Entomology

Maximum Number of Team Members	4
Number of Team Members Scored	3
Scantron	Horticulture – CDE# 105482
Committee: Lisa Moreland Thelma Stickler John Workman	

The contests will consist of identifying correctly from specimens, **twenty-five (25) to thirty (30)** common economic insects or insect relatives which will be selected from the following list. Specimens will be numbered and contestants will identify the common name, host, scientific order and ONE control measure for each insect. Students will select the appropriate corresponding number for each insect, host, scientific order and control measure from the lists provided and enter those appropriate numbers on the scantron sheet provided.

THE SCORE WILL BE DETERMINED AS FOLLOWS:

1. Each correctly identified **insect** or **insect relative** will count **2 points**.
2. Each correctly identified **order** will count **2 point**.
3. Each correctly identified **host** will count **2 point**
4. Correctly identifying one of the **control measures** for each will count **2 points**

Tie Breaker: Tie breakers will consist of the following:

- Judges will compare answers starting with specimen 1 and proceed through the contest until a contestant/team gains an advantage

Bulletins illustrating and describing economic insects or their relatives are occasionally issued by the Agricultural Experiment Stations of various states-- usually the supply of these bulletins is so quickly exhausted that their listing here is not worthwhile.

List of Insects

Host:	***Insect:***	***Order:***	• ***Control:***
Alfalfa	Alfalfa Weevil	Coleoptera	• Parasitoids and/or pathogens • Early harvest • Pyrethroids
	Leafhopper	Homoptera	• Resistant plant varieties • Early harvest

Host:	*Insect:*	*Order:*	• *Control:*
			• Pyrethroids
Apple	Apple Maggot	Diptera	• Sticky balls • Kaolin clay (Surround) • Carbaryl (Sevin)
	Codling Moth	Lepidoptera	• Pheromone traps • CM granulovirus (Cyd-X) • Spinetoram (Delegate) • Acetamiprid (Assail)
	San Jose Scale	Homoptera	• Prune and destroy infested plant parts • Dormant horticultural oil • Pyriproxyfen (Esteem) • Pyrethroids
Bean	Mexican Bean Beetle	Coleoptera	• Plant early and/or fall plantings • Acephate (Orthene) • Pyrethroids
	Spider Mites	Acari	• Predators • Dormant horticultural oil • Abamectin • Bifenthrin
Beneficial Insects	Dragon Fly and Damsel Fly	Odanata	• Insect predator
	Syrphid Fly	Diptera	• Insect predator
	Honey Bee	Hymenoptera	• Plant pollination • Useful product
	Bumble Bee	Hymenoptera	• Plant pollination
	Lady Bug	Coleoptera	• Insect predator
	Lace Wing	Neuroptera	• Insect predator
	Praying Mantis	Mantodea	• Insect predator
Corn	Corn Earworm	Lepidoptera	• Resistant plant varieties • Plant early • Bt (*Bacillus thuringiensis*) • Carbaryl (Sevin) • Pyrethroids
	Flea Beetles	Coleoptera	• Carbaryl (Sevin) • Pyrethroids
	European Corn Borer	Lepidoptera	• Resistant plant varieties • Plant early • Bt (*Bacillus thuringiensis*) • Carbaryl (Sevin) • Pyrethroids
	Corn Seed Maggot	Diptera	• Insecticidal seed treatment or soil insecticide at planting

Host:	***Insect:***	***Order:***	• ***Control:***
	Wireworm	Coleoptera	• Crop rotation • Soil insecticide at planting
	Armyworm	Lepidoptera	• Bt (*Bacillus thuringiensis*) • Carbaryl (Sevin) • Pyrethroids
	Corn Leaf Aphid	Homoptera	• Predators and/or parasitoids • Pyrethroids
	Corn Rootworm	Coleoptera	• Crop rotation • Pyrethroids
Crucifers	Cabbage Maggot	Diptera	• Row covers • Insecticidal seed treatment or soil insecticide at planting
	Cabbage Looper	Lepidoptera	• Parasitoids • Bt (*Bacillus thuringiensis*) • Pyrethroids
Cucurbits	Striped Cucumber Beetle	Coleoptera	• Kaolin clay (Surround) • Imidacloprid
	Squash Vine Borer	Lepidoptera	• Kaolin clay (Surround) • Pyrethroids
	Squash Bug	Hemiptera	• Hand removal and destruction • Removal of plant debris after harvest • Imidacloprid
	Cutworm	Lepidoptera	• Collars placed around plants • Carbaryl (Sevin) • Pyrethroids
Domestic Animals	Face Fly	Diptera	• Insecticide impregnated ear tags • Self-treatment dust bags and oilers • Feed additive insecticides • Animal sprays
	Horse and Deer Fly	Diptera	• CO2 baited traps • Animal sprays
	Stable Fly	Diptera	• Sanitization around stable or corral • Residual surface sprays
	Horn Fly	Diptera	• Walk-through trap • Insecticide impregnated ear tags • Self-treatment dust bags and oilers • Feed additive insecticides • Pour-on insecticides • Animal sprays
	Cattle Grub (Dairy)	Diptera	• Pour-on insecticides for non-lactating cattle

Host:	***Insect:***	***Order:***	• ***Control:***
			• Injectible insecticides for non-lactating cattle
	Cattle Grub (Beef)	Diptera	• Pour-on insecticides • Injectible insecticides
	Sheep Ked	Diotera	• Spring sheering • Pour-on insecticides • Animal sprays and dusts
	Chewing Lice (Dairy)	Phthiraptera (suborder Mallophaga)	• Check and treat new animals before adding to herd • Self treatment dust bags and oilers • Pour-on insecticides • Animal sprays and dusts
	Chewing Lice (Beef)	Phthiraptera (suborder Mallophaga)	• Check and treat new animals before adding to herd • Self treatment dust bags and oilers • Pour-on insecticides • Animal sprays and dusts
	Sucking Lice	Phthiraptera (suborder Anoplura)	• Check and treat new animals before adding to herd • Self treatment dust bags and oilers • Pour-on insecticides • Animal sprays and dusts
	Bot Fly	Diptera	• Bath with warm H20 • Feed additive insecticides
	Tick	Acari	• Check and remove by hand • Animal sprays
	Flea	Siphonaptera	• Insecticide treated collars • Animal sprays and dusts
	Northern Fowl Mite (Poultry)	Acari	• Animal sprays and dusts
Forest and Shade Tree	Tent Caterpillar	Lepidoptera	• Remove and destroy egg cases • Remove nests from branches • Bt (*Bacillus thuringiensis*) • Carbaryl (Sevin)
	Locust Borer	Coleoptera	• Promote tree vitality • Prune and destroy infested plant parts • Carbaryl (Sevin)
	Poplar leaf weevil	Coleoptera	• Imidacloprid • Carbaryl (Sevin) • Acephate (Orthene)

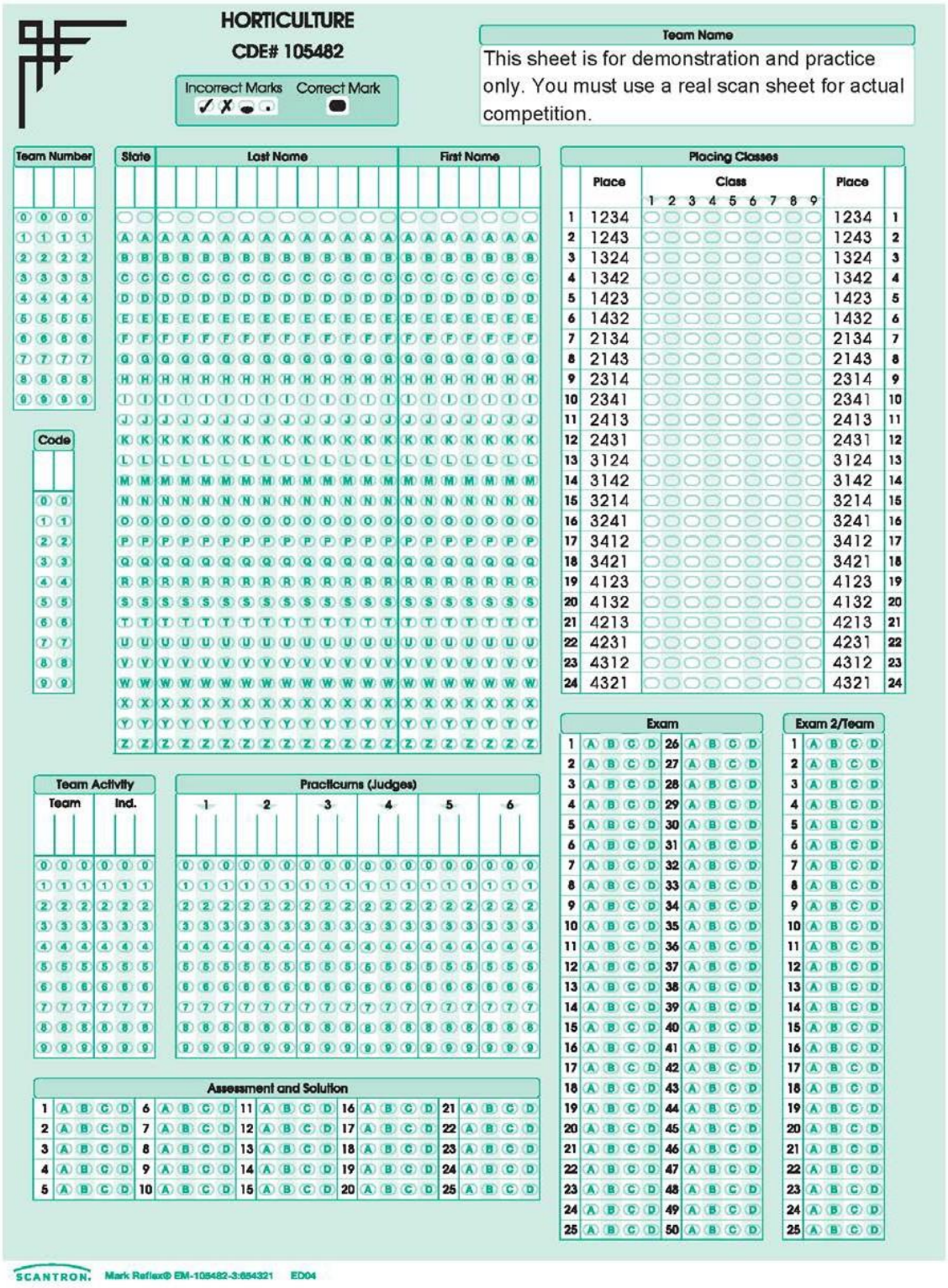
Host:	***Insect:***	***Order:***	• ***Control:***
	Gypsy Moth	Lepidoptera	• Remove and destroy egg cases • Pheromone traps • Bt (*Bacillus thuringiensis*) • Nucleopolyhedrosis virus (NPV) • Carbaryl (Sevin)
	Bark Beetles	Coleoptera	• Promote tree vitality • Prune and destroy infested plant parts
	Periodical Cicada	Homoptera	• Cover young trees with netting or other materials • Remove flagging damage and destroy clippings
	Elm Leaf Beetle	Coleoptera	• Imidacloprid • Carbaryl (Sevin)
Household	Indian Meal Moth	Lepidoptera	• Discard infested materials • Store dry foods in tightly sealed containers • Sanitation/Clean-up
	Clothes Moth	Lepidoptera	• Periodic dry cleaning or laundering • Lavandin oil • Naphthalene • Paradichlorobenzene
	Saw-toothed grain beetle	Coleoptera	• Discard infested materials • Store dry foods in tightly sealed containers • Sanitation/Clean-up
	Millipede	Julida	• Removal of plant refuse/debris • Seal cracks and other openings • Hand removal and destruction
	Silverfish	Thysanura	• Keep infested areas clean and dry • Boric acid • Pyrethroids
	Moth Drain Fly	Diptera	• Clean drain pipes and traps • Pyrethroids
	Termites	Isoptera	• Contact a reliable pest control operator
	Clover Mite	Acari	• Remove grass growing next to foundation of homes • Perimeter spray with miticide • Vacuum/wipe up with damp cloth
	Carpet Beetle	Coleoptera	• Sanitation/Clean-up • Periodic dry cleaning or laundering • Store dry foods, woolens, furs in tightly sealed containers • Pyrethroids

Host:	***Insect:***	***Order:***	• ***Control:***
	Carpenter Ant	Hymenoptera	• Eliminate high moisture conditions • Replace moisture-damaged wood • Baits • Pyrethroids
	Cockroach	Blattaria	• Sanitation/Clean-up • Boric Acid • Baits/Gels
	Sowbug	Isopoda	• Removal of plant refuse/debris • Seal cracks and other openings • Hand removal and destruction
	Carpenter Bee	Hymenoptera	• Paint exposed wood surfaces • Plug entrance holes • Carbaryl (Sevin) • Pyrethroids
	Powder Post Beetle	Coleoptera	• Use properly stored and dried wood • Paint, seal, or varnish exposed wood surfaces • Removal and destruction of infested items • Fumigation
	Boxelder Bug	Hemiptera	• Remove seed bearing boxelder • Seal cracks and other openings • Maintain tight fitting screens • Carbaryl (Sevin)
	Cluster Fly	Diptera	• Seal cracks and other openings • Maintain tight fitting screens • Fly swatter • Aerosol sprays
Insects of Annoyance and Public Health	Mosquito	Diptera	• Eliminate breeding sites • Limit exposure during dawn and dusk • Insect repellants
	Tick (Deer and American Dog)	Acari	• Insect repellants • Avoid walking through tall grass and weeds • Check and remove by hand
	Buffalo Gnat	Diptera	• Insect repellants
	Bed Bug	Hemiptera	• Sanitation/Clean-up

Host:	***Insect:***	***Order:***	• ***Control:***
			• Wash and dry clothes and bed linens at high temperature • Pyrethroids • Contact a reliable pest control operator
	Lice (Human)	Phthiraptera (suborder Anoplura)	• Use nit combs to remove lice and their eggs • Wash and dry clothes and bed linens at high temperature • Insecticidal shampoos and lotions
	House Fly	Diptera	• Sanitation/Clean-up • Fly swatter • Aerosol sprays
	Wasp, Hornet, Yellow Jacket	Hymenoptera	• Fly swatter • Aerosol sprays (treatment of nest)
	Spider	Araneae	• Seal cracks and other openings • Maintain tight fitting screens • Remove sheltering sites adjacent to the home • Aerosol sprays
Lawn	Chinch Bug	Hemiptera	• Keep thatch to a minimum • Predators • Carbaryl (Sevin) • Imidacloprid (Merit)
	White Grub	Coleoptera	• Establish tall fescue turf • Insect parasitic nematodes • Milky spore disease • Imidacloprid (Merit)
	Sod Webworm	Lepidoptera	• Establish tall fescue turf • Insect parasitic nematodes • Bt (*Bacillus thuringiensis*) • Carbaryl (Sevin)
Oats	Cereal Leaf Beetle	Coleoptera	• Predators and/or parasitoids • Carbaryl (Sevin) • Pyrethroids
Ornamental	Bagworm	Lepidoptera	• Remove and destroy bags • Bt (*Bacillus thuringiensis*) • Carbaryl (Sevin)
	Lace Bug	Hemiptera	• Promote tree vitality • Insecticidal soap • Horticultural oil • Carbaryl (Sevin)

Host:	***Insect:***	***Order:***	• ***Control:***
	Scale Insects	Homoptera	• Prune and destroy infested plant parts • Dormant horticultural oil • Imidacloprid
	Black Vine Weevil	Coleoptera	• Insect parasitic nematodes • Imidacloprid • Pyrethroids
	Thrips	Thysanoptera	• Predators • Spinosad • Imidacloprid • Pyrethroids
	Japanese Beetle	Coleoptera	• Milky spore disease • Carbaryl (Sevin) • Pyrethroids
	Spider Mites	Acari	• Predators • Dormant horticultural oil • Insecticidal soap • Abamectin
Peach	Plum Curculio	Coleoptera	• Thiamethoxam (Actara, Endigo) • Phosmet (Imidan)
	Peach Tree Borer	Lepidoptera	• Pheromone traps • Organophosphates • Pyrethroids
	Oriental Fruit Moth	Lepidoptera	• Pheromone traps • OFM sprayable pheromone • Spinetoram (Delegate) • Pyrethroids
Potato	Potato Leafhopper	Homoptera	• Promote plant vitality • Neonicotinoids • Pyrethroids
	Colorado Potato Beetle	Coleoptera	• Crop rotation • Spinosad (Entrust) • Neonicotinoids
	Potato Aphid	Homoptera	• Predators and/or parasitoids • Neonicotinoids
Tobacco	Tobacco Hornworm	Lepidoptera	• Hand removal and destruction • Predators and/or parasitoids • Bt (*Bacillus thuringiensis*) • Bifenthrin
	Tobacco Budworm	Lepidoptera	• Predators and/or parasitoids • Spinosad (Tracer) • Imidacloprid
Tomato	Tomato Hornworm	Lepidoptera	• Hand removal and destruction

Host:	***Insect:***	***Order:***	• ***Control:***
			• Predators and/or parasitoids • Bt (*Bacillus thuringiensis*) • Bifenthrin
	Tomato Fruitworm	Lepidoptera	• Parasitoids • Bt (*Bacillus thuringiensis*) • Spinosad (Entrust) • Bifenthrin
	Flea Beetle	Coleoptera	• Carbaryl (Sevin) • Pyrethroids



HORTICULTURE

CDE# 105482

Incorrect Marks ✓ ✗ Correct Mark ●

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

Placing Classes

	Place	Class 1 2 3 4 5 6 7 8 9	Place	
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

Team Activity

Team | Ind.

Practicums (Judges)

1 | 2 | 3 | 4 | 5 | 6

Exam

1	A B C D	26	A B C D	1	A B C D	26	A B C D	1	A B C D
2	A B C D	27	A B C D	2	A B C D	27	A B C D	2	A B C D
3	A B C D	28	A B C D	3	A B C D	28	A B C D	3	A B C D
4	A B C D	29	A B C D	4	A B C D	29	A B C D	4	A B C D
5	A B C D	30	A B C D	5	A B C D	30	A B C D	5	A B C D
6	A B C D	31	A B C D	6	A B C D	31	A B C D	6	A B C D
7	A B C D	32	A B C D	7	A B C D	32	A B C D	7	A B C D
8	A B C D	33	A B C D	8	A B C D	33	A B C D	8	A B C D
9	A B C D	34	A B C D	9	A B C D	34	A B C D	9	A B C D
10	A B C D	35	A B C D	10	A B C D	35	A B C D	10	A B C D
11	A B C D	36	A B C D	11	A B C D	36	A B C D	11	A B C D
12	A B C D	37	A B C D	12	A B C D	37	A B C D	12	A B C D
13	A B C D	38	A B C D	13	A B C D	38	A B C D	13	A B C D
14	A B C D	39	A B C D	14	A B C D	39	A B C D	14	A B C D
15	A B C D	40	A B C D	15	A B C D	40	A B C D	15	A B C D
16	A B C D	41	A B C D	16	A B C D	41	A B C D	16	A B C D
17	A B C D	42	A B C D	17	A B C D	42	A B C D	17	A B C D
18	A B C D	43	A B C D	18	A B C D	43	A B C D	18	A B C D
19	A B C D	44	A B C D	19	A B C D	44	A B C D	19	A B C D
20	A B C D	45	A B C D	20	A B C D	45	A B C D	20	A B C D
21	A B C D	46	A B C D	21	A B C D	46	A B C D	21	A B C D
22	A B C D	47	A B C D	22	A B C D	47	A B C D	22	A B C D
23	A B C D	48	A B C D	23	A B C D	48	A B C D	23	A B C D
24	A B C D	49	A B C D	24	A B C D	49	A B C D	24	A B C D
25	A B C D	50	A B C D	25	A B C D	50	A B C D	25	A B C D

Exam 2/Team

Assessment and Solution

1	A B C D	6	A B C D	11	A B C D	16	A B C D	21	A B C D
2	A B C D	7	A B C D	12	A B C D	17	A B C D	22	A B C D
3	A B C D	8	A B C D	13	A B C D	18	A B C D	23	A B C D
4	A B C D	9	A B C D	14	A B C D	19	A B C D	24	A B C D
5	A B C D	10	A B C D	15	A B C D	20	A B C D	25	A B C D

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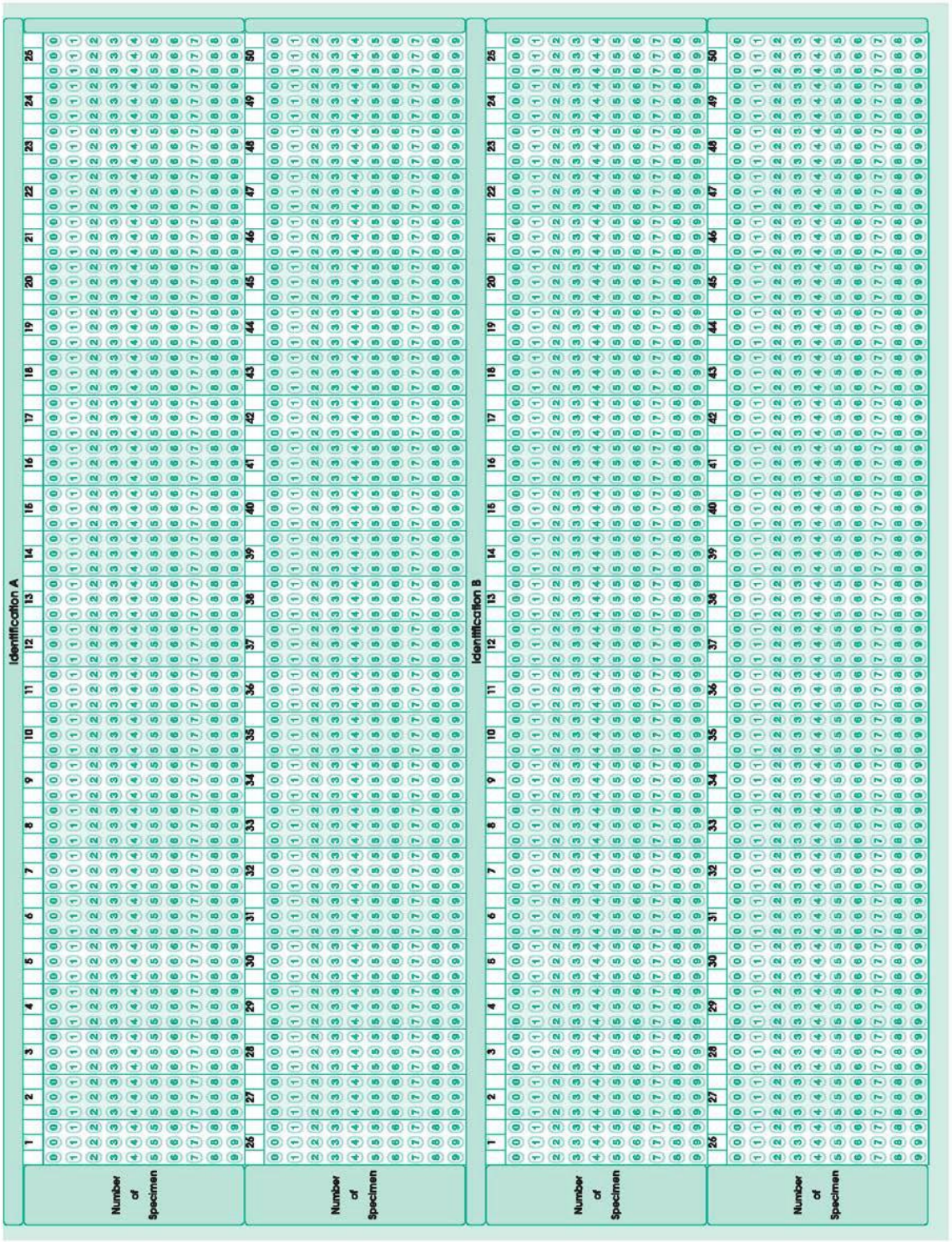
Identification A
Number of Specimen
Identification B
Number of Specimen