

Discriminatory indices of 'introduction to psychology' multiple choice examination questions

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Abstract: This study investigated the discriminatory indices of the multiple choice questions of a compulsory undergraduate course (Introduction to Psychology) in a private Nigerian university. The main research question raised was: Did all the items in the 'Introduction to Psychology' examination discriminate adequately between low scoring and high scoring students? To answer this question, the discriminatory index was derived for all the 70 items fielded in the examination. Though 255 students took this course, only students whose total scores fell within the topmost and lowest quartiles participated in this study. Students with missing data were extracted from the topmost and lowest quartiles. Consequently, the data of 100 students (50 in the topmost quartile and 50 in the lowest quartile) were utilized in computing the Discriminatory indices (Di) of the 70 Multiple Choice Questions. Out of the 70 items, two (2.9%) furnished poor Di, fifteen items (21.4%) had weak Di, fourteen items (20%) had fair Di, and thirty-nine items (55.7%) had fairly strong and strong Di. The findings are discussed and relevant recommendations made.

Keywords: Discriminatory Index, Item Analysis, Multiple Choice Questions, Test Validity, Testing.

1. Introduction

With the advent of pestilences like COVID-19 which authors such as [1] consider non-violent conflict that harms people's health and human development [2], the use of Multiple Choice Questions (MCQ), especially for online testing has increased. It is a common knowledge that essay examination questions are much easier to set than MCQs, while the case is reversed in scoring. It is often more laborious to score essay questions than MCQs. With a large student population, the wiser assessment format option should be MCQ. Diminishing returns tend to negatively affect the accurate scoring of a large pool of essay questions. Conversely, it is far easier and faster scoring MCQ for a large number of candidates with optical mark readers [OMR]. Another strong advantage of MCQ is that, if well-constructed with the application of Test Blueprint, it allows for good coverage of the subject curriculum cum syllabus. This way, the probability of achieving the curriculum objectives, and by extension the national educational objectives, is greatly enhanced [3-15].

The process of developing a valid MCQ often takes days, weeks and at times months, depending on the skill and experience of the test developers. It is for this reason that the strategy of item banking is often used in conjunction with the development exercise. The time and resources expended in developing good MCQs would hardly be justified when only a few items (questions) are written. It is for this reason that professional examination bodies like the Education Testing Service (ETS), West African Examinations Council, and Joint Admission and Matriculation Board, among others, ensure that a large pool of MCQs is developed, validated, and banked to last for about three years or more, depending on the life span of the curriculum.

Another strong reason why it is imperative to empirically establish the validity of MCQs is because of the sensitivity of the decisions often made based on their results. Some are used for

recruitment, selection, admission, and promotion [16]. Invalid examination questions naturally invalidate the results and decisions made. Several people's destinies, hopes and expectations have been frustrated because of such invalid examination questions. Some even became depressed and committed suicide [17].

The core objective of this study therefore is to demonstrate one of the standard procedures for validating MCQs, using Discriminatory Index. Consequently, this study hopes to evolve recommendations that will further enhance Learning Facilitators' skills for more effective implementation of item analysis, hence enhancing multiple choice objective test validity. Item analysis includes the Discriminatory Index.

Beyond the Discriminatory Index, other standard procedures for ascertaining the validity of MCQ are done via computation of Difficulty Index and Distractive Index [17-19]. Foundational to item analysis procedures are content validation and strict adherence to Item writing rules. The procedure for establishing Difficulty and Distractive Indices has been treated by [20]. The study focuses on the Discriminatory Index.

1.1. Discriminatory Index

The Discriminatory Index (Di) is the difference between the proportion of candidates who got an item right in the Upper Quartile (UQ) and those who got the answer to the same item right in the Lower Quartile (LQ) [21]. The discrimination index shows the degree to which an item discriminates between high and low-scoring students [21-27].

$$Di = \frac{UQ \text{ Right}}{UQ \ n} - \frac{LQ \text{ Right}}{LQ \ n} \quad - \text{Formula 1}$$

Here is another formula from the [27]:

$$D = \frac{K_h - K_l}{N_h}$$

D = Discrimination Index

K_h = Number of correct answers to the item from the highest group

K_l = Number of correct answers to item from the lowest group

N_h = Number of students in the highest or lowest group

The range of values for Di, therefore, is between 0 and ± 1 . The closer to zero and the more negative the value of Di, the poorer the Discriminatory Index. This implies that the item is not appropriately discriminating or differentiating high scoring and low scoring students. For instance, the literal meaning of a negative Di is that more of the students who scored higher on the overall (which suggests intellectually superior students) missed the answer to an item than the intellectually weaker students. This is and calls for a closer review of the item. Such review often reveals anomalies in the item that will likely require item moderation. In some cases, the item may be unredeemable and might need to be discarded outright. This is why Discriminant Index is more reliable empirical evidence of the content validity of multiple-choice examination questions [14].

Imagine that a large number of items in your MCQs have near zero or negative Di. Further imagine that the result of such an examination, being a compulsory course, might prevent affected students from getting promoted or graduating. The implications are better imagined than experienced. Depending on the personality and resilience of affected students, some may slip into depression and suicide ideation [17]. Consequently, the ideal psychometric requirement is to conduct item analysis and item moderation before final test administration. This is imperative for all MCQ examinations, be it elective or compulsory courses [18].

2. Method

This study adopted the *survey* design. Live multiple choice questions (MCQ) on *Introduction to Psychology* were administered on undergraduate students in a private Nigerian University and the responses constituted the data for this study.

Though two hundred and fifty-one students registered for the course, one hundred students were purposively sampled from the lower and upper quartiles to derive the Discriminatory Index. The mean age of the *sample* is 16 years. The participants were 100 level students in a private university in Nigeria.

The main *instrument* used in this study was the 70-item multiple choice end-of-semester examination questions on *Introduction to Psychology*, a compulsory two-unit course. The course was examined solely with Multiple Choice Question. This examination constituted 70% while the Continuous Assessment constituted 30% of the whole course assessment. Extra care was therefore taken to ensure the Content Validity of this final examination. First, the relevance of all questions to the content and objectives of the *course compact* (called Course Outline or Scheme in other institutions) was checked. Thereafter, the stem (main question), keys (correct answer) and distractors (incorrect answers) in each item were also checked for adherence to the rules of item writing. Of importance is checking to ensure that the items were free of ambiguity, that there is only one absolutely correct answer for single-answer MCQ format, and that all the distractors were attractive enough to distract students that are prone to guessing.

It is important to also mention that the *Introduction to Psychology* course was facilitated by three Lecturers (A Professor, Senior Lecturer and an Assistant Lecturer). The Senior Lecturer is a Test and Measurement major.

Under strict examination conditions, the questions were administered within a duration of one hour. The students responded on Optical Mark Reader (OMR) forms which was later scanned and scored digitally. The output of the scanned OMR constituted the main *data* for this study. The output indicated the options selected by each student. With this information, it was possible to derive the Distractive Index (Di) for all the 70 items in the examination, using *Formula 1* above.

In conducting *data analysis*, *Excel* was used to arrange the total scores for all registered students (251) in descending order. Thereafter, the distribution was divided into four quartiles. The exercise made it possible to identify the students falling into the Upper and Lower Quartiles. With the elimination of cases having missing data, the lower and upper quartiles were brought down to 50 cases each, making it 100 cases altogether.

The data was thereafter transferred into *SPSS* for derivation of frequency of respondents who got each item right in the Upper Quartile (UQ) and Lower Quartiles (LQ). Thereafter, the LQ proportion was deducted from the UQ proportion to determine the Discriminatory Index.

The decision rules applied on the range of indices derived are the following: All items with negative Di were described as 'Poor', while items with Di ranging from 0.00 and 0.19 were described as Weak. Items with Di in the range of 2.0 and 3.9 were classified as Fair, while items with Di in the range of 4.0 and 5.9 were classified as Fairly Strong. Items with Di in the range of 6.0 and 7.9 were classified as Strong, while items with Di ranging from 8.0 and 1.0 were classified as Very Strong [23]. The summary of this classification is in Table 1 while the results of the Di derivations are presented Table 2a and 2b below.

Table 1:
Interpretation of discriminatory indices range.

Di Range	Interpretation
-ve indices	Poor
0.0-0.19	Weak
0.20-0.39	Fair
0.40-0.59	Fairly strong
0.60-0.79	Strong
0.80-1.0	Very Strong

3. Results

Table 2a:
Discriminatory Indices of first 35 items in *Introduction to Psychology* Course.

Item No.	Upper Quartile [UQ]			Lower Quartile [LQ]			Di	Interpretation
	No. Correct	UQ [n]	UQ Prop	No. Correct	LQ [n]	LQ Prop		
1	37	50	0.74	36	50	0.72	0.02	Weak
2	41	50	0.82	34	50	0.68	0.14	Weak
3	43	50	0.86	11	50	0.22	0.64	Strong
4	43	50	0.86	24	50	0.48	0.38	Fair
5	47	50	0.94	17	50	0.34	0.60	Strong
6	45	50	0.90	7	50	0.14	0.76	Strong
7	46	50	0.92	25	50	0.5	0.42	Fairly Strong
8	43	50	0.86	9	50	0.18	0.68	Strong
9	46	50	0.92	19	50	0.38	0.54	Fairly Strong
10	27	50	0.54	7	50	0.14	0.40	Fairly Strong
11	41	50	0.82	14	50	0.28	0.54	Fairly Strong
12	24	50	0.48	23	50	0.46	0.02	Weak
13	46	50	0.92	9	50	0.18	0.74	Strong
14	50	50	1.00	13	50	0.26	0.74	Strong
15	8	50	0.16	9	50	0.18	-0.02	Poor
16	21	50	0.42	1	50	0.02	0.40	Fairly Strong
17	19	50	0.38	10	50	0.2	0.18	Weak
18	4	50	0.08	8	50	0.16	-0.08	Poor
19	44	50	0.88	7	50	0.14	0.74	Strong
20	48	50	0.96	22	50	0.44	0.52	Fairly Strong
21	45	50	0.90	16	50	0.32	0.58	Fairly Strong
22	37	50	0.74	22	50	0.44	0.30	Fair
23	12	50	0.24	6	50	0.12	0.12	Weak
24	24	50	0.48	21	50	0.42	0.06	Weak
25	49	50	0.98	33	50	0.66	0.32	Fair
26	47	50	0.94	37	50	0.74	0.20	Weak
27	43	50	0.86	32	50	0.64	0.22	Weak
28	42	50	0.84	11	50	0.22	0.62	Strong
29	42	50	0.84	10	50	0.2	0.64	Strong
30	41	50	0.82	32	50	0.64	0.18	Weak
31	48	50	0.96	33	50	0.66	0.30	Fair
32	36	50	0.72	12	50	0.24	0.48	Fairly Strong
33	44	50	0.88	19	50	0.38	0.50	Fairly Strong
34	49	50	0.98	23	50	0.46	0.52	Fairly Strong

35	43	50	0.86	17	50	0.34	0.52	Fairly Strong
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Table 2b:
Discriminatory Indices of last 35 items in *Introduction to Psychology* Course.

Item No.	Upper Quartile [UQ]			Lower Quartile [LQ]			Di	Interpretation
	No. correct	UQ [n]	UQ Prop	No. Correct	LQ [n]	LQ prop		
36	8	50	0.16	2	50	0.04	0.12	Weak
37	44	50	0.88	21	50	0.42	0.46	Fairly Strong
38	41	50	0.82	14	50	0.28	0.54	Fairly Strong
39	41	50	0.82	17	50	0.34	0.48	Fairly Strong
40	36	50	0.72	20	50	0.4	0.32	Fair
41	36	50	0.72	20	50	0.4	0.32	Fair
42	34	50	0.68	13	50	0.26	0.42	Fairly Strong
43	46	50	0.92	15	50	0.3	0.62	Strong
44	49	50	0.98	16	50	0.32	0.66	Strong
45	41	50	0.82	13	50	0.26	0.56	Fairly Strong
46	45	50	0.90	14	50	0.28	0.62	Strong
47	6	50	0.12	1	50	0.02	0.10	Weak
48	44	50	0.88	9	50	0.18	0.70	Strong
49	23	50	0.46	4	50	0.08	0.38	Fair
50	39	50	0.78	8	50	0.16	0.62	Strong
51	25	50	0.50	10	50	0.2	0.30	Fair
52	9	50	0.18	9	50	0.18	0.00	Weak
53	34	50	0.68	27	50	0.54	0.14	Weak
54	9	50	0.18	7	50	0.14	0.04	Weak
55	45	50	0.90	6	50	0.12	0.78	Strong
56	31	50	0.62	16	50	0.32	0.30	Fair
57	43	50	0.86	20	50	0.4	0.46	Fairly Strong
58	40	50	0.80	22	50	0.44	0.36	Fair
59	47	50	0.94	26	50	0.52	0.42	Fairly Strong
60	49	50	0.98	29	50	0.58	0.40	Fairly Strong
61	39	50	0.78	38	50	0.76	0.02	Weak
62	50	50	1.00	25	50	0.5	0.50	Fairly Strong
63	37	50	0.74	15	50	0.3	0.44	Fairly Strong
64	20	50	0.40	1	50	0.02	0.38	Fair
65	48	50	0.96	20	50	0.4	0.56	Fairly Strong
66	46	50	0.92	21	50	0.42	0.50	Fairly Strong
67	24	50	0.48	5	50	0.1	0.38	Fair
68	27	50	0.54	14	50	0.28	0.26	Fair
69	50	50	1.00	24	50	0.48	0.52	Fairly Strong

70	29	50	0.58	14	50	0.28	0.30	Fair
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Table 3:
Frequency & Percentage of Di Interpretations.

	Frequency	Percent
Poor	2	2.9
Weak	15	21.4
Fair	14	20.0
Fairly Strong	24	34.3
Strong	15	21.4
Total	70	100.0

From Table 3, it can be deduced that out of the 70 items, 2 (2.9%) exhibited poor Discriminatory Indices, with more Students in the Lower Quartile getting an item correct than the students in the Upper Quartile. The questions affected are items 15 [-0.02] and 18 [-0.08].

In all, twenty-nine items were weak and fair (29, 41.4%) while fourteen were fair (14, 20%). In all thirty-nine items were fairly strong and strong (39, 55.7%). It is important to note that there was no 'very strong item' in the whole lot, in terms of Discriminatory power.

4. Findings

The following are the findings from this study:

1. Two items (2.9%) were deemed poor because they furnished negative Discriminatory indices.
2. Fifteen items (21.4%) were deemed weak.
3. Fourteen items (20%) were deemed fair.
4. Twenty-four items (34.3%) were deemed fairly strong.
5. Fifteen items (21.4%) were deemed strong.

5. Discussion

5.1. Two Items Were Deemed Poor

Let's have a closer look at the two questions that furnished negative Discriminant Indices - Items 15 and 18:

15. The first IQ test was developed by _____ and his friend.

- A. Thiodore Simon
- B. Alfred Bonnet
- C. Frederick Menninger
- D. Francis Galton

18. Which of the following is not a neurotransmitter _____

- A. Serotonin
- B. Histamine
- C. Aceticoline
- D. Dopamine

In item 15, the name of ‘Theodore Simon’ was misspelled as ‘Theodore Simon’. This could have accounted for the abnormal discriminatory index observed. The implication of this is that there is no correct answer in the options, hence the students resorted to guessing. This must have accounted for the sporadic responses.

There is nothing wrong with item 18, apart from the missing question mark at the end of the question. The focus of the question is to test for the knowledge of the correct spelling of the neurotransmitter called ‘Acetylcholine’. It is also apparent many of the respondents are not familiar with the names of the other neurotransmitters listed in the options. The neurotransmitters were only mentioned during the lecture. They were not listed in the PowerPoint slides given to students. Consequently, many of the respondents, including the high-scoring students, did not know the correct spelling of ‘Acetylcholine’. They therefore resorted to guessing. This finding further suggests that many of the students, including the high-scoring ones, did not engage in deep study of the content of these courses.

The discovery from item 18 therefore suggests that an abnormal Discriminatory index may not always be attributable to faulty multiple choice question. It could also be attributable to poor students’ preparation for examinations.

5.2. Fifteen Items Were Deemed Weak

Items 1, 2, 12, 17, 23, 24, 26, 27, 30, 36, 47, 52, 53, 54 and 61 were deemed weak in terms of Discriminatory power. Apart from item 47 that has a slight grammatical error, close scrutiny shows that all the other items listed here have sufficient content validity attributes. The reason adduced for the abnormal Discriminatory index obtained for item 18 above tend to apply for the items listed as weak here. It is not unlikely majority of the students, including those in the high scoring quartile, did not engage adequate study to correctly identify the correct answer. It is important to mention that the Lecturers, being conscious of the level of the students, hardly ask questions beyond the explanations made during lectures and the points in the PowerPoint slides they were given.

5.3. Fourteen Items Were Deemed Fair; Twenty-Four Items Were Deemed Fairly Strong; Fifteen Items Were Deemed Strong

The fact that 75.7% of the questions were deemed fair, fairly, strong and strong is an indication that the examination under review could be graded A in terms of psychometric quality. However, there is clearly room for improvement.

5.4. General Observation

The fact that there were still errors in some of the items in this examination, despite the partial psychometric intervention, reiterates the need to astutely apply item analysis before the live administration of all sensitive examinations of this nature. It is simply humanly impossible to spot all the errors in MCQ items solely via content validation visual review. It is important that all newly written MCQs, after thorough content validation, be taken through pilot testing with students of similar parameters, to generate data for item analysis. The empirical results obtained from the item analysis become reliable guide for item moderation. Subsequently, the approved items are banked for future use. This is the standard procedure for the use of Multiple Choice Objective questions. Any attempt at introducing short cut methods is bound to result in assessment errors which could prove to be debilitating to the recipients of such examination, and non-fulfillment of organisational and national developmental goals.

6. Conclusion

This study investigated the discriminant validity of ‘Introduction to Psychology’ multiple choice examination questions in a Private Nigerian University. Though the number of faulty items were minimal, perhaps due to the intervention of a Psychometrician who took time to ensure adherence with the rules of item writing, yet the overall result shows that there is always need to conduct item analysis to prevent situations where some students will be put at undue disadvantage. Such students often know

the subject matter but may end up failing or get sub-standard result due to test development errors. In some cases, some students end up spending extra one year to make up for courses of this nature, which are often compulsory. Some students further develop depression as a result of such nasty experience. For these reasons, it is quite apparent that item analyses are a task that must be done with all sensitive multiple-choice objective examinations that are compulsory requirement for promotion, graduation and certification in all organisations and institutions handling such assessment exercises. Students should also be counselled and taught the procedure for deep study cum learning to prevent the kind of errors observed with item 18 in this study.

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Appendix

TITLE OF EXAMINATION: B.Sc Psychology

DEPARTMENT: Psychology

COURSE CODE: PSY 111

TIME: 1hr

COURSE TITLE: Introduction to Psychology

INSTRUCTION: Answer questions 1 to 70 in the OMR sheet provided.

1. Which of the options below **best** describes the true meaning of Psychology? It is the
 - A. study of scientific behavior
 - B. scientific study of behavior
 - C. study of mental challenges
 - D. scientific study of the brain
2. Which if the following is **not** a field of Psychology?
 - A. Forensic Psychology
 - B. Hospital Psychology
 - C. Educational Psychology
 - D. Industrial Psychology
3. The concept of *reinforcement* belongs to which field of Psychology?
 - A. Constructivism
 - B. Psychoanalysis
 - C. Structuralism
 - D. Behaviorism
4. The human mind is made up three basic components:
 - A. cognition, soul and mind
 - B. will, emotion and intellect
 - C. cognition, affect and psychomotor
 - D. brain, affective and psychomotor
5. Humanistic Psychology has to do with
 - A. being cordial and caring
 - B. being humane
 - C. fair deal
 - D. free will
6. The social psychology perspective that explains social behavior as a product of hereditary and genetics is _____
 - (A) Social cognitive perspective
 - (B) Evolutionary perspective
 - (C) Socio-genetic perspective
 - (D) Socio-hereditary perspective
7. The perspective in social psychology that explains social behavior as products of rational thinking is _____
 - (A) Social cognitive perspective
 - (B) Socio-evolutionary perspective
 - (C) Social learning perspective
 - (D) Socio-rational perspective
8. According to Piliavin & Charng, (1990), _____ is a type of prosocial behaviour motivated mainly out of a consideration for another's needs rather than one's own.
 - (A) Bystander effect
 - (B) Altruism
 - (C) Airtude
 - (D) Empathy
9. The bystander effect is also known as the _____ syndrome.
 - (A) Stockholm syndrome
 - (B) Genovese syndrome
 - (C) Capras syndrome
 - (D) Ekbohm syndrome
10. One of the following is **not** a characteristics of research
 - (A) Systematic
 - (B) Empirical
 - (C) Justifiable
 - (D) Replicable

11. Psychologists use _____ research method to explore the relationship between variables.
 (A) Correlational
 (B) Survey
 (C) Observational
 (D) Descriptive
12. _____ research studies are ideal for identifying causal relationships.
 (A) Correlational
 (B) Survey
 (C) Causal
 (D) Experimental
13. The Mother of Psychology is
 A. Margaret Maslow
 B. Juliet Skinner
 C. Karen Horne
 D. Mary Calkins
14. Which of these psychological theories did Skinner propose?
 A. Behaviour modification
 B. Behaviour conditioning
 C. Operant conditioning
 D. Classical conditioning
15. The first IQ test was developed by _____ and his friend.
 A. Theodor Simon
 B. Alfred Bonnet
 C. Frederick Menninger
 D. Francis Galton
16. The first woman to study women's issues was
 A. Mary Washburn
 B. Floy Washburn
 C. Karen Horne
 D. Stetter Hollingworth
17. The variable that is selected, manipulated and controlled by the experimenter is called the?
 A. Dependent variable
 B. Secondary variable
 C. Independent variable
 D. Primary variable
18. Which of the following is ~~not~~ a neurotransmitter _____
 A. Serotonin
 B. Histamine
 C. Acetylcholine
 D. Dopamine
19. Sensation is first experienced in the _____
 A. axon terminals
 B. brain
 C. synapse
 D. dendrite
20. Which of the following is an insulator on the neuron?
 A. Fatty layer
 B. Insulator
 C. myelin
 D. dendrite sheat
21. According to Sigmund Freud, which of the following works with the pleasure principle?
 A. Ego
 B. Superego
 C. Id
 D. Subrasso
22. Which of the following Functionalists went on to set up a laboratory at Harvard University?
 A. John Dewey
 B. William James
 C. James Cattell
 D. Edward Thorndike
23. Which of the following Schools of Psychology recommended concepts like mnemonics and concept mapping?
 A. Mapping theory
 B. Constructivism
 C. Gestalt Psychology
 D. Cognitive Psychology
24. The field of psychology responsible for developing and standardizing tests, questionnaires and related psychological instruments is
 A. Test Psychology
 B. School Psychology
 C. Psychometrics
 D. Educational Psychology
25. The first projective psychological test was created by
 A. Skinner
 B. Rorschach
 C. Bandura
 D. Galton

26. How is Philosophy related to Psychology?
- Psychology is the mother of Philosophy
 - Psychology births Philosophy
 - There can be no Philosophy without Psychology
 - Philosophy led to Psychology
27. Psychology is ~~not~~ needed in which of the following sectors?
- Armed forces
 - Engineering
 - Economics
 - None of the options
28. The unique feature of lobotomy is
- drilling hole through frontal lobe
 - destroying portions of the brain
 - drilling hole through temporal lobe
 - letting evil spirit escape
29. Who proposed Cognitive Behaviour Therapy [CBT]?
- ~~Meichenbaum~~
 - Beck
 - Ellis
 - ~~Neisser~~
30. Who proposed the ABC framework for treating people with psychological ailments?
- ~~Neisser~~
 - Ellis
 - Aaron
 - Donald
31. The unique feature of Trephining is
- destroying portions of the brain to cure insanity
 - drilling hole in the skull
 - drilling hole through frontal lobe
 - to trap evil spirit causing madness
32. Joseph in the Bible woke up one morning and observed one of the Prisoners was looking sad. How is this phenomenon described in Psychology?
- Phrenology
 - ~~Prenology~~
 - Physiognomy
 - ~~Parentology~~
33. ----- was one of those who proposed the theory of functionalism.
- Wilhelm Wundt
 - John Dewey
 - James Dewey
 - Williams Wundt
34. Who proposed the concept of dream analysis?
- Skinner
 - Watson
 - Bandura
 - Freud
35. Who proposed the concept of Self Actualization?
- ~~Wilhem~~
 - Maslow
 - Bandura
 - Beck
36. ----- is part of the abiotic environment that affects human ~~behaviour~~.
- plasmodium
 - dust
 - virus
 - parasites
37. The theory that emphasizes *the world as it is interpreted by the individual* is
- Self Perception theory.
 - Individual Perception.
 - Personal Unconscious theory.
 - Construal theory.
38. Which of the following was a proponent of Gestalt Psychology?
- Gestalt
 - ~~Ebbingshaw~~
 - Herman
 - Lee Ross
39. According to Piaget, which stage of cognitive development is associated with object permanence?
- Concrete operational
 - Operational
 - Formal Operational
 - Sensorimotor

40. According to Piaget, at what age period is a person likely to engage symbolic thoughts?
 A. 0-2 years
 B. 2-7 years
 C. 7-12 years
 D. Above 12 years
41. The fact that people tend to learn more through observation & role modelling is the subject of
 A. Role modelling.
 B. Observational learning.
 C. Social learning.
 D. Interactive learning.
42. Who once said *the only disability is bad attitude*?
 A. Oprah Winfrey
 B. Keith Karrell
 C. Maya Angelou
 D. Scott Hamilton
43. Part of the brain that is majorly responsible for reasoning is the _____
 A. mid stem
 B. frontal lobe
 C. temporal lobe
 D. cerebellum
44. Which part of the brain helps humans to understand language?
 A. Cerebral cortex
 B. Occipital lobe
 C. Temporal lobe
 D. Pre-frontal lobe
45. Which part of the brain is responsible for maintaining balance?
 a. Brain stem
 b. Cerebellum
 c. Mid stem
 d. Parietal lobe
46. Which part of the brain is controls hearing?
 a. Occipital lobe
 b. Cortex
 c. Cerebrum
 d. Temporal lobe
47. Lolita suddenly saw the snake, screamed, flung the expensive wedding cake she was carrying into the air, and began running. Which part of her mind is responsible for this behaviour?
 A. The cortex
 B. The involuntary cortex
 C. Spinal cord
 D. Hypothalamus
48. The concept of *introspection* belongs to which field of Psychology?
 A. Constructivism
 B. Behaviorism
 C. Psychoanalysis
 D. Structuralism
49. The primary function of the stimulus is to _____
 A. cause depolarization.
 B. generate action potential
 C. open the sodium pump.
 D. cause potassium to rush into the neuron.
50. During *depolarisation*, the inner part of the neural cell membrane is
 A. neutral
 B. negative
 C. positive
 D. charged
51. *Specifically*, in which part of the neuron are the neurotransmitter released into the synapse?
 A. Dendrite terminals
 B. Axon terminals
 C. Pre-synaptic membrane
 D. Neurotransmitter vesicles.
52. What *actually* causes the release of action potential is _____
 a. the opening of potassium pump
 b. opening of sodium pump
 c. depolarization
 d. sodium ion rushing into the neuron.
53. The organelles that receive the neurotransmitters are called _____
 A. receivers
 B. receptors
 C. post-synaptic membranes
 D. pre-synaptic membranes

54. Which part of the mind is **directly** attributed to be responsible for learning?
 A. Temporal lobe
 B. Potassium gate
 C. Brain
 D. Synapse
55. Which hormonal gland controls the level of calcium in the blood?
 A. Pancreas
 B. Parathyroid
 C. Pituitary
 D. Thyroid
56. One of the hormones responsible for controlling sugar level in the body is the _____.
 A. Pituitary
 B. Adrenalin
 C. Glucagon
 D. Insulin
57. Which hormonal gland tend to control virtually all other hormonal gland?
 a. Master gland
 b. Pituitary gland
 c. Hypothalamus
 d. Pineal gland
58. Which hormone could **most likely** cause high blood pressure?
 a. Thyroxine
 b. Adrenaline
 c. Excessive Insulin
 d. Prolactin
59. The likely reason when a girl feels she is a transgender is that she has
 a. excessive estrogen
 b. low estrogen
 c. excessive testosterone
 d. low testosterone
60. Which of the following is likely to be obsessed with sexual thoughts and actions?
 a. Sex slave
 b. Drug addict
 c. Nymphomania
 d. Sexomania
61. At what period is a girl likely to feel unusually horny [i.e. experience strong sexual urge]?
 During _____
 A. Menstruation
 B. Fertilisation
 C. Ovulation
 D. Implantation
62. The field of Psychology proposed by Alfred Adler is called _____
 A. Individual Psychology
 B. Gestalt Psychology
 C. Comparative Psychology
 D. Personal Psychology
- According to Erickson, a person is expected to develop sense of industry or inferiority at the age range of _____
 A. 4-5 years
 B. 5-12 years
 C. 12-19 years
 D. 19-39 years
- At what stage of Psychosocial development do children begin to assert their independence by making choices like picking which toys to play with?
 A. Trust vs Mistrust
 B. Initiative vs Guilt
 C. Autonomy vs Shame
 D. Industry vs Inferiority
65. Carl Jung's theory is called _____
 A. Psychodynamic Psychology
 B. Analytical Psychology
 C. Profiling Psychology
 D. Jung's Psychology
66. Which of the following is the correct order of the Psychosexual stages of development?
 A. Oral, Anal, Latency, Phallic, Genital.
 B. Oral, Anal, Phallic, Latency, Genital.
 C. Oral, Anal, Phallic, Genital, Latency.
 D. Oral, Anal, Genital, Phallic, Latency.

67. Sometimes, when one finds it difficult to ascend a stage of Psychosexual development, such may develop behaviour patterns reflecting that of infantile behaviour. Freud called this -----
- A. Libido
 - B. Fixation
 - C. Infanility
 - D. Oedipus complex
68. In psychoanalytic therapy, the sudden and dramatic outpouring of emotion that occurs when trauma is resurrected is called -----
- A. Catharsis
 - B. Transference
 - C. Outburst
 - D. Spillburst
69. The first Psychology laboratory was founded in -----
- A. London
 - B. Texas
 - C. Titchner
 - D. Leipzig
70. Oedipus Complex is associated with _____ stage of psychosexual development
- A. genital
 - B. phallic
 - C. latency
 - D. anal