

STUDENT'S ID NO: _____

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UNIVERSITY OF GHANA

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DEPARTMENT OF TEACHER EDUCATION

SCHOOL OF EDUCATION AND LEADERSHIP

COLLEGES OF EDUCATION

END OF SEMESTER ONE EXAMINATIONS FOR LEVEL 200, 2021/2022

B.ED. PROGRAMME

COURSE CODE: TEEG 209

COURSE TITLE: THEORIES IN TEACHING AND LEARNING OF MATHEMATICS

Instruction: Answer all questions in Section A and any three questions in Section B.

1. Philosophy of mathematics is also regarded as a branch of the philosophy of ____
A. Mathematics
B. Algebra
C. Science
D. Geometry and Trigonometry

2. A learner who continually ask "Why" and "How do we know" about a concept in mathematics is said to have developed ____
A. cultural values
B. disciplinary Values
C. practical values
D. preparatory values

3. The Egyptian mathematics symbols were part of their ancient writing system called ____
A. cuneiform
B. hieroglyphics
C. mathematical Papyrus
D. rhind papyrus

4. Philosophy of mathematics is a branch of mathematics that studies the philosophical ____, ____ and implications of mathematics.
A. Axioms, theories of
B. Assumptions, theories
C. Assumptions, axioms
D. Assumption, foundations

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5. Which of the following steps of using Multiple Intelligence Theory (MIT) in curriculum is very much appreciated?
 - I. Apprenticeship
 - II. Inter-disciplinary Programme
 - III. Lesson design only on linguistic Intelligence
 - IV. Students' Projects
 - A. I and II only
 - B. I, II and III only
 - C. I, III and IV only
 - D. I, II and IV only.
6. . _____, described mathematics as the most abstract and so the most powerful of all theatrical system.
 - A. Bertrand Russel
 - B. Harris Kline
 - C. Richard Skemp
 - D. Taylor Tale
7. According to Jerome Bruner, the zone of proximal development is referred to as the period of _____.
 - A. differentiation
 - B. dynamic assessment
 - C. reciprocal teaching
 - D. scaffolding
8. Mathematics is seen as a science of patterns and _____.
 - A. Algebra
 - B. Construction
 - C. Order
 - D. Symbols
9. A multi-dimensional model who presents information to learners in different ways and help learners to process information in a creative and flexible environment is a/an _____.
 - A. coach
 - B. facilitator
 - C. mentor
 - D. teacher
10. Hexagon, points, lines, triangle, circle, sphere polyhedral, topological space are examples of mathematical objects called _____.
 - A. Construction
 - B. Geometry
 - C. Patterns
 - D. Trigonometry

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11. The position of the body or a way of carrying oneself in the teaching and learning process is referred to as a/an _____.
 - A. attitude
 - B. believe
 - C. concept
 - D. value
12. Leman (1983) identified _____ alternative conception of the nature of mathematics.
 - A. 1
 - B. 2
 - C. 3
 - D. 4
13. In ensuring Equity for Socio-economically Challenged learners, which of the following is the odd one?
 - A. teachers need to learn about how gender bias and racial labels can influence a child's self-perception.
 - B. teachers need to learn about how economic and geographical equity functions in the mathematics classroom.
 - C. teachers need to learn about finding strategies for fostering equity, such as addressing learning gaps and social stigmas.
 - D. teachers need to learn about celebrating different learning styles and targeting an unclear outcome.
14. Which theory states that everyone has all the intelligences at varying degrees of proficiency and an individual's learning style is unrelated to the areas in which they are the most intelligent?
 - A. Behaviourist theory.
 - B. Constructivist theory.
 - C. Cognitivist theory.
 - D. Multiple intelligence theory.
15. The beliefs that teachers hold about the teaching and learning of mathematics _____.
 - A. contributes to the selection of the national goals.
 - B. determines the products they produce.
 - C. influence the instructional strategies they select and enact.
 - D. influences their teaching philosophy.
16. An early grade mathematics teacher agrees with the direct transmission belief about learning mathematics. Which of the following statements will NOT represent his/ her belief about learning mathematics?
 - A. Doing mathematics or practicing makes the learner perfect.
 - B. Learners learn through experience and knowledge.
 - C. Learning takes place if the learner obtains correct answer.
 - D. The best learner is one who can reproduce what the teacher taught.

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17. Application of mathematical concepts and processes to problems of everyday life are of which of the values?
- A. cultural values
 - B. disciplinary Values
 - C. practical values
 - D. preparatory values
18. This group of scholars believes that there exist abstract objects that are wholly no spatiotemporal, nonphysical none metal. Who are they?
- A. Absolutist
 - B. Constructivist
 - C. Platonist
 - D. Formalist
19. The following are some components of the effective teacher attitudes:
- I.demonstrating caring and kindness
 - II.restrain individualized instruction
 - III.sharing responsibility
 - IV.sensitively accepting diversity
- A. I and II only
 - B. II and III only
 - C. I and III only
 - D. I, III and IV only.
20. Deductivism is one version of _____.
- A. Absolutism
 - B. Formalism
 - C. Intuitionism
 - D. Platonism
21. According to the activity theory, teachers should be aware that tools can limit as well as enable social interaction, so must be _____.
- A. used with variation in the colours of the tools.
 - B. applied wisely and appropriately to promote the most effective learning.
 - C. applied with caution in order to promote challenged learners.
 - D. applied wisely by an effective mathematics teacher.
22. According to Jean Piaget, every individual construct new knowledge from their experiences through processes of _____.
- A. accommodation and assimilation.
 - B. inductive and deductive.
 - C. passive and active.
 - D. axioms and theories.
23. A _____ is a set of basic symbols and some rules for making other symbols from them.
- A. numeration system
 - B. number system
 - C. numeral system
 - D. numberation system

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24. The idea of breaking complex behaviours into small component behaviour originated with _____
- A. Brenner
 - B. Garner
 - C. Piaget
 - D. Skinner
25. As a Pre-service teacher who firmly believes in the social constructivist theory of Lev. Vygotsky which of the following method would you prefer for assessing your students
- A. Collaborative project
 - B. Fact-based recall questions
 - C. Multiple choice questions
 - D. Standardized test

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SECTION B

Answer any three questions in this section

1. (a) State and explain five reasons why mathematics is taught and learned in schools. [10 marks]
(b) (i) Define mathematical concept as Richard Skemp sees it. [4 marks]
 (ii) state and explain the two main forms of concept according to Skemp. [4 marks]
 (iii) Explain the zone of proximal development by giving a mathematical example to support it. [7 marks]
2. a) Mathematics can be characterized as a cycle of investigation that is intended to lead to the development of valid mathematical ideas. Mention and explain the three cycles of investigations. [15marks]
b) State and explain five usefulness of mathematics to the pre-service teacher. [10 marks]
3. (a) State five effective teacher attitudes in teaching mathematics. [10 marks]
(b) (i)explain the five effective teacher attitudes stated in 3(a) above; [10 marks]
 (ii)List and five believes of the Platonist. [5 marks]
4. a) With relevant examples, examine any five factors that affect the teaching and learning of mathematics at the early grade level. [15 marks]
b) Explain any four classroom implications of constructivism of the JHS classroom teacher. [10 marks]
5. a) Explain three of Gardner's multiple intelligences and how it contributes to learner learning situation? [11 marks]
b) (i) state and explain Bruner's stages of developmental learning? [10 marks]
 (ii) c) State the two classifications of understanding as propounded by Skemp. [4 marks]