STATE EXAMINATIONS.

THEORY AND ART OF TEACHING.
1. Name four great educational writers of the past whose teachings you best know, and describe the theory of each. (6 credits.)
2. What is the difference between the science and the art of teaching? In your own experience which comes first? (6 credits.)
3. What steps are included in the preparation of a lesson by a teacher? (6 credits.)
4. "Spare the rod and spoil the child." Give your own reasons for and against the soundness of this as a principle of teaching. (5 credits.)
5. What do you understand by the purpose of a "Course of Study"? Why not allow each teacher to follow any chace order of lessons? (6 credits.)
6. (a) Distinguish between remembering and recollecting; (b) between judging and reasoning; (c) between feeling and thinking. (10 credits.)
7. In what sense is the following statement true: "I know, but I can't tell"? (10 credits.)
8. What defects in teaching arise from a lack of scholarship on the part of the teacher? (10 credits.)
9. What defects arise from a lack of professional knowledge? (10 credits.)
10. What are the qualities of a teacher who is "strong in government"? (6 credits.)

UNITED STATES HISTORY.
1. (a) What is a colony? (b) What were the objects of European countries in establishing colonies in America during the eighteenth century? (6 credits.)
2. (a) When was there formed a permanent union among the English colonies in America? (b) Why did it occur at that time? (6 credits.)
3. Defend the attitude of the Loyalists or Tories in 1775 and 1776. (10 credits.)
4. Mention the most important service to the United States of each of the following: Alexander Hamilton, Robert Morris, Benjamin Franklin, Samuel Adams, John Marshall. (10 credits.)
5. Make clear the meaning of the following terms: Implied Powers, State Sovereignty, Reconstruction, Joint Resolution. (10 credits.)
6. Compare Congress in 1765, 1782 and in 1792 in regard to the composition of the body and its powers. (10 credits.)
7. (a) What was the service rendered the country by the Federal party? (b) Why was it defeated in 1860? (10 credits.)
8. Give a brief account of our relations with Spain up to 1898. (10 credits.)
9. (a) What are the two most important questions before the American government at the present time? (b) What settlement of each do you favor? Why? (10 credits.)
10. (a) What are the methods being used to destroy the expenses of the present stationery and the Civil War. (10 credits.)

ZOOLOGY.
1. Name some classifications of animals with regard to 1) teeth, 2) food, 3) to toes, 4) to feet, 5) to bearing young. (10 credits.)
2. (a) What is meant by "the survival of the fittest." (b) Show how some animals have changed their forms to adapt themselves to change in environments. (10 credits.)
3. (a) How does the cricket chirp? (b) How does the deer fret? (c) How does the partridge drum? (d) How does the finch shine? (e) How does the bee sting? (10 credits.)

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4. Trace the development of the nervous system from the lower to the higher orders of animals. (10 credits.)
5. Name an insect and tell in what way it is injurious to (a) the apple, (b) the plum, (c) the maple tree, (d) wheat, (e) sheep, (f) hens. (10 credits.)
6. Describe and compare the respiratory organs of the fish and the bird. (10 credits.)
7. State what is meant by the following terms and name an animal to which each will apply: (a) Inversion, (b) respiration, (c) amphibious, (d) carnivorous, (e) metamorphosis. (10 credits.)
8. Describe the circulatory system of insects. (10 credits.)
9. Name three characteristics of ruminants; of rodents; of marsupials. (10 credits.)
10. Show how the feet of birds indicate their habits. (10 credits.)

11. QUESTIONS PREPARED BY THE STATE BOARD OF EDUCATION FOR EXAMINATION HELD AT LANSING, DECEMBER, 1866.

ALGEBRA.
1. (a) If a man walks 6 miles in 4 hours, how long will it take him to walk 12 miles? (b) If a man can do a piece of work in 8 days, how much of the work can he do in 1 day? (10 credits.)
2. (a) If a thermometer at 1 o'clock p.m. indicates 92 degrees below zero and at 7 p.m. 6 degrees below zero, express the difference in temperature of the two hours. (10 credits.)
(b) How many times is m a factor of (3m²)? (10 credits.)
1. (a) Given 5m²+2m=62. Solve. (10 credits.)
(b) What name is given to this equation from the fact that it contains both z² and z? (10 credits.)
1. (a) Reduce to simplest form the complex fraction. (10 credits.)
(b) Simplify the expression x²+y². (10 credits.)
(c) Given z=3. Solve. (10 credits.)
(d) Find the direct distance between the towns. (10 credits.)
1. (a) Simplify the expression x²+y². (b) Divide by 2. (10 credits.)
2. Prove, giving the fundamental principles of fractions, that the expression m/n + n/m is equal to the expression m² + n². (10 credits.)
3. Three towns are at the three angles of a triangle. From the first to the second the third is 8 miles; from the first to the third through the second is 97 miles; from the second to the third through the first is 89 miles. Find the direct distance between the towns. (10 credits.)
4. (a) Simplify the expression x²+y². (b) Divide by 2. (10 credits.)
5. Simplify the expression x²+y². (10 credits.)
6. (a) State an axiom which gives authority for changing the signs of all the terms of an equation. (10 credits.)
STATE EXAMINATIONS.

(b) Define elimination. (c) Define and give illustration of like or similar terms.

9. Solve without clearing of fractions

\[
\frac{10}{8} - \frac{5}{10} = 8
\]

10. Two cubical vessels have together a capacity of 1078 cubic inches, and the sum of their heights is 16 inches. What is the capacity of each?

Note: What is your preparation in this subject? Where obtained?

ARITHMETIC.

State Examination. December 23, 1868.

1. (a) Find, by factoring, the g. c. d. of 8001, 33,756, and 121,968. (b) What is the Euclidean method of finding the g. c. d.?

2. Give five fundamental properties of fractions.

3. At what time between 1 and 9 o'clock are the hands of the clock at right angles to each other? Give analysis.

4. Write a 90-day note, signed by Peter Brown and payable to your order, bearing the legal rate of interest; indorse it so that it shall be payable to the order of Robert Jones.

5. Which is the better investment, and how much; one of $4,500, yielding $166 semi-annually, or one of $7,500, yielding $3712 annually?

6. A body will fall 10 1/2 feet in the first second of its fall, 48 1/2 feet in the second, and so on. How far will it fall in one minute?

7. (a) Explain the difference between a ratio and a proportion. (b) How would you teach the idea of number?

8. Trade discounts of 20%, 10%, and 8 1/3% are equivalent to what single discount?

9. A semi-annual dividend of 2% on Illinois Central railroad stock bought at 92% is equivalent to what per cent of annual interest on the investment?

10. Find the cost of a lot 50 feet front, 85 feet rear, and 90 feet deep, at $2.50 per square foot.

Note: What preparation have you had in this subject? Where obtained?

AMERICAN HISTORY.

1. What points were in dispute between England and the United States at the time of "Jay’s Treaty?" Outline the terms of "Jay’s Treaty."

2. What were the causes of our commercial difficulties at the close of Jefferson’s administration? How did we try to remedy them and with what result?

3. Compare the attitude of the Democratic-Republican party on national questions in John Adams’ administration with its position in the last of Madison’s. Name the questions at issue in each case.

4. Trace in outline the history of the United States Bank from its inception to the expiration of its charter in 1836.

5. Contrast colonial Massachusetts and Virginia in regard to purpose of settlement, character of settlers, form of local government and religion.

6. In what states was the Emancipation Proclamation to take effect, and why was it called a war measure?

7. Compare President Johnson’s ideas of reconstruction with the congressional plan.


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10. What is meant by the term “States rights?” Mention three instances in which the question has been prominently before Congress. How and when finally settled?

BOTANY.

Directions: (1) Be sure you understand the question. (2) Take time enough and pains enough to answer it in the way you wish it to be understood and graded. (3) Number your answers to correspond with the number of the question or in several instances.

1. (a) Where have you studied botany, for how long a time and with what text? (b) What is the purpose of such study in our schools?

2. Discuss the important characteristics of protoplasm.

3. State what conditions are necessary for germination, and explain clearly why these conditions are necessary.

4. Describe in detail the origin and development of the root, and discuss its function.

5. Describe, with the assistance of drawings, the structure of a typical exogenous stem.

6. Discuss fully the work of the leaf.

7. Enumerate five reasons for considering a flower a modified leaf-bud.

8. Describe the various devices by which nature prevents self-pollination.

9. Give the botanical name of the edible part of the following plants: Potato, celery, strawberry, pea, cabbage, turnip, string bean, apple, tomato, rutabaga.

10. Name five plant families, with a type of each, and discuss the family characteristics exhibited by each type.

CHEMISTRY.

Directions: (1) Be sure you understand the question. (2) Take time enough and pains enough to answer it in the way you wish it to be understood and graded. (3) Number your answers to correspond with the number of the question or in several instances.

1. State your educational experience in chemistry: (a) school; (b) teacher; (c) amount of time—weeks or months; (d) laboratory work done; (e) textbooks used.

2. (a) What are the main constituents of the atmosphere by weight and by volume? (b) Name two others regularly present. (c) What apparatus would you use to show the presence and amount of each of these four constituents? (d) Sketch the apparatus.

3. As above for the two main constituents of water, but give more than one way of showing the composition.

4. (a) What is the molecular formula for water? (b) Upon what facts is the reasoning based by which you reach this formula? (c) Give steps in the reasoning.

5. What is the molecular weight of water? Fully describe method of finding it.

6. (a) What takes place when sulfuric acid is brought into contact with common salt? (b) When the gaseous product of (a) is passed into water up to saturation? (c) What is the result of (b) reacts with manganese dioxide? Are there reactions peculiar or typical? Illustrate.

7. (a) State in full the process for making Le Blanc Soda. (b) Ammonia soda (Solvay process).

8. Classify the elements and name one good example of each class. What is the basis of the classification?

9. Treat the topic ordinary combustion in full: (a) ordinary combustibles (fuels); (b) physical and chemical products; (c) kindling temperatures; (d) heat of combustion.
EXPERIMENTAL

10. The purpose of the experimental design was to determine the effectiveness of a new instructional method on student achievement. A pre- and post-test design was employed to assess the impact of the intervention. The sample consisted of students from two different schools: School A and School B.

11. In School A, the experimental group was taught using the new method, while the control group continued with the traditional method. In School B, the roles were reversed.

12. The results indicated that students in the experimental group showed a significant improvement in test scores, compared to the control group. This suggests that the new instructional method is effective in enhancing student achievement.

13. Further analysis revealed that the gains were not only statistically significant but also practically meaningful. The effectiveness of the method was further supported by qualitative data collected through interviews and observations.

14. The study highlights the importance of continuous improvement in educational practices and the need for innovative approaches to teaching.

15. It is recommended that the findings be replicated in other settings to confirm the generalizability of the results. Additionally, further research is needed to explore the sustainability of the gains and the long-term impact on student achievement.
ORTHOPHONY

PHONETICS

PHONEMICS

GRAMMAR

EXAMINATIONS
STATE EXAMINATIONS.

SCHOOL LAW.

Directions:—(1) Be sure you understand the question. (2) Take time enough and pains enough to answer it in the way you wish it to be understood and graded. (3) Number your answers to correspond with the number of the question or its several subdivisions. (4) Write plainly and legibly.

1. What, if any, new legislation affecting schools was enacted during the last session of the State legislature? Explain fully.
2. How is a new school district organized in Michigan?
3. Under the laws of Michigan, who may teach in the common schools?
4. (a) Explain fully the right of a teacher to inflict corporal punishment. (b) May the teacher punish a pupil for misconduct committed off the school grounds, on the way to and from school?
5. Name the chief duties of the county commissioner of schools.
6. Can parents be compelled to send their children to school in this State? If so, for what period in each year?
7. How many months of school must a district maintain each year to entitle it to a portion of the primary school fund?
8. Who may grant teachers' certificates in Michigan?

RHETORIC.

Directions:—(1) Be sure you understand the question. (2) Take time enough and pains enough to answer it in the way you wish it to be understood and graded. (3) Number your answers to correspond with the number of the question or its several subdivisions. (4) Write plainly and legibly.

1. (a) Name two recent textbooks on rhetoric, and compare them as to quality of text and educational value. (b) May the subject be taught effectively without a textbook? Why?
2. (a) I (avow, acknowledge, confess) my guilt. Which word is preferable? Why?
   (b) Criticize the following: I seldom find him indolent; he was not of an idle disposition.
3. Point out fault of style in the following sentence and improve it:
   "Since the great navigator on two several and successive occasions has menaced himself as having been born in Genoa, we may rest assured that we have conclusive evidence of the fact that he was a native of that important maritime city."
4. What qualities of style are essential to effective sentence and paragraph structure?
5. Write a brief outline of an argument for or against our acquiring the Philippines.
6. Write a single paragraph upon some subdivision of the above outline.
7. Name figures in the following:
   (a) Laugh and tears are meant to be the wheels of the same machinery of sensibility. One is wind power, the other water power. That is all the difference.
   (b) Put on the strength, O Zion; put on thy beautiful garments, O Jerusalem, the holy city.
   (c) The prodigal rolls his heir, the miser rolls himself.
   (d) When you have nothing to say, say it.
   (e) Man shall live by the sweat of his brow.
8. Punctuate the following:
   (a) The present life is not wholly pure and pristine and faintly to the gifted eye it abounds in the poetic.
   (b) Punctuate and use necessary capitals in the following:
      A cobbler at Leyden who used to attend the public disputations was asked if he understood Latin; no replied the fellow but I know which is wrong in the argument how by seeing which gets angry first.

9. Name and scan the following verses:
   (1) Low volubly's muse winding trembling. (2) Look, dearest, in my face, and see fears of heart. (3) Plane, ye disconsolate, whenever ye languish. (4) No more, sweet Tavio, shall the glaring bale-fires upon thy silver tide; steel-clad warriors ride along thy wild and willowed shore no longer.
   (Change the last into four iambic tetrameter verses, rhyming alternately.)

THEORY AND ART OF TEACHING.

Directions:—(1) Be sure you understand the question. (2) Take time enough and pains enough to answer it in the way you wish it to be understood and graded. (3) Number your answers to correspond with the number of the question or its several subdivisions. (4) Write plainly and legibly.

1. Designate the studies you have pursued in this subject, as follows:
   (a) Name three books read.
   (b) Recent works studied.
   (c) Educational papers regularly read.
   (d) Work taken in school. (156.)
2. (a) Distinguish between the theory and the art of teaching. (b) Name and characterize briefly one book devoted to each. (156.)
3. Describe and compare any one of the following ways of teaching reading:
   (a) word method; (b) sentence method; (c) alphabet; (d) Paliott system. (46.)
4. What are your reasons for thinking that music and drawing should be made a part of every elementary school course? If you think they should not be, give reasons. (66.)
5. What is meant by nature study, and what results are aimed at in intermediate and grammar grades? (66.)
6. In the teaching of United States history what work should be done before a text-book is taken up? (66.)
7. Name two laws of mind, and indicate their significance to the teacher. (12x.)
8. Name two principles of teaching, and illustrate their meaning by reference to some actual school exercises. (12x.)
9. What powers of mind are chiefly appealed to in eighth grade or above in teaching spelling? In teaching history? (12x.)
10. What are the educational ill-effects of a too loose school discipline? (12x.)

ZOLOGY.

1. Give an outline for the classification of animals.
2. Mention four peculiarities that distinguish man from other animals.
3. State what animals are most like man in general structure, and give the order to which each belongs.
4. Compare the structure of a cat with that of a dog.
5. Name the carnivora common in the United States.
6. Describe the ant and its natural enemy.
7. (a) What are the periods of life of an insect? (b) During which does it consume the most food?
8. Describe the appearance and habits of the potato beetle in its meta-morphic stages.
9. To what order do the following belong? (1) locusts, (2) dragonflies, (3) beetles, (4) butterflies.
10. Give an account of the bee communities.