APPENDIXES

APPENDIX A: Tables of electrical safety level in terms of checklist's sections.

Table A-1: illustrates the sections and items of checklist.

Items of checklist's sections	Checklist's sections
1- Protection of flexible cords from damage, and they aren't located in damp or wet locations and keep out of the way of traffic.	**Section I: electrical cords and extension cords**
2- Extension cords and Adapters that eliminate the equipment ground (3-prong to 2-prong adapters) are prohibited.	
3- Using the right gauge and type of wire size (AWG) to carry the current being drawn and comply with associated standards and practices.	
4- Extension cords in use of the three-wire type and used with the grounded plugs with a minimum wire size of (14 AWG = 5.9 A).	
1- An alternate source of power (more than one source of power), and it has capacity to meet 100% of demand.	**:Section II Power system and power Distribution**
2- Using an emergency power system in hospital. (Restore power within 10 s after interruption of the normal power.)	
3- Using Un-Interrupted Power System in hospital.	
4- Installation of Power Cables and electrical wires according to Color Code.	
5- Medical Isolated power systems (IPS) are used especially in operating room and when a location is classified as a wet location.	
6- Grounded power systems are used.	
7- Receptacles are of the grounding type. and electrically connected to the equipment grounding conductor.	
8- Receptacles installed in damp locations are protected by GFCI.	
9- All Plugs, outlets, switches and are in good condition and working properly. and All live parts are covered.	
10- An adequate number of outlets/circuits provided to avoid overloading of circuits.	
11- Any device have receptacle (number of receptacle are appropriate).	

12-Panel box (used to supply Voltage service to the receptacles, The isolation transformer and circuit breaker) for operating room , CCU and ICU?		
13-Cables operating on high volts are shielded to confine voltage stresses to the insulation.		
All electrical equipment is grounded effectively.	-1	**:Section III Grounding system**
The patient environment and metal fixed electrical equipment are grounded.	-2	
All electrical components are bonded together in grounding system (equipotential bonding).	-3	
All protectively earthed equipment must use a 3-pin plug.	-4	
The grounding electrode conductor size adequate. (At least #2 in AWG =94 ampere).	-5	
The residual current devices (RCD) are used.	-1	**Section IV: Testing and Protective devices**
The line isolation monitors (LIMs) are used with IPS.	-2	
Proper personal protective equipment (PPE) is always used.	-3	
Defibrillation tester (analyzer) is used.	-4	
5- Electro surgical tester is used.		
Electrical safety analyzer is used.	-6	
Ground fault circuit interrupters (GFCI) are used, and they tested periodically.	-7	
All outlets protected by a GFCI.	-8	
Appropriate fire extinguishers available and in good condition.	-9	
Continuity of grounding wire is tested periodically.	-10	
Bedrails and bed frame are made of plastic or covered in insulating material	-11	
1- Visually inspect for electrical equipment before use.		**Section IIV: Evaluation of electrical safety program**
2- Instrumentations in all intensive care areas, operating room, and special procedures room are inspected at bimonthly intervals, other equipmens shall be tested quarterly.		
3- Employees are aware of the hazards associated with power electronic Equipment, and taken Basic Electrical Safety for Maintenance Employees. And trained to think and react to electrical safety hazards.		
4- Technicians are available all the time to emergency situation’s related to patient safety.		

5- All monitoring and patient care equipment in special care area’s are checked for proper performance and calibration periodically.

6- The hospital has inspection, testing and evidence of maintenance program, in place to ensure that electrical apparatus is safe to use.

7- Protectively earthed equipment is tested every 6 months and double insulated equipment every 12 months.

8- All electrical equipment must be inspected for electrical safety before initial use, after repair, or when a problem is suspected.

9- Electrical equipment inspected and maintained according to manufacturer’s instructions.

									Scale	**Items of Section I**
High	.113	.727	3.85	8	19	14	0	0	Frequency	**1**
				19.5	46.3	34.1	0	0	Percent (%)	
Middle	.156	.997	3.39	5	15	13	7	1	Frequency	**2**
				12.2	36.6	31.7	17.1	2.4	Percent (%)	
High	.140	.897	3.54	5	18	12	6	0	Frequency	**3**
				12.2	43.9	29.3	14.6	0	Percent (%)	
Middle	.139	.891	3.39	5	12	18	6	0	Frequency	**4**
				12.2	29.3	34.9	14.6	0	Percent (%)	
High	.108	.695	3.54	23	64	57	19	1	Frequency	**Result of Section I**
				14	39	32.5	11.6	2.4	Percent (%)	

Table A-2: Distribution of the answer and results of electrical safety .level in terms of electrical cords and extension cords

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Table A-3: Distribution of the answer and results of electrical safety .level in terms of power system and power distribution

Items of Section II	Scale								
1	Frequency	0	0	9	15	17	4.2	0.78	.122	Highest
	Percent (%)	0	0	22	36.3	41.5				
2	Frequency	4	3	14	10	10	3.46	1.22	.192	High
	Percent (%)	9.8	7.3	34.1	24.4	24.4				
3	Frequency	2	6	9	11	12	3.62	1.21	.192	High
	Percent (%)	4.9	14.6	22	26.8	29.3				
4	Frequency	0	10	11	11	9	3.46	1.09	.171	High
	Percent (%)	0	24.4	26.8	26.8	22				
5	Frequency	28	7	5	0	1	1.51	0.89	.140	None
	Percent (%)	68.3	17.1	12.2	0	2.4				
6	Frequency	0	10	10	12	9	3.49	1.09	.172	High
	Percent (%)	0	24.4	24.4	29.3	22.0				
7	Frequency	1	5	13	13	9	3.59	1.04	.164	High
	Percent (%)	2.4	12.2	31.7	31.7	22.0				

Low	.150	0.96	1.85	0	2	10	9	20	Frequency	**8**
				0	4.9	24.4	22.0	48.8	Percent (%)	
High	.160	1.02	3.83	14	10	13	4	0	Frequency	**9**
				34.1	24.4	31.7	9.8	0	Percent (%)	
High	.167	1.06	3.76	12	14	8	7	0	Frequency	**10**
				29.3	34.1	19.5	17.1	0	Percent (%)	
High	.150	0.96	3.98	15	13	10	3	0	Frequency	**11**
				36.6	31.7	24.4	3.7	0	Percent (%)	
None	.143	0.90	1.58	1	0	5	9	25	Frequency	**12**
				2.4	0	12.2	22.0	61.0	Percent (%)	
Middle	.128	0.82	4.32	20	16	3	2	0	Frequency	**13**
				48.8	39.0	7.3	4.9	0	Percent (%)	
Middle	.089	.574	3.28	129	127	120	75	80	Frequency	**Result of Section II**
				99.2	97.7	92.3	57.7	61.5	Percent (%)	

Table A-4: Distribution of the answer and results of electrical safety .level in terms of grounding system

									Scale	**Items No of Section III**
High	0.15	0.99	3.41	7	11	15	8	0	Frequency	**1**
				17.1	26.8	36.6	19.5	0	Percent (%)	
Middle	0.16	1.03	3.07	2	15	10	12	2	Frequency	**2**

				4.9	36.6	24.4	29.3	4.9	Percent (%)	
Middle	0.15	0.98	3.07	2	14	11	13	1	Frequency	**3**
				4.9	34.1	26.8	31.7	2.4	Percent (%)	
Middle	0.14	0.92	3.2	5	6	23	6	1	Frequency	**4**
				12.2	14.6	56.1	14.6	2.4	Percent (%)	
Middle	0.17	1.06	3.33	5	13	13	6	2	Frequency	**5**
				12.2	31.7	31.7	14.6	4.9	Percent (%)	
Middle	.128	.820	3.22	21	59	72	45	6	Frequency	**Result of section III**
				4.2	11.8	14.4	9	1.2	Percent (%)	

Table A-5: Distribution of the answer and results of electrical safety level in terms of testing and protective devices.

									Scale	**Items No of Section IV**
None	0.059	0.381	1.17	0	0	0	7	34	Frequency	**1**
				0	0	0	17.1	82.9	Percent (%)	
None	087.	0.558	1.2	0	1	0	5	35	Frequency	**2**
				0	2.4	0	12.2	85.4	Percent (%)	
Low	143.	0.915	2.37	0	4	15	14	8	Frequency	**3**
				0	9.8	36.6	34.1	19.5	Percent (%)	

None	185.	0.941	1.62	0	2	2	6	16	Frequency	**4**
				0	4.9	4.9	14.6	39.0	Percent (%)	
None	167.	0.852	1.38	0	1	3	1	21	Frequency	**5**
				0	2.4	7.3	2.4	51.2	Percent (%)	
None	086.	0.549	1.27	0	0	2	7	32	Frequency	**6**
				0	0	4.9	17.1	78.0	Percent (%)	
None	041.	0.264	1.07	0	0	0	3	38	Frequency	**7**
				0	0	0	7.3	92.7	Percent (%)	
None	166.	0.746	1.51	0	1	3	12	25	Frequency	**8**
				0	2.4	7.3	29.3	61.0	Percent (%)	
High	168.	1.074	3.44	6	16	11	6	2	Frequency	**9**
				14.6	39.0	26.8	14.6	4.9	Percent (%)	
Low	156.	0.999	2.05	0	3	12	10	16	Frequency	**10**
				0	7.3	29.3	24.4	39.0	Percent (%)	
High	127.	0.812	3.88	9	20	10	2	0	Frequency	**11**
				22.0	48.8	24.4	4.9	0	Percent (%)	
Low	.0957	0.612	1.93	15	48	58	73	227	Frequency	**Result of Section IV**
				1.36	4.36	5.27	6.64	20.6	Percent (%)	

Table A-6: Distribution of the answer and results of electrical safety .level in terms evaluation of electrical safety program

								Scale	**Items of Section IV**
High	0.163	1.044	3.9	15	12	9	5	0	Frequency	**1**
				36.6	29.3	22.0	12.2	0	Percent (%)	
Middle	0.17	1.07	3.3	5	15	10	6	2	Frequency	**2**

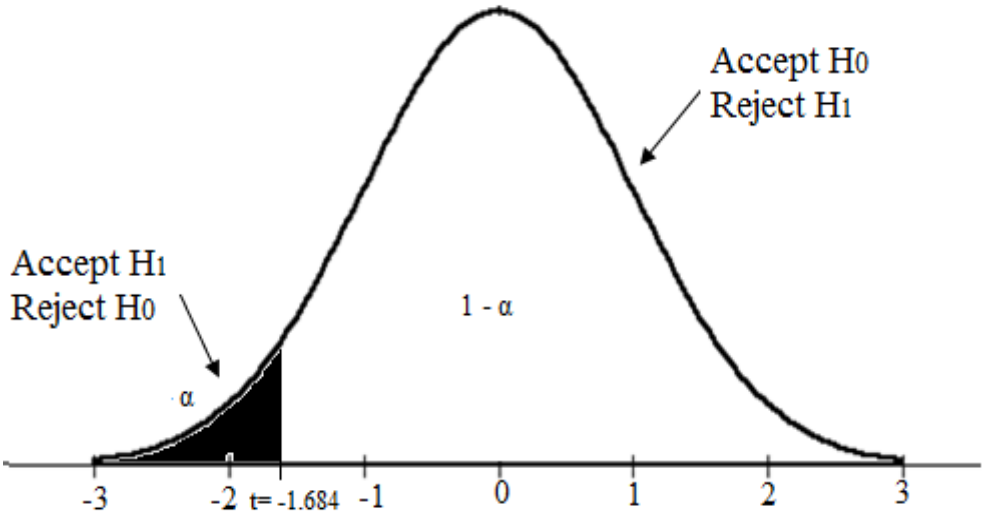
	5	9	9	12.2	36.6	24.4	14.6	4.9	Percent (%)	
Middle	0.196	1.255	3.22	7	11	12	6	5	Frequency	**3**
				17.1	26.8	29.3	14.6	12.2	Percent (%)	
High	0.162	1.037	3.98	15	15	7	3	1	Frequency	**4**
				36.6	36.6	17.1	7.3	2.4	Percent (%)	
High	0.156	0.984	3.58	7	16	10	7	0	Frequency	**5**
				17.1	39.0	24.4	17.1	0	Percent (%)	
Middle	0.154	0.971	3.08	3	11	12	14	0	Frequency	**6**
				7.3	26.8	29.3	34.1	0	Percent (%)	
Low	0.156	0.999	1.95	1	1	10	12	17	Frequency	**7**
				2.4	2.4	24.4	29.3	41.5	Percent (%)	
High	0.135	0.867	3.44	4	16	15	6	0	Frequency	**8**
				9.8	39.0	36.6	14.6	0	Percent (%)	
High	0.136	0.869	3.54	6	14	17	4	0	Frequency	**9**
				14.6	34.1	41.5	9.8	0	Percent (%)	
Middle	.0957	0.6128	3.33	63	111	102	63	25	Frequency	**Result of Section IIV**
				7.0	12.3	11.3	7.0	2.78	Percent (%)	

APPENDIX B: Table showing probabilities (areas) under the probability density function of the t distribution for different (degrees of freedom (df.

0.25	**0.1**	**0.05**	**0.025**	**0.01**	**0.005**	**0.0025**	**0.001**	**one-tail *p***
0.5	**0.2**	**0.1**	**0.05**	**0.02**	**0.01**	**0.005**	**0.002**	**two-tail *p***
1.000	3.078	6.314	12.71	31.82	63.66	127.3	318.3	**df = 1**
0.816	1.886	2.920	4.303	6.965	9.925	14.09	22.33	**2**

0.765	1.638	2.353	3.182	4.541	5.841	7.453	10.21	**3**
0.741	1.533	2.132	2.776	3.747	4.604	5.598	7.173	**4**
0.703	1.383	1.833	2.262	2.821	3.250	3.690	4.297	**9**
0.681	1.306	1.688	2.028	2.434	2.719	2.990	3.333	**36**
0.681	1.305	1.687	2.026	2.431	2.715	2.985	3.326	**37**
0.681	1.304	1.686	2.024	2.429	2.712	2.980	3.319	**38**
0.681	1.304	1.685	2.023	2.426	2.708	2.976	3.313	**39**
0.681	1.303	**1.684**	2.021	2.423	2.704	2.971	3.307	**40**
0.681	1.303	1.683	2.020	2.421	2.701	2.967	3.301	**41**
0.680	1.302	1.682	2.018	2.418	2.698	2.963	3.296	**42**

.Table of Upper-Tail and Two-Tail *t* Critical Values



Normal distribution curve

APPENDIX C: Table of critical values for the F distribution (for use with ANOVA):

.Critical values of F for the 0.05 significance level

	1	2	3	4	5	6	7	8	9	10
1	161.45	199.50	215.71	224.58	230.16	233.99	236.77	238.88	240.54	241.88
2	18.51	19.00	19.16	19.25	19.30	19.33	19.35	19.37	19.39	19.40
3	10.13	9.55	9.28	9.12	9.01	8.94	8.89	8.85	8.81	8.79
4	7.71	6.94	6.59	6.39	6.26	6.16	6.09	6.04	6.00	5.96
5	6.61	5.79	5.41	5.19	5.05	4.95	4.88	4.82	4.77	4.74
6	5.99	5.14	4.76	4.53	4.39	4.28	4.21	4.15	4.10	4.06
7	5.59	4.74	4.35	4.12	3.97	3.87	3.79	3.73	3.68	3.64
8	5.32	4.46	4.07	3.84	3.69	3.58	3.50	3.44	3.39	3.35
9	5.12	4.26	3.86	3.63	3.48	3.37	3.29	3.23	3.18	3.14
10	4.97	4.10	3.71	3.48	3.33	3.22	3.14	3.07	3.02	2.98
11	4.84	3.98	3.59	3.36	3.20	3.10	3.01	2.95	2.90	2.85
12	4.75	3.89	3.49	3.26	3.11	3.00	2.91	2.85	2.80	2.75
13	4.67	3.81	3.41	3.18	3.03	2.92	2.83	2.77	2.71	2.67
14	4.60	3.74	3.34	3.11	2.96	2.85	2.76	2.70	2.65	2.60
15	4.54	3.68	3.29	3.06	2.90	2.79	2.71	2.64	2.59	2.54
16	4.49	3.63	3.24	3.01	2.85	2.74	2.66	2.59	2.54	2.49
17	4.45	3.59	3.20	2.97	2.81	2.70	2.61	2.55	2.49	2.45
18	4.41	3.56	3.16	2.93	2.77	2.66	2.58	2.51	2.46	2.41
19	4.38	3.52	3.13	2.90	2.74	2.63	2.54	2.48	2.42	2.38
20	4.35	3.49	3.10	2.87	2.71	2.60	2.51	2.45	2.39	2.35
36	4.11	3.26	2.87	2.63	2.48	2.36	2.28	2.21	2.15	2.11
37	4.11	3.25	2.86	2.63	2.47	2.36	2.27	2.20	2.15	2.10
38	4.10	3.25	2.85	2.62	2.46	2.35	2.26	2.19	2.14	2.09
39	4.09	3.24	2.85	2.61	2.46	2.34	2.26	2.19	2.13	2.08
40	4.09	3.23	2.84	2.61	2.45	2.34	2.25	2.18	2.12	2.08