGE-CURRENT PHASE RELATIONSHIPS

M1153 M3-04 DO YOU USE OR REFER TO EXCITATION FREQUENCIES

M1154 M3-05 DO YOU USE OR REFER TO VOLTAGE-CURRENT PHASE
RELATIONSHIPS

M1155 M3-06 DO YOU USE SERVOS IN CONJUNCTION WITH CHOPPER
CIRCUIT OPERATION

M1156 M3-07 DO YOU USE DETECTORS IN CONJUNCTION WITH CHOPPER
CIRCUIT OPERATION

M1157 M3-08 DO YOU USE ERROR SIGNAL DEVICES IN CONJUNCTION WITH
CHOPPER CIRCUIT OPERATION

M1158 M3-09 DO YOU USE COMPARISON CIRCUITS IN CONJUNCTION WITH
CHOPPER CIRCUIT OPERATION

M1159 M1-01 DOES YOUR PRESENT JOB INVOLVE ANY TASKS DEALING WITH
INFRARED SYSTEMS

M1160 M1-02 DO YOU INSPECT INFRARED SYSTEMS

M1161 M1-03 DO YOU CLEAN INFRARED SYSTEMS

M1162 M1-04 DO YOU ADJUST OR CALIBRATE INFRARED SYSTEMS

M1163 M1-05 DO YOU OPERATE INFRARED SYSTEMS

M1164 M1-06 DO YOU TROUBLESHOOT WIRE CONNECTIONS OF INFRARED
SYSTEMS

M1165 M1-07 DO YOU TROUBLESHOOT MAJOR ASSEMBLIES OF INFRARED
SYSTEMS

M1166 M1-08 DO YOU TROUBLESHOOT DOWN TO INFRARED SYSTEM
COMPONENT PARTS

M1167 M1-09 DO YOU REMOVE OR REPLACE MAJOR ASSEMBLIES OF
INFRARED SYSTEMS

M1168 M1-10 DO YOU REMOVE OR REPLACE INFRARED SYSTEM
COMPONENT PARTS

PCT MBMS RESPONDING *YES* BY SELECTED GRPS

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TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

		UY-TSK				SPC			
						001	002	003	004
T1169	T1-11 DO YOU USE OR REFER TO FAR REGION	1	1	0	1				
T1170	T1-12 DO YOU USE OR REFER TO INTERMEDIATE REGION	1	1	0	1				
T1171	T1-13 DO YOU USE OR REFER TO NEAR REGION	1	1	0	1				
T1172	T1-14 DO YOU USE OR REFER TO MICRON	1	1	0	1				
T1173	T1-15 DO YOU USE OR REFER TO GRAY BODIES	1	1	0	1				
T1174	T1-16 DO YOU USE OR REFER TO BLACK BODIES	1	1	0	1				
T1175	T1-17 DO YOU USE OR REFER TO ABSORPTION	1	1	0	1				
T1176	T1-18 DO YOU USE OR REFER TO SCATTERING	1	1	0	1				
T1177	T1-19 DO YOU USE OR REFER TO ABSOLUTE ZERO	1	1	0	1				
T1178	T1-20 DO YOU PERFORM TASKS ON BLITZ	1	1	0	1				
T1179	T1-21 DO YOU PERFORM TASKS ON TARGET BUTTONS	1	1	0	1				
T1180	T1-22 DO YOU PERFORM TASKS ON ERECTOR LENSES	1	1	0	1				
T1181	T1-23 DO YOU PERFORM TASKS ON OCULAR LENSES	1	1	0	1				
T1182	T1-24 DO YOU PERFORM TASKS ON CORRECTION LENSES	1	1	0	1				
T1183	T1-25 DO YOU PERFORM TASKS ON FILTERS	1	1	0	1				
T1184	T1-26 DO YOU PERFORM TASKS ON SPHERICAL MIRRORS	1	1	0	1				
T1185	T1-27 DO YOU PERFORM TASKS ON PLANE MIRRORS	1	1	0	1				
T1186	T2-01 DOES YOUR PRESENT JOB INVOLVE ANY TASKS DEALING WITH LASERS	1	1	0	1				
T1187	T2-02 DO YOU INSPECT LASER SYSTEMS	1	1	0	1				
T1188	T2-03 DO YOU CLEAN LASER SYSTEMS	1	1	0	1				
T1189	T2-04 DO YOU OPERATE LASER SYSTEMS	1	1	0	1				
T1190	T2-05 DO YOU OPERATE LASER SYSTEMS	1	1	0	1				
T1191	T2-06 DO YOU TROUBLESHOOT WIRE CONNECTIONS OF LASER SYSTEMS	1	1	0	1				
T1192	T2-07 DO YOU TROUBLESHOOT MAJOR ASSEMBLIES OF LASER SYSTEMS	1	1	0	1				
T1193	T2-08 DO YOU TROUBLESHOOT TO COMPONENT PARTS OF LASER SYSTEMS	1	1	0	1				
T1194	T2-09 DO YOU REMOVE OR REPLACE MAJOR ASSEMBLIES OF LASER SYSTEMS	1	1	0	1				
T1195	T2-10 DO YOU REMOVE OR REPLACE COMPONENT PARTS OF LASER SYSTEMS	1	1	0	1				
T1196	T2-11 DO YOU USE OR REFER TO ANGSTROMS (A)	1	1	0	1				
T1197	T2-12 DO YOU USE OR REFER TO ELECTRON ENERGY LEVELS	1	1	0	1				
T1198	T2-13 DO YOU USE OR REFER TO GROUND STATE	1	1	0	1				
T1199	T2-14 DO YOU USE OR REFER TO EXCITED STATE	1	1	0	1				
T1200	T2-15 DO YOU USE OR REFER TO PACKET OF RADIATION	1	1	0	1				
T1201	T2-16 DO YOU USE OR REFER TO PHOTONS	2	1	3	2				
T1202	T2-17 DO YOU USE OR REFER TO SPONTANEOUS EMISSION	1	1	0	1				
T1203	T2-18 DO YOU USE OR REFER TO STIMULATED EMISSION	1	1	0	1				
T1204	T2-19 DO YOU USE OR REFER TO COHERENCE OR INCOHERENCE	1	1	0	1				
T1205	T2-20 DO YOU USE OR REFER TO INVERSION LEVEL	1	1	0	1				
T1206	T2-21 DO YOU USE OR REFER TO MONOCHROMATIC	1	1	0	1				
T1207	T2-22 DO YOU WORK WITH ACTIVE MATERIALS	1	1	0	1				
T1208	T2-23 DO YOU WORK WITH PUMPING SOURCES	1	1	0	1				
T1209	T2-24 DO YOU WORK WITH FULL SILVERED (100% REFLECTIVE) MIRRORS	1	1	0	1				

LASERS

PCT MMS RESPONDING *YES* BY SELECTED GNPS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

Task	SPC 001	SPC 002	SPC 003	SPC 004
0Y-TSK				
T1210 T2-25 DO YOU WORK WITH HALF SILVERED (928 REFLECTIVE) MIRRORS	1	1	0	1
T1211 T2-26 DO YOU WORK WITH MELICAL FLASHTUBES	1	1	0	1
T1212 T2-27 DO YOU WORK WITH RUBY	1	1	0	1
T1213 T2-28 DO YOU WORK WITH HELIUM-NEON	1	1	0	1
T1214 T2-29 DO YOU WORK WITH HELIUM-XENON	1	1	0	1
T1215 T2-30 DO YOU WORK WITH XENON	1	1	0	1
T1216 T2-31 DO YOU WORK WITH CESIUM-HELIUM	1	1	0	1
T1217 T2-32 DO YOU WORK WITH ARGON	1	1	0	1
T1218 T2-33 DO YOU WORK WITH NEODYMIUM IN GLASS	1	1	0	1
T1219 T2-34 DO YOU WORK WITH GALLIUM ARSENIDE	1	1	0	1
T1220 T3-01 IN YOUR PRESENT JOB DO YOU WORK WITH DISPLAY TUBES, SUCH AS DIRECT VIEW STORAGE (DVST) OR MULTIPLE MODE STORAGE TUBES (MMST)	1	1	0	1
T1221 T3-02 DO YOU INSPECT DVST OR MMST	1	1	0	1
T1222 T3-03 DO YOU CLEAN DVST OR MMST	1	1	0	1
T1223 T3-04 DO YOU ADJUST OR CALIBRATE DVST OR MMST	1	1	0	1
T1224 T3-05 DO YOU OPERATE SYSTEMS THAT CONTAIN DVST OR MMST	1	1	0	1
T1225 T3-06 DO YOU TROUBLESHOOT DVST OR MMST CIRCUITS	1	1	0	1
T1226 T3-07 DO YOU REMOVE OR REPLACE DVST OR MMST TUBES FROM MAJOR ASSEMBLIES ON UNITS	1	1	0	1
T1227 T3-08 DO YOU PERFORM TASKS THAT MAKE IT NECESSARY TO NAME THE VARIOUS ELEMENTS OF DVST	1	1	0	1
T1228 T3-09 DO YOU PERFORM TASKS THAT MAKE IT NECESSARY TO NAME THE VARIOUS ELEMENTS OF MMST	1	1	0	1
T1229 T3-10 DO YOU PERFORM TASKS ON FLOOD GUNS	1	1	0	1
T1230 T3-11 DO YOU PERFORM TASKS ON WHITE GUNS	1	1	0	1
T1231 T3-12 DO YOU PERFORM TASKS ON ATTACK GUNS	1	1	0	1
T1232 T3-13 DO YOU PERFORM TASKS ON ERASE GUNS	1	1	0	1
T1233 T3-14 DO YOU PERFORM TASKS ON STORAGE GRIDS	1	1	0	1
U1234 U1-01 IN YOUR PRESENT JOB, DO YOU PERFORM ANY PROGRAMMING TASKS	1	1	0	1
U1235 U1-02 DO YOU USE OR REFER TO DECIMAL SYSTEMS	1	1	0	1
U1236 U1-03 DO YOU USE OR REFER TO PROGRAMS	1	1	0	1
U1237 U1-04 DO YOU USE OR REFER TO HEXIDECIMAL SYSTEMS	1	1	0	1
U1238 U1-05 DO YOU USE OR REFER TO R-4-2-1 SYSTEMS	1	1	0	1
U1239 U1-06 DO YOU USE OR REFER TO FOUR SYSTEMS	1	1	0	1
U1240 U1-07 DO YOU USE OR REFER TO BINARY SYSTEMS	1	1	0	1
U1241 U1-08 DO YOU USE OR REFER TO TIME-SHARING	1	1	0	1
U1242 U1-09 DO YOU USE OR REFER TO DATA WORDS	1	1	0	1
U1243 U1-10 DO YOU USE OR REFER TO ADDRESS WORDS	1	1	0	1
U1244 U1-11 DO YOU USE OR REFER TO ADDRESS/SUBADDRESS	1	1	0	1
U1245 U1-12 DO YOU USE OR REFER TO STEERING/INFORMATION	1	1	0	1
U1246 U1-13 DO YOU USE OR REFER TO INFORMATION WORDS	1	1	0	1
U1247 U1-14 DO YOU PERFORM TASKS ON SINGLE LEVEL PROGRAMMING	1	1	0	1
U1248 U1-15 DO YOU PERFORM TASKS ON MULTI-LEVEL PROGRAMMING	1	1	0	1

DISPLAY TUBES

PROGRAMMING

PCT MARS RESPONDING "YES" BY SELECTED GRPS

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TASK GROUP SUMMARY PERCENT MEMBERS PERFORMING

UY-TSK

	SPC 001	SPC 002	SPC 003	SPC 004
U1249 U1-16 DO YOU PERFORM TASKS ON INPUT DEVICES	1	1	0	1
U1250 U1-17 DO YOU PERFORM TASKS ON STORAGE DEVICES	1	1	0	1
U1251 U1-18 DO YOU PERFORM TASKS ON ARITHMETIC SECTIONS	1	1	0	1
U1252 U1-19 DO YOU PERFORM TASKS ON CONTROL SECTIONS	1	1	0	1
U1253 U1-20 DO YOU PERFORM TASKS ON OUTPUT DEVICES	1	1	0	1
U1254 U1-21 DO YOU PERFORM TASKS ON POWER SUPPLIES	1	1	0	1
U1255 U2-01 DO YOU USE DECIBELS TO EXPRESS AMPLIFICATION AND ATTENUATION	35	28	50	39
U1256 U2-02 DO YOU USE LOGARITHMS TO COMPUTE OUTPUT POWER IN DECIBELS	4	4	3	4
U1257 U2-03 DO YOU USE LOGARITHMS TO COMPUTE ATTENUATION IN DECIBELS	4	4	3	4
U1258 U2-04 DUMMY TASK TO IDENTIFY INCUMBENTS WHO PERFORMED NO TASKS	2	0	6	1

DB AND POWER RATIOS

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AIR FORCE OCCUPATIONAL MEASUREMENT CENTER LACKLAND A--ETC F/G 5/9
TELEPHONE SWITCHING EQUIPMENT REPAIRMAN/ELECTRO-MECHANICAL SPEC--ETC(U)
SEP 77 T J O'CONNOR, F B BOWER

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) This report summarizes the results of the administration of the Electronic Principles Inventory to airmen assigned as Telephone Switching Equipment Repairman/Electro-Mechanical Specialist (AFSC 36251). The report gives a detailed listing of the technical tasks and knowledge needed to perform the jobs within the specialty or career ladder.		

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→ This specialty has the following functions:

Installs and maintains all types of electro/mechanical telephone switching equipment. Installs telephone switching equipment. Maintains telephone switching equipment such as manual switchboards, step-by-step, and X-Y automatic dial systems. Monitors and analyzes performance of wire systems. Supervises telephone switching equipment personnel

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