

# Sample Items

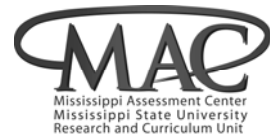
Revised September 2008

**Postsecondary**

**Agriculture Business & Mgmt.  
Technology**

**Test Code: 202**

Mississippi Department of Education  
Office of Student Assessment



## **MS-CPAS2 Sample Test Items**

The MS-CPAS2 sample test items for the Mississippi Vocational–Technical Curriculum Frameworks are now available to the public.

Sample test items are provided to help familiarize students with the MS-CPAS2. The sample test items in this publication are representative only and should not be interpreted as exact duplicates of the items on the MS-CPAS2. Although the results of the MS-CPAS2 sample test items can be used to determine students' strengths and weaknesses, they should not replace other forms of classroom assessment.

The answer keys are located at the back of each sample item document and can be used to identify the unit/course to which the sample item is aligned as well as the cognitive level (C1 or C2) of each item.

## **Notice of Non-Discrimination**

The Mississippi Department of Education, Office of Vocational Education and Workforce Development does not discriminate on the basis of race, color, religion, national origin, sex, age, or disability in the provision of educational programs and services or employment opportunities and benefits. The following office has been designated to handle inquiries and complaints regarding the non-discrimination policies of the Mississippi Department of Education.

Director, Office of Human Resources  
Mississippi Department of Education  
359 North West Street, Suite 359  
Jackson, Mississippi 39201  
(601) 359-3511

## 202 Agriculture Business and Management Sample

---

1

Mating registered animals of the same breed is called:

- A. natural selection.
- B. crossbreeding.
- C. grading up.
- D. purebreeding.

2

A breed of beef cattle that is red with a white face is the:

- A. Angus.
- B. Brahman.
- C. Hereford.
- D. Charolais.

3

Newborn calves and pigs get their first immunity from:

- A. vaccination.
- B. colostrum.
- C. the air.
- D. other animals.

4

The part of the female reproductive tract where the fetus attaches and grows is the:

- A. cervix.
- B. vagina.
- C. vulva.
- D. uterus.

5

Bacterial action in the stomachs of what animals breaks down the roughages in their diets?

- A. Rabbits
- B. Poultry
- C. Hogs
- D. Cattle

6

What is the leading dairy producing state in the country based on the number of dairy cows?

- A. Wisconsin
- B. Texas
- C. California
- D. Pennsylvania

## 202 Agriculture Business and Management Sample

7

Given a physiological fuel value of 1 gram of carbohydrate = 4 calories, 1 gram of fat = 9 calories, and 1 gram of protein = 4 calories, which of the following contains the most calories?

- A. 10 grams of fat and 5 grams of protein
- B. 10 grams of protein and 10 grams of carbohydrate
- C. 5 grams of fat and 10 grams of carbohydrate
- D. 15 grams of carbohydrate

8

Based on a value of 4 calories per gram for carbohydrates, 9 calories per gram for fats, and 4 calories per gram for proteins, which of the following grain samples contains the largest amount of energy?

	Carbohydrates	Fats	Proteins
Sample 1	3 grams	4 grams	3 grams
Sample 2	2 grams	2 grams	6 grams
Sample 3	5 grams	3 grams	2 grams
Sample 4	4 grams	3 grams	3 grams

- A. Sample 1
- B. Sample 2
- C. Sample 3
- D. Sample 4

9

If a hay sample has a crude protein of 15% and a dry matter of 90%, what is the crude protein percent on an as-fed basis?

- A. 0.5
- B. 13.5
- C. 15.0
- D. 20.0

10

Nematodes are a type of microscopic:

- A. fungus.
- B. insect.
- C. protozoon.
- D. roundworm.

11

The by-product of photosynthesis is:

- A. carbon dioxide.
- B. oxygen.
- C. phosphate.
- D. auxin.

## 202 Agriculture Business and Management Sample

---

12

In what stage of growth is a plant when it produces flowers?

- A. Reproductive
- B. Standard
- C. Dormant
- D. Dead

13

The basic unit of growth in a plant is the:

- A. cell.
- B. petal.
- C. stem.
- D. zone.

14

The transmission of characteristics from an organism to its offspring through genes in reproductive cells is known as:

- A. progeny.
- B. linkage.
- C. heredity.
- D. genetics.

15

A plant has a genetic makeup such that one gene determines if the plant will be tall (T) or short (t). The T gene is dominant over the t gene. In crossing a plant with a genotype of TT with another plant with a genotype of Tt, what percentage of the offspring will demonstrate the tall characteristic?

- A. 0
- B. 25
- C. 50
- D. 100

16

An advantage of completing an inventory in an agricultural business is that:

- A. blaming the employee responsible for running out of the item is easier.
- B. completing a physical inventory takes a great deal of time.
- C. it provides managers information needed to make good management decisions.
- D. it does not show losses due to errors, damage, or theft.

17

What has the greatest effect on the value of an inventory?

- A. Sales tax
- B. Current prices
- C. Depreciation
- D. Short-term loans

## 202 Agriculture Business and Management Sample

---

18

The management function responsible for arranging resources between departments is:

- A. planning.
- B. organizing.
- C. leading.
- D. controlling.

19

A cost of production that does not vary with the level of total production and includes such items as depreciation, taxes, insurance, and interest on investment is called:

- A. a liability.
- B. a variable cost.
- C. the total cost.
- D. a fixed cost.

20

A cash flow statement for the next year can provide information on:

- A. return of the farm operator's labor and management.
- B. projected borrowing requirements and repayment ability.
- C. net worth of the farm business.
- D. rate of return on the farm investment.

21

Bill knows that the corn yield on his farm peaks at about 150 bushels when 125 units of fertilizer are applied. He also knows he can produce 25 bushels of corn without fertilizer. With this information, Bill knows that:

- A. anything more than 125 units of fertilizer would be wasted.
- B. he should use less than 125 units of fertilizer so he can increase yields.
- C. he should not use any fertilizer so he can save money.
- D. if he uses less than 125 units of fertilizer, his yield will not substantially decrease.

22

The quality of agricultural products marketed in the United States is established by:

- A. government grade and standards.
- B. each individual producer.
- C. the price paid by the purchaser.
- D. consumer boards.

23

Documentation of the quantity of crops harvested in years past on a certain parcel of property is called a:

- A. delivery receipt.
- B. scale ticket.
- C. yield history.
- D. production schedule.

## 202 Agriculture Business and Management Sample

---

24

The difference between the weight of grain when it is harvested in the field and the weight after it is dried is called:

- A. swelling.
- B. shrinkage.
- C. burning.
- D. evaporation.

25

In constructing a marketing plan, the three types of costs considered as costs of living are:

- A. survival, comforts, and dreams.
- B. production, harvesting, and transportation.
- C. taxes, depreciation, and interest.
- D. opportunity, variation, and fixation.

26

Which of the following grades of soybeans is superior?

- A. #1 yellow
- B. #2 yellow
- C. #3 yellow
- D. #4 yellow

27

If the current basis is \$2.00 under the cash price, and the cash price for live cattle is \$74.00, what is the futures price?

- A. \$72.00
- B. \$74.00
- C. \$76.00
- D. \$0.74

28

Soils that are grayish in color throughout the soil profile are classified as:

- A. poorly drained.
- B. moderately well drained.
- C. well drained.
- D. excessively well drained.

29

The moisture-holding capacity of soil is sometimes improved by:

- A. adding organic matter.
- B. using tile drains.
- C. terracing the soil.
- D. adding sand to the soil.

## 202 Agriculture Business and Management Sample

---

30

Which pH is alkaline?

- A. 2
- B. 4
- C. 6
- D. 8

31

All of the following are soil particles that make up the soil texture EXCEPT:

- A. silt.
- B. clay.
- C. loam.
- D. sand.

32

Alluvial soils are carried and formed by:

- A. water.
- B. wind.
- C. glaciers.
- D. animals.

33

Which structure is used on a soil slope to control the runoff of water?

- A. Vegetative waterway
- B. Terrace
- C. Tree lines
- D. Overflow pipes

34

Which of the following soils allows water to percolate at the fastest rate?

- A. A soil with 50% sand, 30% silt, and 20% clay
- B. A soil with 45% sand, 10% silt, and 45% clay
- C. A soil with 25% sand, 20% silt, and 55% clay
- D. A soil with 15% sand, 20% silt, and 65% clay

## 202 Agriculture Business and Management Sample

35

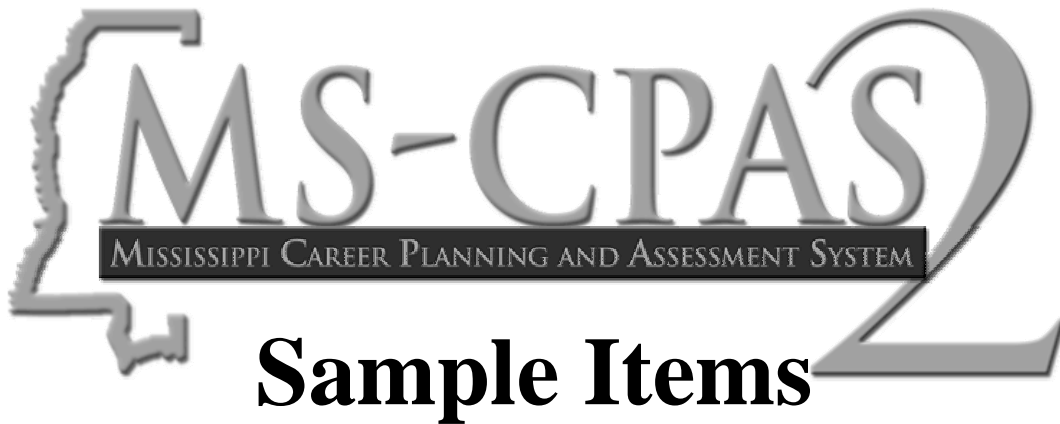
Using the information from the soil test report shown below and assuming that the recommended application rate is 300 lb per acre, how many pounds of potassium would a producer need to cover 100 acres?

Sample Designation	Soil Texture	Soil pH	Organic Matter	P # per acre	K # per acre	Ca # per acre	Y # per acre
A	Clay Loam	5.6	High	44	274	25	50
S # per acre 45	<b>Soil Nutrient Levels</b>						
		Low	Medium	High			
	pH	→					
	P	→					
K	→						

- A. 2,000 lb
- B. 2,600 lb
- C. 3,500 lb
- D. 4,000 lb

**202 Agriculture Business and Management Sample**

?	⊙	Answer/ Scale	Objective	?	⊙	Answer/ Scale	Objective
1	1	D	AGT 1214-C1	19	19	D	AGT 1413-C1
2	2	C	AGT 1214-C1	20	20	B	AGT 1413-C1
3	3	B	AGT 1214-C1	21	21	A	AGT 1413-C2
4	4	D	AGT 1214-C1	22	22	A	AGT 1513-C1
5	5	D	AGT 1214-C1	23	23	C	AGT 1513-C1
6	6	A	AGT 1214-C1	24	24	B	AGT 1513-C1
7	7	A	AGT 1214-C2	25	25	A	AGT 1513-C1
8	8	A	AGT 1214-C2	26	26	A	AGT 1513-C1
9	9	B	AGT 1214-C2	27	27	A	AGT 1513-C2
10	10	D	AGT 1313-C1	28	28	A	AGT 1714-C1
11	11	B	AGT 1313-C1	29	29	A	AGT 1714-C1
12	12	A	AGT 1313-C1	30	30	D	AGT 1714-C1
13	13	A	AGT 1313-C1	31	31	C	AGT 1714-C1
14	14	C	AGT 1313-C1	32	32	A	AGT 1714-C1
15	15	D	AGT 1313-C2	33	33	B	AGT 1714-C1
16	16	C	AGT 1413-C1	34	34	A	AGT 1714-C2
17	17	C	AGT 1413-C1	35	35	B	AGT 1714-C2
18	18	B	AGT 1413-C1				



# Sample Items

Revised September 2008

**Postsecondary**

**Precision Agriculture Technology**

**Test Code: 285**

Mississippi Department of Education  
Office of Student Assessment



## **MS-CPAS2 Sample Test Items**

The MS-CPAS2 sample test items for the Mississippi Vocational–Technical Curriculum Frameworks are now available to the public.

Sample test items are provided to help familiarize students with the MS-CPAS2. The sample test items in this publication are representative only and should not be interpreted as exact duplicates of the items on the MS-CPAS2. Although the results of the MS-CPAS2 sample test items can be used to determine students' strengths and weaknesses, they should not replace other forms of classroom assessment.

The answer keys are located at the back of each sample item document and can be used to identify the unit/course to which the sample item is aligned as well as the cognitive level (C1 or C2) of each item.

## **Notice of Non-Discrimination**

The Mississippi Department of Education, Office of Vocational Education and Workforce Development does not discriminate on the basis of race, color, religion, national origin, sex, age, or disability in the provision of educational programs and services or employment opportunities and benefits. The following office has been designated to handle inquiries and complaints regarding the non-discrimination policies of the Mississippi Department of Education.

Director, Office of Human Resources  
Mississippi Department of Education  
359 North West Street, Suite 359  
Jackson, Mississippi 39201  
(601) 359-3511

## 285 Precision Agriculture Technology Sample

---

1

The GPS system was started by which agency?

- A. USGS
- B. Mapping and Topo
- C. U.S. Department of Agriculture
- D. Department of Defense

2

Using three satellites to determine our position on the planet is a process called:

- A. elevation.
- B. coordinate system.
- C. latitude.
- D. triangulation.

3

Each of the GPS satellites revolves around the earth:

- A. once a day.
- B. twice a day.
- C. three times a day.
- D. four times a day.

4

To use GPS, it is necessary to have a line of sight with the:

- A. tower.
- B. sky.
- C. moon.
- D. base location.

5

Approximately how many hectares are in a 230-acre field?

- A. 65
- B. 93
- C. 105
- D. 113

6

A GIS database contains geographic data, which is also known as:

- A. input data.
- B. spatial data.
- C. raster data.
- D. vector data.

## 285 Precision Agriculture Technology Sample

---

7

What are the two types of data that are contained within a GIS coverage?

- A. GPS and GIS
- B. Spatial and attribute
- C. Shape and image
- D. Raster and vector

8

While there is no set sequence for what GIS users do, GIS activities can be grouped into spatial data input, attribute data management, data display, GIS modeling, data exploration, and:

- A. table reduction.
- B. spatial relocation.
- C. dynamic segmentation.
- D. data analysis.

9

Converting a newly digitized map into a real-world coordinate system is called:

- A. geometric transformation.
- B. attribute transformation.
- C. orthogonal modification.
- D. dynamic segmentation.

10

Which of the following is NOT a major method of inputting data into a GIS?

- A. Scanning
- B. Uploading spatial data from the Internet
- C. Downloading spatial data from the Internet
- D. Digitizing

11

What is the function that is used to identify or define an area within a specified distance around a feature?

- A. Spatial join
- B. Union
- C. Buffer
- D. Clip

12

What is the function that is used to extract an area of interest from a larger dataset?

- A. Spatial join
  - B. Merge
  - C. Buffer
  - D. Clip
-

## 285 Precision Agriculture Technology Sample

---

13

The total amount of radiation that strikes an object is called:

- A. incident radiation.
- B. reflected radiation.
- C. absorbed radiation.
- D. transmitted radiation.

14

Why does Precision Agriculture sometimes use “on-the-go” sensors?

- A. Because farmers have to change methods so often
- B. Because they are used on moving equipment
- C. To receive immediate, cheap feedback
- D. The weather changes so often

15

Shadows can help aerial photo interpreters determine what about an object?

- A. Height
- B. Width
- C. Age
- D. Shape

16

Thermal infrared is emitted energy, but infrared photography of a crop is:

- A. absorbed energy.
- B. transmitted energy.
- C. permitted energy.
- D. reflected energy.

17

Soil fertility samples should be taken to determine the:

- A. moisture content of the soil.
- B. soil particle sizes and shapes.
- C. nutrient needs of the soil.
- D. time to plant.

18

Water held by soil particles that plants use is:

- A. gravitational water.
  - B. adhesion water.
  - C. hygroscopic water.
  - D. available water.
-

## 285 Precision Agriculture Technology Sample

---

19

When reading a soil analysis, soil test ratings expressed as ppm refer to:

- A. people per mile.
- B. parts, people, and miles.
- C. parts per million.
- D. parts per minute.

20

One problem with chemical analysis of soils is that it does not always tell:

- A. the correct amount of nutrient present.
- B. all of the nutrients present.
- C. the amount of nutrient available to the plant.
- D. the type of nutrient present in the soil.

21

What kind of file does the data logger or prescription rate controller use to tell the control unit how much to spray?

- A. A graphic file (\*.gif)
- B. A polygon shaped file (\*.shp)
- C. A target rate file (\*.tgt)
- D. An Excel file (\*.xls)

22

Which of the following is an application of GIS software to variable rate technology?

- A. The farmer no longer has to worry about treatment zones.
- B. The best date for application to crops can be determined.
- C. Prescription maps can be developed from information about a field.
- D. There are no direct applications.

23

Since GPS signals have error, what other component is necessary for proper placement of materials on a field via VRT?

- A. A laptop computer
- B. Newer equipment
- C. Shielded wiring from the GPS receiver to the computer
- D. Differential GPS signal

24

Before employing variable rate fertility, what needs to be done?

- A. Use subsurface drainage and georeference it
- B. Obtain and analyze georeferenced soil samples every 1-3 years
- C. Check the yield maps
- D. Use variable-rate seeding

## 285 Precision Agriculture Technology Sample

25

A scouting report shows that a field of corn is infested with cocklebur, smartweed, and jimsonweed. At the current level of infestation indicated by the report, a loss in yield of 6.3 bushels per acre would be expected. You will be able to sell the corn at \$4.00 per bushel. If the cost of applying a herbicide to control the weeds is \$40.00 per acre, what should you do?

- A. Apply the herbicide now.
- B. Continue to monitor the field, and apply herbicide if expected loss is greater than 10 bushels per acre.
- C. Continue to monitor the field, and apply herbicide if expected loss is greater than 14 bushels per acre.
- D. Continue to monitor the field, and apply herbicide if expected loss is greater than 16 bushels per acre.

26

Your field scout recommends that you spray 20 GPA of chemical X. You know that you will have to drive at 10 mph. The sprayer has 60 nozzles on 16-in. spacing. What is the flow rate at each nozzle going to be?

Given:  $\text{Total GPM} = (\text{mph} \times \text{W} \times \text{GPA})/495$

Total GPM = flow rate of all nozzles in gallons per minute

mph = speed in miles per hour

W = swath width in feet = number of nozzles x nozzle spacing/12 in.

GPA = desired application rate in gallons per acre

- A. 0.43 GPM per nozzle
- B. 0.54 GPM per nozzle
- C. 0.61 GPM per nozzle
- D. 0.67 GPM per nozzle

27

Your field scout recommends that you spray 25 GPA of chemical X. You know that you will have to drive at 8 mph. The sprayer has 50 nozzles on 16-in. spacing. What is the flow rate at each nozzle going to be?

Given:  $\text{Total GPM} = (\text{mph} \times \text{W} \times \text{GPA})/495$

Total GPM = flow rate of all nozzles in gallons per minute

mph = speed in miles per hour

W = swath width in feet = number of nozzles x nozzle spacing/12 in.

GPA = desired application rate in gallons per acre

- A. 0.43 GPM per nozzle
- B. 0.54 GPM per nozzle
- C. 0.61 GPM per nozzle
- D. 0.67 GPM per nozzle

## 285 Precision Agriculture Technology Sample

28

If a field has uniform fertility and a few areas grow above-average crops, what will a soil test in those areas show compared to the rest of the field after harvest?

- A. Higher yielding areas will generally have higher nutrient removal.
- B. Higher yielding areas will generally have lower nutrient removal.
- C. Nutrient removal does not correlate with yield.
- D. It will not demonstrate any differences.

29

In terms of variable seeding rates, a field has a hill on it, and on the top of the hill, the topsoil is eroded and weathered and never seems to yield very well. In efforts to maintain a good profit from the land, it is best to:

- A. increase the seeding rate.
- B. decrease the seeding rate.
- C. leave the seeding rate at normal.
- D. not worry about seeding rate as it has no effect on yield in this situation.

30

Your field scout recommends that you spray 40 GPA of chemical X. You know that you will have to drive at 12 mph. The sprayer has 60 nozzles on 18-in. spacing. What is the flow rate at each nozzle going to be?

(Given: Total GPM = (mph x W x GPA)/495

Total GPM = flow rate of all nozzles in gallons per minute

mph = speed in miles per hour

W = swath width in feet = number of nozzles x nozzle spacing/12 in.

GPA = desired application rate in gallons per acre

- A. 1.45 GPM per nozzle
- B. 1.54 GPM per nozzle
- C. 1.61 GPM per nozzle
- D. 1.67 GPM per nozzle

31

A preemergence herbicide is applied:

- A. after the weed or crop is present.
- B. at the time of harvesting.
- C. before the weed or crop is present.
- D. during cultivation of the growing crop.

32

Which of the following items would NOT be appropriate to wear when working with hazardous chemicals such as pesticides?

- A. Safety goggles or a face shield
- B. Rubber gloves
- C. Neoprene apron
- D. Canvas tennis shoes

## 285 Precision Agriculture Technology Sample

---

**33** Which of the following is a herbicide trade name?

- A. Roundup®
- B. glyphosate
- C. N-(phosphonomethyl) glycine
- D. Raid®

**34** A sprayer has a spray volume of 20 gal. per acre, with a boom width of 36 ft, and 20 nozzles. If the sprayer is traveling at a speed of 8 mph, what is the total flow-through for the system?  
(Given:  $\text{MPH} \times \text{W} \times \text{GPA} / 495 = \text{total GPM}$ )

- A. 11.64 GPM
- B. 12.34 GPM
- C. 12.64 GPM
- D. 13.34 GPM

**35** A sprayer has a spray volume of 40 gal. per acre, with a boom width of 24 ft, and 20 nozzles. If the sprayer is traveling at a speed of 5 mph, what is the total flow-through for the system?  
(Given:  $\text{MPH} \times \text{W} \times \text{GPA} / 495 = \text{total GPM}$ )

- A. 8.35 GPM
- B. 8.70 GPM
- C. 9.35 GPM
- D. 9.70 GPM

# 285 Precision Agriculture Technology Sample

?	⊙	Answer/ Scale	Objective	?	⊙	Answer/ Scale	Objective
1	1	D	AGT 1254-C1	19	19	C	AGT 2434-C1
2	2	D	AGT 1254-C1	20	20	C	AGT 2434-C1
3	3	B	AGT 1254-C1	21	21	C	AGT 2164-C1
4	4	B	AGT 1254-C1	22	22	C	AGT 2164-C1
5	5	B	AGT 1254-C2	23	23	D	AGT 2164-C1
6	6	B	AGT 2154-C1	24	24	B	AGT 2164-C1
7	7	B	AGT 2154-C1	25	25	B	AGT 2164-C2
8	8	D	AGT 2154-C1	26	26	B	AGT 2164-C2
9	9	A	AGT 2154-C1	27	27	B	AGT 2164-C2
10	10	B	AGT 2154-C1	28	28	A	AGT 2164-C2
11	11	C	AGT 2154-C1	29	29	B	AGT 2164-C2
12	12	D	AGT 2154-C1	30	30	A	AGT 2164-C2
13	13	A	AGT 1354-C1	31	31	C	AGT 2474-C1
14	14	C	AGT 1354-C1	32	32	D	AGT 2474-C1
15	15	A	AGT 1354-C1	33	33	A	AGT 2474-C1
16	16	D	AGT 1354-C1	34	34	A	AGT 2474-C2
17	17	C	AGT 2434-C1	35	35	D	AGT 2474-C2
18	18	D	AGT 2434-C1				