



Environmental and Natural Resources Handbook

Purpose

To foster cooperation and teamwork and provide a natural resource education experience for participants. Five member teams are tested on their basic knowledge in soils, aquatics, wildlife, forestry, plus a current topic, which changes each year. Additionally, the purpose of the event is to promote natural resource education in a manner that succeeding generations will be more environmentally literate, with the skills and knowledge to make informed decisions regarding the environment.

Objectives

Participant will demonstrate their knowledge of:

- The effect individual actions have on environmental problems.
- The interactions and interdependencies of our environment.
- Current environmental issues.
- The agencies available to assist in resource protection matters.
- The need to become environmentally aware and action orientated adults.

Event Rules

1. A chapter team consists of four members. All four members will be scored individually and the top three scores will count towards the total team score. The total team score is comprised of the three top members' exam and practicum scores.
2. Under no circumstance will any participant be allowed to handle any of the items in the identification portion of the practicum. Any infraction of this rule will be sufficient to eliminate the entire team from the event.
3. Participants will be assigned to a group leader to escort them to various event-staging sites. Each participant is to stay with his or her assigned group leader throughout the event or until told to change by the event superintendent.
4. Participants must come to the event prepared to work in adverse weather conditions. The event will be conducted regardless of the weather. Participants should have rainwear, warm clothes and appropriate footwear.
5. All written material will be furnished for the event. No written materials such as tests, problems and worksheets shall be removed from the site.

Event Format

1. Objective Written Exam General Knowledge Examination (100 pts.)
 - Fifty objective-type multiple-choice questions will be written that cover the areas the in the event objectives. This phase of the event will test participants' knowledge and understanding of basic biological and scientific principles of environmental science and natural resource management. Each participant will be allowed 45 minutes to complete this phase of the event. Each answer has a value of two points.
2. Identification of Material Identification of Plant Materials (90 pts.)
 - Thirty specimens from the Identification List (included with the scorecard) will be displayed for participants to identify. Each specimen will be designated by a number. Three points will be awarded for each specimen that is correctly identified. Each participant will be allowed 45 minutes to complete this phase of the event.
3. Individual Practicums (300 points)
 - Each participant will be allowed 30 minutes to complete each of the three selected practicums.

EQUIPMENT

Materials student must provide - Each participant must have a clean, free of notes clipboard, two sharpened No. 2 pencils, and an electronic calculator. Calculators used in this event should be battery operated, non-programmable, and silent with large keys and large displays. Calculators should have only these functions- addition, subtraction, multiplication, division, equals, percent, square root, +/- key, and one memory register. No other calculators are allowed to be used during the event.

Equipment provided - All other tools and equipment will be furnished for the event. Participants must use the tools and equipment furnished at the event.

PRACTICUMS

Rotational Practicums - Students will participate in three of the four of the following practicums each year. Practicums may vary from year to year. Water Practicums will be used on even years and Soil Practicums on odd years. GPS Locations and Site Analysis will be used every year.

a. Water Analysis - (100 points)

1. Using measuring devices provided at the event, each participant will measure a sample of water for quality analysis. Four of the following categories will be tested each year: dissolved oxygen, nitrates, nitrites, pH, temperature, phosphates, water hardness, chlorine and ammonia.
2. Analyze the results of measurements and determine if it is suitable for a specific use.
3. Answer questions using the data collected about water quality and limiting factors.

b. Soil Nutrient Test - (100 points)

1. Students will be furnished with a scorecard, an interpretation guide and a pre-dug soil pit or core/monolith to judge. The participants will identify soil horizons, textures, percentage coarse fragments, pH, horizon colors, slope, geologic origin, soil permeability, irrigation suitability and soil structure types of the soil present in the given example.
2. Using the information from the scorecard and interpretation guide, the student will then identify the most appropriate use for the given area and the erosion control practice that best fits the designated use for the land.

c. GPS Locations - (100 points)

1. Students will be furnished with a Global Positioning System (GPS) unit and a map with points identified in longitude and latitude.
2. Using the GPS unit, participant will be required to walk and locate certain points.
3. Participants will then record a predetermined identification mark located at each point.
4. Participants shall know how to read longitude and latitude numbers, how to use a GPS unit and understand differential corrections.

d. Environmental Analysis - (100 points) - Students will address the following five aspects:

1. Living Organisms - students will identify and list as many living organisms (both native and invader) as they can find within the marked boundaries of the site. Additional species may be artificially introduced as mounted or preserved specimens.
2. Non-living components (shelter, nutrients) – students will inventory resources such as water, shelter, etc. upon which resident species depend for survival.
3. Food Web - students will define relationships among the plants and animal species that are found or introduced in the study area.
4. Ecological Succession - students will identify the stages of succession of various grasses, shrubs and trees. They will also identify causes of changes in succession patterns.
5. Situation Analysis - students will determine whether a healthy balance exists between the environment and the native species that depend upon it. They will also check remediation practices where needed.

TIEBREAKER

1. Team with the highest individual score
2. Individual on the highest team,
3. Total practicum scores
4. Identification practicum

References

This list of references is not intended to be all-inclusive.

Other sources may be utilized, and teachers are encouraged to make use of the very best instructional materials available. The following list contains references that may prove helpful during event preparation.

- For past materials and preparation documents log onto *FFA.org*
- *Managing Our Natural Resources*. Camp and Daughtery. Delmar Publishers, Inc. 2009. Albany NY.
- *Land Judging in Oklahoma*. J.H. Stiegler, 4-H Member's Guide, Oklahoma Cooperative Extension Service, Division of Agricultural Sciences and Natural Resources, Oklahoma State University. 4H.HPS.101
- *Environmental Science: Fundamentals and Applications*. Cengage learning. 2007
- *Applied Environmental Science*: <https://www.FFA.org/thecouncil/resources>

Identification List

Equipment			<u>Wildlife</u>	<u>Reptiles/Amphibians</u>	
		136	Bighorn sheep	186	Bullfrog
	<u>Water Quality</u>	137	Badger	187	Collared Lizard
100	Refractometer	138	Beaver	188	Fence Lizard
101	Secchi Disk	139	Bison	189	Garter Snake
102	Thermometer	140	Black bear	190	Rubber Boa Snake
103	Turbidity Tube (for stream turbidity)	141	Bobcat	191	Rattle Snake
104	Water Bottle Samplers	142	Chipmunk		
105	Water Meter for physical/chemical parameters (pH, conductivity, and/or DO)	143	Cottontail		
		144	Coyote		<u>Birds</u>
	<u>Aquatic</u>	145	Columbia Ground Squirrel	192	Bald Eagle
106	Aquatic Net	146	Elk	193	Blue Jay
107	Bottom Dredges	147	Gray Squirrel	194	Blue Grouse
108	Fish Measuring Board	148	Gray Wolf	195	Canada Goose
109	Plankton Net	149	Grizzly Bear	196	Cooper's Hawk
110	Seines	150	Jackrabbit	197	Crow
111	Sieves	151	Mole	198	Great Horned Owl
112	Stream Bottom Sampler	152	Moose	199	Great Blue Heron
		153	Mountain Goat	200	Golden Eagle
	<u>Wildlife</u>	154	Mountain Lion	201	Kestrel
113	Animal Tags/Bands	155	Mule Deer	202	Magpie
114	Mammal Traps	156	Muskrat	203	Mallard Duck
115	Snake/Reptile Stick	157	Opossum	204	Mourning Dove
116	Radio Telemetry Unit	158	Pine Martin	205	Mountain Bluebird
		159	Porcupine	206	Osprey
	<u>Geographical</u>	160	Pronghorn	207	Pintail Duck
117	GPS unit	161	Raccoon	208	Purple Martin
		162	Red fox	209	Quail
	<u>Weather</u>	163	River otter	210	Raven
118	Barometer	164	Skunk	211	Red Tailed Hawk
119	Rain Gauge	165	Weasel	212	Ruffed Grouse
120	Sling Psychomotor	166	Whitetail Deer	213	Sage Grouse
121	Wind Speed Meter	167	Yellow Bellied Marmot	214	Sharp-Tail Grouse
				215	Turkey
	<u>Forestry</u>			216	White Pelican
122	Biltmore Stick			217	Wood Duck
123	Diameter Tape		<u>Fish & Other Aquatic Animals</u>		
124	Prism	168	Bream/Bluegill	<u>Invasive/Non-Native Species</u>	
125	Tree Increment Borer	169	Brook Trout	<u>Plants</u>	
		170	Bull Trout	218	Eurasian Milfoil
Native Species		171	Bullhead Catfish	219	Leafy Spurge
		172	Channel Catfish	220	Purple Loosestrife
	<u>Plants</u>	173	Chinook Salmon	221	Rush Skeleton Weed
126	Big Sagebrush	174	Crappie	222	Spotted Knapweed
127	Arrowleaf Balsamroot	175	Crayfish	223	Yellow Star-thistle
128	Bluebunch Wheatgrass	176	Cutthroat Trout		
129	Coyote Willow	177	Grayling		<u>Animals</u>
130	Nebraska Sedge	178	Kokanee Salmon	224	Asiatic Clams
131	Smooth Brome	179	Largemouth Bass	225	Brown Trout
132	Downy Brome (aka cheatgrass)	180	Mountain White Fish	226	Carp
133	Rabbitbrush (rubber or green rabbit rush)	181	Rainbow Trout	227	Chukar
134	Antelope Bitterbrush	182	Smallmouth Bass	228	English Sparrow
135	Baltic Rush	183	Sturgeon	229	European Starling
		184	Walleye	230	Eurasian Collared Dove
		185	Yellow Perch	231	Ring Neck Pheasant
				232	Zebra Mussel

**ENVIRONMENTAL AND NATURAL RESOURCES
CAREER DEVELOPMENT EVENT SCORECARDS**

ENVIRONMENTAL AND NATURAL RESOURCES IDENTIFICATION SCORECARD

PARTICIPANT NUMBER _____

Directions: Identify plant specimens by matching the correct plant number from list provided to the sample spaces below.

1.	16.
2.	17.
3.	18.
4.	19.
5.	20.
6.	21.
7.	22.
8.	23.
9.	24.
10.	25.
11.	26.
12.	27.
13.	28.
14.	29.
15.	30.

SCORING DIRECTIONS:

Each identification is worth 3 points. Deduct the total incorrect from 90 points possible and record the final score at the bottom of the card.

SCORE: _____

Environmental & Natural Resources CDE

Participant Name: _____ Chapter: _____

Participant Number: _____ Team Number: _____

Water Quality Score Card

Your job today is analyzing the given water sample. You will need to determine the concentration of oxygen, turbidity, pH, and determine the temperature. Using this information indicate if the water quality is suitable for _____ (this will be provided on day of analysis). Indicate the potentially limiting factor(s) and explain ways the water quality can be improved. (Each year, four of the categories listed in the National handbook will be tested).

Category	Answer	Possible Points	Score
pH		10	
Dissolved Oxygen		10	
Turbidity		10	
Temperature		10	
Effect on Specific Setting		20	
Limiting Factors		20	
How can Water Quality be Improved?		20	
Total Score		100	

These guidelines will be followed in 2021. Some small details may change to facilitate implementation of the CDE. Contact Dr. Karen Launchbaugh (range@uidaho.edu) with questions.

Soil Practicum Scorecard

100 points

NAME

MEMBER NUMBER

CHAPTER

STAT

PART 1 (80 POINTS)	
Soil Factors	Soil Factors – Part 1
(Check Appropriate Box)	
Points	Points
<p>Location in Landscape</p> <ul style="list-style-type: none"> <input type="checkbox"/> Mountain/Hill <input type="checkbox"/> Alluvial fan <input type="checkbox"/> Terrace <input type="checkbox"/> Flood Plain/Basin <input type="checkbox"/> Flat/Low Rolling Plain <input type="checkbox"/> Playa <input type="checkbox"/> Dunes <p>% Bare Ground on soil surface</p> <ul style="list-style-type: none"> <input type="checkbox"/> Little (0-25%) <input type="checkbox"/> Significant (26-50%) <input type="checkbox"/> Abundant (51-75%) <input type="checkbox"/> Dominant (76-100%) <p>Slope</p> <ul style="list-style-type: none"> <input type="checkbox"/> Nearly Level 0-1% <input type="checkbox"/> Gently Sloping..... 1-3% <input type="checkbox"/> Moderate Sloping 3-5% <input type="checkbox"/> Strongly Sloping 5-8% <input type="checkbox"/> Steep..... 8-15% <input type="checkbox"/> Very Steep.....> 15% <p>Depth of Topsoil (O+A Horizon)</p> <ul style="list-style-type: none"> <input type="checkbox"/> Very Shallow (<3 inches) <input type="checkbox"/> Shallow (3 to 6 inches) <input type="checkbox"/> Moderately Deep (6 to 9 inches) <input type="checkbox"/> Deep (> 9 inches) <p>Depth of Soil to restricting layer</p> <ul style="list-style-type: none"> <input type="checkbox"/> Very Shallow (<10 inches) <input type="checkbox"/> Shallow (10 to 20 inches) <input type="checkbox"/> Deep (>20 inches) 	<p>Texture of Topsoil</p> <ul style="list-style-type: none"> <input type="checkbox"/> Sand <input type="checkbox"/> Loamy Sand <input type="checkbox"/> Sandy Loam <input type="checkbox"/> Loam <input type="checkbox"/> Silt Loam <input type="checkbox"/> Clay Loam <input type="checkbox"/> Sandy Clay Loam <input type="checkbox"/> Silty Clay Loam <input type="checkbox"/> Sandy Clay <input type="checkbox"/> Clay and Silty Clay <p>Percent Course Rock Fragment</p> <ul style="list-style-type: none"> <input type="checkbox"/> None to Slight (0-15%) <input type="checkbox"/> Moderate (16-35%) <input type="checkbox"/> Considerable (36-60%) <input type="checkbox"/> Extreme (>60%) <p>Permeability</p> <p>apid</p> <p>oderate</p> <p>low</p> <p>ery Slow</p>

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Soil Profile Scorecard

PART 2 (20 POINTS)

Recommended Conservation Treatment – Part 2 (Check Appropriate Box)

Points	
	<p>Vegetative</p> <ul style="list-style-type: none"><input type="checkbox"/> 1. Row crop/occasional soil conserving crop<input type="checkbox"/> 2. Row crop/frequent soil conserving crop<input type="checkbox"/> 3. Row crops not more than 2 out of 4 years<input type="checkbox"/> 4. Row crops not more than 1 out of 5 years<input type="checkbox"/> 5. Return crop residue to the soil<input type="checkbox"/> 6. Practice conservation tillage<input type="checkbox"/> 7. Establish recommended grass or grasses and legumes<input type="checkbox"/> 8. Proper pasture and range management<input type="checkbox"/> 9. Protect from burning<input type="checkbox"/> 10. Control grazing<input type="checkbox"/> 11. Plant recommended trees<input type="checkbox"/> 12. Harvest trees selectively<input type="checkbox"/> 13. Use only for wildlife or recreation area <p>Mechanical</p> <ul style="list-style-type: none"><input type="checkbox"/> 14. Control brush or trees<input type="checkbox"/> 15. Terrace and farm on contour<input type="checkbox"/> 16. Maintain terraces<input type="checkbox"/> 17. Construction diversion terraces<input type="checkbox"/> 18. Install drainage system<input type="checkbox"/> 19. Control gullies<input type="checkbox"/> 20. No mechanical treatment needed

Environmental and Natural Resources CDE

Participant Name: _____ Chapter _____

ENVIRONMENTAL ANALYSIS SCORECARD

Your assignment is to analyze the given ecosystem with the following four aspects in mind:

QUESTION	POSSIBLE POINTS	SCORE
Identify and list as many organisms (both native and invader) that can be found within the marked boundaries of this site.	20	
Identify and list all non-living components found with the marked site.	20	
Describe the food web presented in this marked ecosystem.	20	
Identify the stages of succession of various grasses, shrubs and trees.	20	
Determine whether a healthy balance exists and recommend remediation where needed.	20	
Total Score:	100	

GPS LOCATION SCORECARD

List your numbers for each location point following the latitude and longitude given.

Note: Variance for differential corrections are noted on condition sheet.

LOCATION POINT	POINT NUMBER	POSSIBLE POINT	SCORE
1		20	
2		20	
3		20	
4		20	
5		20	
		<i>Total Points: 100</i>	

Identification A																											
	1	2	3	4	5	6	7	8	9	0	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	
Number of Specimen	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9
05	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	
Number of Specimen	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	
	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	
	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	
	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9
05	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	

Identification B																											
	1	2	3	4	5	6	7	8	9	0	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	
Number of Specimen	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	
	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	
	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	
	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	
	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9
05	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	
Number of Specimen	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	
	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	
	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	
	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	
	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9
05	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	



HORTICULTURE

CDE# 105482

Incorrect Marks Correct Mark

✓ X ● ●

Team Name _____

This sheet is for demonstration and practice only. You must use a real scan sheet for actual competition.

Team Number	State	Last Name	First Name
0 0 0 0			
1 1 1 1	A	A A A A A A A A A A	A A A A A A A
2 2 2 2	B	B B B B B B B B B B	B B B B B B B
3 3 3 3	C	C C C C C C C C C C	C C C C C C C
4 4 4 4	D	D D D D D D D D D D	D D D D D D D
5 5 5 5	E	E E E E E E E E E E	E E E E E E E
6 6 6 6	F	F F F F F F F F F F	F F F F F F F
7 7 7 7	G	G G G G G G G G G G	G G G G G G G
8 8 8 8	H	H H H H H H H H H H	H H H H H H H
9 9 9 9	I	I I I I I I I I I I	I I I I I I I
	J	J J J J J J J J J J	J J J J J J J
	K	K K K K K K K K K K	K K K K K K K
	L	L L L L L L L L L L	L L L L L L L
	M	M M M M M M M M M M	M M M M M M M
	N	N N N N N N N N N N	N N N N N N N
	O	O O O O O O O O O O	O O O O O O O
	P	P P P P P P P P P P	P P P P P P P
	Q	Q Q Q Q Q Q Q Q Q Q	Q Q Q Q Q Q Q
	R	R R R R R R R R R R	R R R R R R R
	S	S S S S S S S S S S	S S S S S S S
	T	T T T T T T T T T T	T T T T T T T
	U	U U U U U U U U U U	U U U U U U U
	V	V V V V V V V V V V	V V V V V V V
	W	W W W W W W W W W W	W W W W W W W
	X	X X X X X X X X X X	X X X X X X X
	Y	Y Y Y Y Y Y Y Y Y Y	Y Y Y Y Y Y Y
	Z	Z Z Z Z Z Z Z Z Z Z	Z Z Z Z Z Z Z

Place	Pacing Classes									Place	
	Class										
	1	2	3	4	5	6	7	8	9		
1	1234									1234	1
2	1243									1243	2
3	1324									1324	3
4	1342									1342	4
5	1423									1423	5
6	1432									1432	6
7	2134									2134	7
8	2143									2143	8
9	2314									2314	9
10	2341									2341	10
11	2413									2413	11
12	2431									2431	12
13	3124									3124	13
14	3142									3142	14
15	3214									3214	15
16	3241									3241	16
17	3412									3412	17
18	3421									3421	18
19	4123									4123	19
20	4132									4132	20
21	4213									4213	21
22	4231									4231	22
23	4312									4312	23
24	4321									4321	24

Code
3 0
1 1
2 2
3 3
4 4
5 5
6 6
7 7
8 8
9 9

Team Activity		Practicums (Judges)					
Team	Ind.	1	2	3	4	5	6
3 0 0 0	3 0 0 0						
1 1 1 1	1 1 1 1						
2 2 2 2	2 2 2 2						
3 3 3 3	3 3 3 3						
4 4 4 4	4 4 4 4						
5 5 5 5	5 5 5 5						
6 6 6 6	6 6 6 6						
7 7 7 7	7 7 7 7						
8 8 8 8	8 8 8 8						
9 9 9 9	9 9 9 9						

PRACTICUM 1

PRACTICUM 2

PRACTICUM 3

Exam		Exam 2/Team	
Place	Score	Place	Score
1	A B C D 26	1	A B C D
2	A B C D 27	2	A B C D
3	A B C D 28	3	A B C D
4	A B C D 29	4	A B C D
5	A B C D 30	5	A B C D
6	A B C D 31	6	A B C D
7		7	A B C D
8		8	A B C D
9		9	A B C D
10		10	A B C D
11	A B C D 36	11	A B C D
12	A B C D 37	12	A B C D
13	A B C D 38	13	A B C D
14	A B C D 39	14	A B C D
15	A B C D 40	15	A B C D
16	A B C D 41	16	A B C D
17	A B C D 42	17	A B C D
18	A B C D 43	18	A B C D
19	A B C D 44	19	A B C D
20	A B C D 45	20	A B C D
21	A B C D 46	21	A B C D
22	A B C D 47	22	A B C D
23	A B C D 48	23	A B C D
24	A B C D 49	24	A B C D
25	A B C D 50	25	A B C D

EXAM 50

Assessment and Solution									
1	2	3	4	5	6	7	8	9	10
A B C D	A B C D	A B C D	A B C D	A B C D	A B C D	A B C D	A B C D	A B C D	A B C D
A B C D	A B C D	A B C D	A B C D	A B C D	A B C D	A B C D	A B C D	A B C D	A B C D
A B C D	A B C D	A B C D	A B C D	A B C D	A B C D	A B C D	A B C D	A B C D	A B C D
A B C D	A B C D	A B C D	A B C D	A B C D	A B C D	A B C D	A B C D	A B C D	A B C D
A B C D	A B C D	A B C D	A B C D	A B C D	A B C D	A B C D	A B C D	A B C D	A B C D

Identification A																											
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ID
50