

**NATIONAL INSTITUTE OF TECHNICAL TEACHERS'  
TRAINING AND RESEARCH,  
CHENNAI – 600 113**

**Ph.D. (Engineering Education) of University of Madras**

**ENTRANCE TEST**

**JULY 2017**

**Time: 1 hr & 30 Minutes**

**Max.Marks: 50**

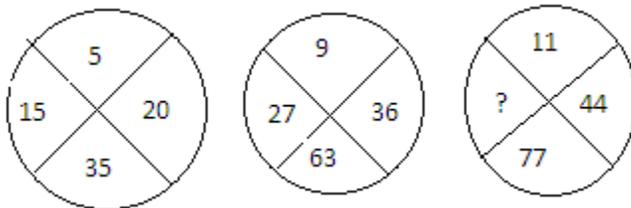
Note : All questions carries equal marks. Answer all the questions.

**PART-A**

1. Action Research
  - A. A longitudinal research
  - B. An applied research
  - C. A research initiated to solve an immediate problem
  - D. A research with socioeconomic objective
  
2. A teacher can ensure the participation of all the students in a diverse ability class room through
  - A. Group activity
  - B. Differentiated teaching strategies.
  - C. Peer learning
  - D. Team teaching
  
3. "Curriculum" and "Syllabus"
  - A. Are one and the same
  - B. Are in the hierarchy, where curriculum is the supersect of the syllabus
  - C. Are in the hierarchy, where syllabus is the supersect of curriculum
  - D. Do not have any connections with each other
  
4. Which of the following is a kind of Survey Research?
  - A. Follow-up
  - B. Census
  - C. Sample
  - D. All of the above
  
5. The most appropriate student centric instructional approach is
  - A. Lecture
  - B. Discussion

- C. Project work
- D. Demonstration

6. When data states not just the occurrence or non-occurrence of phenomena but also gives an indication of the magnitude or intensity etc., the information is called.....
- A. Statistical data
  - B. Quantitative data
  - C. Qualitative data
  - D. Tangible data
7. When every individual has an equal chance of being picked as one of the samples, the sampling technique is called?
- A. Random sampling
  - B. Purposive random sampling
  - C. Systematic sampling
  - D. Stratified sampling
8. Normal Probability Curve should be
- A. Positively Skewed
  - B. Negatively Skewed
  - C. Zero Skewed
  - D. Leptokurtic Skewed



- 9.
- A. 22
  - B. 33
  - C. 44
  - D. 55
10. Intrapersonal communication is best defined as
- A. Person to Person contact
  - B. Talking to oneself
  - C. When more than two persons are involved
  - D. None of the above
11. Statistics is
- A. Descriptive only
  - B. Explanatory only

- C. Both descriptive and explanatory  
D. Either (a) or (b)
12. Uncorrelated random variables have a Pearson correlation coefficient of  
a. 1  
b. 0  
c. -1  
d.  $\infty$
13. Correlational study is an example of  
A. Casual Comparative Study  
B. Descriptive Survey Study  
C. Experimental Study  
D. Longitudinal Study
14. 180: ? :: 160:5, 4, 8  
A. 9,8,10  
B. 5,6,6  
C. 7,5,11  
D. 9,5,12
15. ICSSR stands for  
A. Indian Council for Survey and Research  
B. Indian Council for strategic Research  
C. Indian Council for Social Science Research  
D. Inter National Council for Social Science Research
16. Cronbach's alpha reliability is:  
A. the correlation of each item with the sum of the items.  
B. an average of all possible split-half reliabilities.  
C. the correlation of half of the items with the total participants.  
D. none of these.
17. If x is scores and N is number of scores then, The formula for Mean is :  
A.  $\frac{\sum_{k=0}^N x}{N}$   
B.  $\frac{\sum_{k=0}^N x}{N*(N+1)}$   
C.  $\frac{\sum_{k=0}^N x}{N*N}$   
D.  $\frac{\sum_{k=0}^N x}{N*(N-1)}$

18. Define odd term in the series: 12/52, 14/56, 17/61, 20/66, 26/74
- A. 14/56
  - B. 17/61
  - C. 20/66
  - D. 26/74
19. If MAT stands for OCV, what does TAPER stand for?
- A. VKSRT
  - B. VLSFT
  - C. VKQRS
  - D. VKSRN
20. The Expansion of MOOC is
- A. Massive Open Online Curriculum
  - B. Massive Open Online Courses
  - C. Massive Open Operational Courses
  - D. Massive Open Operational Curriculum
21. Testing hypothesis is a
- A. Inferential Statistics
  - B. Descriptive Statistics
  - C. Data Preparation
  - D. Data Analysis
22. The expansion of the term TEL as per MHRD
- A. Technology Enabled Learning
  - B. Technology Education Learning
  - C. Technical Education Learning
  - D. Technical Enabled Learning
23. Which of the following is the first step in starting the research process?
- A. Searching sources of information.
  - B. Survey of related literature
  - C. Identification of a broad area of research
  - D. Searching for solutions to problem
24. If 250 is increased to 300, what is the % increase?
- A. 16.67
  - B. 20
  - C. 23
  - D. 17
25. If cash discount is 10%, a book bought for Rs.9 is valued at
- A. Rs.12
  - B. Rs.11
  - C. Rs.10
  - D. Rs.8

26. In a class of 150 students, 50 students passed in Maths I, 70 passed in Maths II. How many passed in both Maths I and Maths II.
- A. 25
  - B. 30
  - C. 50
  - D. 45
27. Find the mean of: 6, 8, 11, 5, 2, 9, 7, 8
- A. 6
  - B. 7
  - C. 8
  - D. 9
28. What will be the probability when rolling two die get the sum of two die to be 5
- A.  $\frac{2}{36}$
  - B.  $\frac{3}{36}$
  - C.  $\frac{4}{36}$
  - D.  $\frac{5}{36}$
29. If X has a binomial distribution with parameters n and p, Variance of binomial distribution is
- A.  $n \cdot p(1+p)$
  - B.  $n \cdot p(1-p)$
  - C.  $n \cdot p$
  - D.  $n \cdot (1-p) \cdot (1+p)$
30. Which of the following is non-probability sampling?
- A. Cluster
  - B. Random
  - C. Snowball
  - D. Stratified
31. Correlating between different versions of a test is known as
- A. Split-half reliability
  - B. Objectivity
  - C. Test-retest reliability
  - D. Alternate forms reliability
32. "Selection of a sample that is a replica of the population" is known as
- A. Quota sample
  - B. Judgmental sample
  - C. Accidental sample
  - D. Non probability sample
33. The independent variable refers to:
- A. the variable which is only used in the control condition.
  - B. a variable which serves as the aim of an experiment.
  - C. the variable which shows us the effect of the manipulation.
  - D. the variable being manipulated or varied in some way by the researcher.

34. A meta-analysis would allow you to:
- A. replicate many studies.
  - B. explore the variations or inconsistencies in the outcomes of lots of studies.
  - C. assess the reliability of a study.
  - D. identify the antecedents of a behaviour.
35. Non-Directional hypothesis that is tested for its rejection is
- A. Alternative
  - B. Null(HO)
  - C. Statistical Inferences
  - D. Simple
36. Fundamental Research is known as \_\_\_\_\_
- A. Descriptive Research
  - B. Basic Research
  - C. Applied Research
  - D. Empirical Research
37. \_\_\_\_\_ study is one which collects data about various variables of the sample at one point of time in order to uncover relationships existing among those variables.
- A. Longitudinal
  - B. Cross-Sectional
  - C. Historical
  - D. Empirical
38. \_\_\_\_\_ employs more techniques to gather information about a particular unit or sample.
- A. Field study
  - B. Survey Study
  - C. Historical study
  - D. Case study
39. The method of Coin Tossing and Lottery are otherwise called \_\_\_\_\_ .
- A. Non-probability sampling
  - B. Systematic sampling
  - C. Simple random sampling
  - D. Stratified sampling
40. \_\_\_\_\_ sampling involves group the population and then selecting the groups in the clusters rather than individual elements for inclusion in the sample.
- A. Simple random
  - B. Cluster
  - C. Multi stage
  - D. Purposive

41. \_\_\_\_\_ attributes cannot be measured in terms of units of measurements
- A. Mixed
  - B. Personal
  - C. Quantitative
  - D. Qualitative
42. \_\_\_\_\_ interview is known as controlled, guided or direct interview which is pre planned manner
- A. Unstructured
  - B. Focused
  - C. In-depth
  - D. Structured
43. The most accurate measure of variability is \_\_\_\_\_
- A. Standard deviation
  - B. Quartile deviation
  - C. Range
  - D. Mean deviation
44. The frequency of the test is measured by \_\_\_\_\_
- A. 't' test
  - B. Sign test
  - C. Run test
  - D.  $X^2$ Test
45. The expected Frequency are based on \_\_\_\_\_
- A. Sample
  - B. Hypothesis
  - C. Population
  - D. Nature of data
46. Mean, Median and Mode are
- A. Measures of deviation
  - B. Ways of sampling
  - C. Measures of central tendency
  - D. None of the above

## PART B

### CRITICAL ANALYSIS AND REASONING SKILLS QUESTIONS

#### Tools for thought

##### Problem

The tools we use to think change the ways in which we think. The invention of written language brought about a radical shift in how we process, organize, store, and transmit representations of the world. Although writing remains our primary information technology, today when we think about the impact of technology on our habits of mind, we think primarily of the computer.

My first encounters with how computers change the way we think came soon after I joined the faculty at the Massachusetts Institute of Technology at the end of the era of the slide rule and the beginning of the era of the personal computer. At a lunch for new faculty members, several senior professors in engineering complained that the transition from slide rules to calculators had affected their students' ability to deal with issues of scale. When students used slide rules, they had to insert decimal points themselves. The professors insisted that doing that required students to maintain a mental sense of scale, whereas those who relied on calculators made frequent errors in orders of magnitude. Additionally, the students with calculators had lost their ability to do "back of the envelope" calculations, and with that, an intuitive feel for the material.

That same semester, I taught a course in the history of psychology. There, I experienced the impact of computational objects on students' ideas about their emotional lives. My class had read Freud's essay on slips of the tongue, with its famous first example: The chair of a parliamentary session opens a meeting by declaring it closed. The students discussed how Freud interpreted such errors as revealing a person's mixed emotions. A computer science major disagreed with Freud's approach. The mind, she argued, is a computer. And in a computational dictionary—like we have in the human mind—*closed* and *open* are designated by the same symbol, separated by a sign for opposition. *Closed* equals *minus* *open*. To substitute *closed* for *open* does not require the notion of ambivalence or conflict. "When the chairman made that substitution," she declared, "a bit was dropped; a minus sign was lost. There was a power surge. No problem." The young woman turned a Freudian slip into an information-processing error. An explanation in terms of meaning had become an explanation in terms of mechanism.

Today, starting in elementary school, students use e-mail, word processing, computer simulations, and virtual communities. In the process, they are absorbing more than the content of what appears on their screens. They are learning new ways to think about what it means to know and understand.

There are a number of areas where I see information technology encouraging changes in thinking. There can be no simple way of cataloging whether any particular change is good or bad. That is contested terrain. At every step we have to ask, as educators and citizens, whether current technology is leading us in directions that serve our human purposes. Such questions are not technical; they are social, moral, and political. For me, addressing that subjective side of computation is one of the more significant challenges for the next decade of information technology in higher education. Technology does not determine change, but it encourages us to take certain directions. If we make those directions clear, we can more easily exert human choice.

Adapted from S. Turkle, How computers change the way we think. ©2004 by The Chronicle of Higher Education.

**Question 1: Based on the passage, the author most likely believes that it is important to understand the influence computers have on people because such understanding will:**

- A. enable people to make computers serve human purposes.
- B. increase the importance of information technology in the next decade.
- C. improve people’s ability to deal with issues of scale.
- D. help prove that the human mind is a computational object.

**Question 2: Which of the following passage assertions is presented as evidence that computers are affecting people’s conception of the mind?**

*Choose 1 answer:*

- A. Engineering students using calculators frequently make mistakes regarding orders of magnitude.
- B. Students who used calculators lost their ability to do “back of the envelope” calculations.
- C. A computer science major interpreted a Freudian slip as an information-processing error.
- D. Addressing the subjective side of computation is a significant challenge for the next decade of information technology in higher education.

**Question 3: Of the following scenarios, which represents an example most similar to what the author probably means by the opening statement, “The tools we use to think change the ways in which we think”?**

*Choose 1 answer:*

- A. After a power outage, a person creates a plan for coping with such events in the future.
- B. An analysis of the sequences of clicks emitted by dolphins reveals structural similarity to aspects of human language.
- C. A person gains a new appreciation for abstract painting after learning about a new theory of complementary colors.
- D. An office manager increases productivity by installing new accounting software on the company’s computers.

**Question 4: Which of the following passage assertions is most supported in the passage by evidence or examples?**

*Choose 1 answer:*

- A. Computational objects have an impact on students’ ideas about their emotional lives.
- B. When students used slide rules, they had to insert decimal points themselves.
- C. Students who used calculators lost their ability to do “back of the envelope” calculations.
- D. The invention of written language brought about a radical shift in how we process, organize, store, and transmit representations of the world.

