



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, 2022/2023

B.ED. PROGRAMME

COURSE CODE: TEEG 209

COURSE TITLE: THEORIES IN THE LEARNING OF NUMERACY

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*Instruction: 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. The activity theory calls for facilitators to be aware that tools can limit as well as enable social interaction. Hence, they must be \_\_\_\_\_  
A. applied wisely by an effective mathematics teacher  
B. applied wisely to promote effective learning  
C. used to assist learners who are challenged  
D. used with variations in their colours

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

SIGNATURE: \_\_\_\_\_

2. The theory that suggests that human learning is largely a social process is termed \_\_\_\_\_.

- A. Behavioural theory
- B. Constructivism theory
- C. Situated cognition theory
- D. Socio-cultural theory

3. The following are true of behaviourism principle, with the EXCEPTION \_\_\_\_\_.

- A. of desirable human behaviour is more the product of design than accident
- B. of some learning conforming to the basic stimulus-response model
- C. that inborn factors have a lot of influence on behaviour and learning ability
- D. that it is an illusion to say that humans have free will; this can never be

4. Any event that increases the frequency of occurrence of the response that follows is referred to as \_\_\_\_\_.

- A. Association
- B. Reconstruction
- C. Reinforcement
- D. Stimulus response

5. Akua can recognize and understand her intentions, motivations, desires, and moods. Which of the following intelligences does she possess, according to the theory of multiple Intelligence?

- A. Interpersonal intelligence.
- B. Intrapersonal intelligence.
- C. Naturalist intelligence.
- D. Spatial intelligence.

6. The form of adaptation that involves modification of the internal cognitive structure to make sense of the new information is referred to as \_\_\_\_\_.

- A. accommodation.
- B. assimilation.
- C. association.
- D. discrimination.

7. Which of the following is NOT TRUE based on the principle of behaviourism?

- A. Forces in the environment shape our behaviour.
- B. Human behaviour consists of specific stimuli.
- C. It pays attention to internal influences in us.
- D. We may act as if we are free, but we are not.

STUDENT'S ID NO. \_\_\_\_\_

SIGNATURE: \_\_\_\_\_

8. The theory in which appropriate behaviour is gradually "shaped" into the desired outcome belongs to the \_\_\_\_\_
- A. Behavioural theory
  - B. Cognitive theory
  - C. Constructivism theory
  - D. Situated cognition theory
9. Mr. Adongo divided "Number and Numeration" into its constituent parts and taught each part to his pupils, believing that once these parts have been learnt, they will be synthesized by the pupils in such a way that "Number and Numeration" is understood. Which school of thought does Mr. Adongo belong to?
- A. Behaviourists
  - B. Cognitivist
  - C. Constructivist
  - D. Socio-Culturalist
10. One main implication of Dienes' work is that large-group lessons should be deemphasized to cater for \_\_\_\_\_
- A. expository teaching by the teacher
  - B. individual difference among students
  - C. students heavily relying on the teacher
  - D. students' reliance on each other
11. The socio-cultural theory developed from the work of which of the following psychologists?
- A. Albert Bandura
  - B. Aleksei, N. Leont'ev
  - C. Jean Piaget
  - D. Lev Vygotsky
12. Those things that are often repeated are the best learned. This has to do with the law of \_\_\_\_\_
- A. effect
  - B. exercise
  - C. primacy
  - D. readiness

13. After the long COVID-19 break, students had forgotten most of the things they learnt in school. This means that \_\_\_\_\_.

- A. lack of repetition leads to extinction
- B. learning cannot be programmed
- C. learning is a conditioned behaviour
- D. negative reinforcement leads to forgetting

14. The use of different situations and models to teach a particular mathematics concept, in the early grade classroom is an illustration of the \_\_\_\_\_.

- A. Conservation principle
- B. Constructivity principle
- C. Multi-arithmetic principle
- D. Multi-embodiment principle.

15. Behaviourism is solely concerned with objectively \_\_\_\_\_ behaviour.

- A. examinable
- B. measurable
- C. observable
- D. traceable

16. Which one of the following BEST describes how we develop knowledge, from the perspective of a constructivist?

- A. We are born with most of our knowledge embed within us.
- B. We are sponges that absorb everything from the authority.
- C. We develop knowledge by continually engaging with others.
- D. We gain knowledge only by going to school.

17. The concept of self-regulated learning derives from \_\_\_\_\_.

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

18. Learning in the iconic mode involves using \_\_\_\_\_.

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

19. There are three ways a cultural tool can be passed from one individual to another. This EXCLUDES \_\_\_\_\_ learning.

- A. collaborative
- B. imitation
- C. instructed
- D. operative

20. Benjamin can analyse information and create products involving oral and written ones. Where can his ability be placed among the following?

- A. Bodily-kinaesthetic intelligence.
- B. Logical-mathematical intelligence.
- C. Musical intelligence.
- D. Verbal-linguistic intelligence.

21. Assimilation as a form of adaptation of schemas in mathematics involves \_\_\_\_\_.

- A. effecting some changes in an existing schema to include a new one
- B. fitting an already existing schema into a new one by trial and error
- C. fitting a new schema into the existing one without any changes but expansion
- D. splitting a new schema into smaller units to fit an existing one

22. An organisation of concepts and actions that can be revised by new information about the world is known as \_\_\_\_\_.

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

23. 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 the instructional strategies they select and enact
- D. influences their teaching and learning philosophy

24. Constructivist theory is underpinned by the principle that \_\_\_\_\_.

- A. learners construct their own knowledge
- B. learning is a change in observable behaviour
- C. learners require a higher authority as a facilitator
- D. learners require frequent practice to succeed

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

SECTION B

[75 Marks]

Answer any THREE questions in this section.

- 1 (a) (i) Identify **FIVE** actions the mathematics facilitator carries out in applying behaviourism in the Early grade classroom. 10 Marks  
(ii) Explain the five actions identified in 1(a) above. 4 Marks

(b) Represent Lingstrom's activity theory diagrammatically. 6 Marks

(c) Explain any **THREE** variables on it in relation to the learner in the Early grade numeracy classroom. 6 Marks

2 (a) Identify **THREE** key issues highlighted by the learning philosophy of the lower primary mathematics curriculum. 9 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 lower primary school: 3 Marks

i. *Dyspraxia* 3 Marks  
ii. *Dyscalculia* 4 Marks

(d) Explain how learners with the stated learning difficulties in (2Ci and 2Cii) may be managed in a numeracy class. 4 Marks

3 (a) State **FIVE** effective facilitator attitudes in teaching numeracy at the Early grade level. 10 Marks

(b) Explain any **THREE** of the effective teacher attitudes stated in (3a). 9 Marks

(c) Explain **THREE** of the criticisms of behaviourism. 6 Marks

(a) (i). State the factors that facilitate concept formation in the numeracy class. 4 Marks

(ii). Explain the factors stated in 4(ai) above. 8 Marks

(b) (i). State the types of concepts in numeracy learning according to Richard Skemp. 2 Marks

(ii). Explain the stated concepts in 4(bi), giving an example in each case. 8 Marks

(c) Distinguish between a number and a numeral, giving an example in each case. 3 Marks

5 (a) Provide the full words for the following abbreviations: 2 Marks

i. ADD 2 Marks  
ii. ADIID 2 Marks

(b) i. Define "situated cognition theory". 3 Marks

ii. State THREE implications for the learner in situated cognition theory. 6 Marks

iii. STATE three implications for the teacher in situated cognition theory. 6 Marks

(c) i. What does the acronym ZPD represent in socio-cultural theory? 2 Marks

ii. Explain what the ZPD is. 4 Marks