

STUDENT ID'S NO: \_\_\_\_\_

SIGNATURE \_\_\_\_\_



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, 2023/2024  
B.ED. PROGRAMME

COURSE CODE: **TEEG 209**

COURSE TITLE: **THEORIES IN THE LEARNING OF NUMERACY**

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**Instruction:** Answer all questions in Section A and any three questions in Section B on the answer booklet provided.

Time: 2 hours

#### SECTION A

[25 Marks]

**Answer all the questions in this section on the answer booklet provided.**

1. An occurrence that boosts the likelihood of a subsequent response is known as \_\_\_\_\_.
  - A. Association
  - B. Reconstruction
  - C. Reinforcement
  - D. Stimulus response
  
2. The activity theory emphasises that facilitators should recognise the dual role of tools in both constraining and facilitating social interaction. Therefore, they need to be \_\_\_\_\_.
  - A. employed judiciously to foster effective learning
  - B. employed with variations in their colours
  - C. utilised judiciously by an effective mathematics instructor
  - D. utilised to aid learners facing challenges.

3. According to the theory of multiple intelligences, which intelligence does Peter possess if he can identify and comprehend his intentions, motivations, desires, and moods?
- A. Interpersonal intelligence.
  - B. Intrapersonal intelligence.
  - C. Naturalist intelligence.
  - D. Spatial intelligence.
4. The adaptation form that entails adjusting the internal cognitive structure to comprehend new information is known as \_\_\_\_\_.
- A. accommodation.
  - B. assimilation.
  - C. association.
  - D. discrimination.
5. The theory positing that human learning predominantly occurs through social interactions is known as \_\_\_\_\_.
- A. Behavioural theory
  - B. Constructivism theory
  - C. Situated cognition theory
  - D. Socio-cultural theory
6. Which of the following statements contradicts the principles of behaviourism?
- A. Behaviourism focuses on internal factors affecting behaviour.
  - B. Human behaviour is responsive to particular stimuli.
  - C. Our actions may appear voluntary, but they are predetermined.
  - D. The environment influences our behaviour.
7. Which of the following statements does NOT align with the principles of behaviourism?
- A. Desirable human behaviour is more the product of design than accident.
  - B. Inborn factors have a lot of influence on behaviour and learning ability.
  - C. It is an illusion to say that humans have free will; this can never be.
  - D. Some learning conforms to the basic stimulus-response model.
8. The theory that involves progressively moulding appropriate behaviour towards a desired outcome falls under the domain of \_\_\_\_\_.
- A. Behavioural theory
  - B. Cognitive theory
  - C. Constructivism theory
  - D. Situated cognition theory

9. A collection of fundamental symbols along with rules for generating additional symbols is referred to as a \_\_\_\_\_ system.

- A. algebraic
- B. counting
- C. number
- D. numeration

10. The foundation of constructivist theory lies in the principle that \_\_\_\_\_.

- A. learners construct their own knowledge
- B. learning is a change in observable behaviour
- C. learners necessitate a higher authority as a facilitator
- D. learners need regular practice to achieve success

11. The beliefs that teachers hold about the teaching and learning of mathematics in the Early Grade classroom \_\_\_\_\_.

- A. contribute to the selection of the national goals
- B. determine the products they choose to produce
- C. influence their instructional strategies selection and enactment
- D. influence their teaching and learning philosophy

12. An arrangement of concepts and actions that can be adjusted based on new information about the world is termed as \_\_\_\_\_.

- A. Class
- B. Content
- C. Schema
- D. Strata

13. Assimilation, as a method of adapting schemas in mathematics, entails \_\_\_\_\_.

- A. breaking down a new schema into smaller units to fit into an existing one
- B. incorporating some adjustments in existing schema to accommodate a new one
- C. integrating an already established schema into a new one through trial and error
- D. merging a new schema into the existing one without alterations but expansion

14. Learning in the iconic mode entails utilising \_\_\_\_\_.

- A. abstract entities in computations
- B. hands-on experience in solving problems
- C. manipulative instruments
- D. visual mediums like pictures

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15. Three methods exist for transmitting a cultural tool from one individual to another. This does NOT include \_\_\_\_\_ learning.
- A. Collaborative
  - B. Imitation
  - C. Instructed
  - D. Operative
16. A primary implication of Dienes' work is that large-group lessons should be reduced to accommodate for \_\_\_\_\_.
- A. expository teaching by the teacher
  - B. individual differences among students
  - C. students heavily relying on the teacher
  - D. students' reliance on each other
17. Which psychologist's research led to the development of the Socio-Cultural Theory?
- A. Albert Bandura
  - B. Aleksei N. Leont'ev
  - C. Jean Piaget
  - D. Lev Vygotsky
18. Repeated experiences lead to better learning. This is related to the law of \_\_\_\_\_.
- A. Effect
  - B. Exercise
  - C. Primacy
  - D. Readiness
19. Utilising diverse scenarios and models to teach a specific mathematics concept in the Early Grade classroom exemplifies \_\_\_\_\_.
- A. Conservation principle
  - B. Constructivity principle
  - C. Multi-arithmetic principle
  - D. Multi-embodiment principle.
20. Behaviourism focuses exclusively on objectively \_\_\_\_\_ behaviour.
- A. examinable
  - B. measurable
  - C. observable
  - D. traceable

21. Which of the following MOST accurately describes how we acquire knowledge, according to a constructivist perspective?

- A. We are born with most of our knowledge embedded within us.
- B. We acquire knowledge solely by attending school.
- C. We are sponges that absorb everything from authority figures.
- D. We develop knowledge by consistently engaging with others.

22. The concept of self-regulated learning originates from \_\_\_\_\_.

- A. Bandura's research on observational learning
- B. Pavlov's studies on the conditioned reflex
- C. Skinner's work with juvenile delinquents
- D. Thorndike's law of effect

23. According to behaviourism, learning is primarily a result of which of the following?

- A. Environmental stimuli and responses
- B. Internal cognitive processes
- C. Intrinsic motivation
- D. Observational learning

24. The ZPD is a concept associated with which learning theorist?

- A. Albert Bandura
- B. B.F. Skinner
- C. Jean Piaget
- D. Lev Vygotsky

25. According to cognitive learning theory, learning involves \_\_\_\_\_.

- A. Active engagement with experiences and interactions
- B. Direct instruction from teachers
- C. Memorization of facts and formulas
- D. Passive reception of information

**SECTION B****[75 Marks]**Answer any **THREE** questions in this section.

- |   |  |                               |
|---|--|-------------------------------|
| 1 | (a) (i). Identify <b>FIVE</b> actions the mathematics facilitator carries out in applying behaviourism in the Early grade classroom.   | 5 Marks                       |
|   | (ii). Explain the five actions identified in a(i) above.   | 10 Marks                      |
|   | (b) Explain multi-embodiment principle.  | 4 Marks                       |
|   | (c) i. What is Cognitive Theory?<br>ii. List any <b>THREE</b> of the key components of Cognitive Theory.   | 3 Marks<br>3 Marks            |
| 2 | (a) Identify <b>THREE</b> key issues highlighted by the <i>learning philosophy</i> of the Early Grade numeracy curriculum.   | 6 Marks                       |
|   | (b) Briefly explain each of the key issues mentioned in (2a) above.  | 9 Marks                       |
|   | (c) Briefly describe how each of the following manifests itself in the teaching and learning of mathematics in the Early Grade school:<br>i. <i>Dyspraxia</i><br>ii. <i>Dyscalculia</i>                            | 3 Marks<br>3 Marks            |
|   | (d) "What is Activity Theory"  | 4 Marks                       |
| 3 | (a) List any <b>FOUR</b> components of the Activity Theory   | 4 Marks                       |
|   | (b) Explain <b>FOUR</b> of the criticisms of Cognitivism.  | 12 Marks                      |
|   | (c) Explain <b>THREE</b> of the criticisms of Behaviourism.  | 9 Marks                       |
| 4 | (a) (i). What do we mean by "multiple intelligences"?<br>(ii). Explain any <b>THREE</b> of the multiple intelligences.   | 3 Marks<br>9 Marks            |
|   | (b) (i). State the types of concepts in numeracy learning according to Richard Skemp.<br>(ii). Explain the stated concepts in 4(bi), giving an example in each case.   | 2 Marks<br>8 Marks            |
|   | (c) Distinguish between a number and a numeral, giving an example in each case.  | 3 Marks                       |
| 5 | (a) Give a practical illustration, involving at least four sensory of how you can apply the multi-embodiment principle while teaching an Early Grade classroom.  | 8 Marks                       |
|   | (b) i. Explain "Situated Cognition Theory".<br>ii. State <b>TWO</b> implications for the learner in Situated Cognition Theory.<br>iii. STATE <b>TWO</b> implications for the teacher in Situated Cognition Theory. | 3 Marks<br>4 Marks<br>4 Marks |

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- (c) i. What does the acronym ZPD represent in Socio-Cultural Theory? 2 Marks  
ii. Explain what the ZPD is. 4 Marks