Appendix
Test on Critical Thinking Ability

Instructions: Answer the following questions by choosing the correct answer and write the alphabet in the box provided. Each question carries equal marks:

SET-A

1. Distinguishing relevant from irrelevant information, claims and reasons:

   Meaning: Finding the relevant factors and irrelevant factors for the given example.

   Directions: In this part there are five items. Each item contains some information. Out of which one of the alternative is irrelevant to the items. Read the items carefully and mark the irrelevant alternative in the space provided.

   1. Delhi is an excellent example for controlling pollution through specific measures taken by the government.
      a) Beautifying the city.
      b) Launching of the metro throughout the city.
      c) Making compressed nitrogen gas vehicles compulsory.
      d) Planting trees at every possible area in the city.
2. The causes for population explosion in India
   a) Belief among the masses.
   b) Increase use of fertilizers and hybridization to meet the demand.
   c) Poverty and traditional practices.
   d) Indian climate.

3. In India drug abuse is a serious issue because
   a) Law of drugs is not strictly prohibited.
   b) Young people consider drug abuse as a source of enjoyment and entertainment.
   c) Drugs abuse will affect the health of an individual.
   d) Education system is not sensitizing the harmful effect of drug abuse.

4. Media defines the destiny of a nation and thinking of an individual
   a) Media exposes the pros and cons of any subject.
   b) Media sells the views of the capitalistic people.
   c) Media is meant for entertainment.
   d) Media causes ill health to the people.

5. A good cricketer is the one which has the following characteristics:
   a) Spends most of the time in practice.
   b) Focuses on more on performance than success.
   c) Scoring a century is important.
   d) Playing a good cricket is always a priority.

6. The man is your good friend if;
   a) He helps you by money.
   b) He helps you in the time of your trouble.
   c) He always praises you.
   d) He always lives with you.
7. A group of college student defines a good citizen of a country with the following pointers…

   a) Practicing adult franchise (right to vote).
   b) Reporting any sort of corruption to anti-corruption cell.
   c) Thinking of one owns self growth and prosperity.
   d) Forming a college union.

8. To avoid accidents on the road, one should

   a) Do not drink and drive.
   b) Wear prominent and bright coloured dresses.
   c) Follow traffic rules strictly.
   d) Cross the roads at the zebra crossing.

9. Empowerment of women can be done by the following ways:

   a) By Promoting Government schemes to empower women equality in all sectors.
   b) Considering male child is required to attain moksha.
   c) Giving dowry or receiving dowry is prohibited
   d) Child marriages are prohibited

10. The main factor which determines the balance of the nature is

    a) Eco friendly human activities.
    b) Rabbit and habitat.
    c) Environmental conditions.
    d) Controlling pollutions in all possible ways.
SET-B

2. Determining factual accuracy of a Statement

**Meaning:** Determining whether or not a factual statement is true and consistent with other known facts in terms of accuracy.

**Directions:** Some incomplete statements are given below, against each incomplete statement, four alternatives a, b, c, and d are given. Select the most accurate alternative and write in the space provided.

1. The best statement to achieve success in life is………..
   a) The person should be well educated.
   b) The person should be rich and prosperous.
   c) The person should be sincere and hardworking.
   d) The person should have contacts with influential persons.

2. Police man wears a uniform because:
   a) It is provided by government at free of cost.
   b) It scares the criminals.
   c) He can be easily recognized.
   d) It keeps him smart.

3. Generally the patients having blood pressure are advised to visit the hill station because;
   a) It is pleasure to enjoy the environment.
   b) Cold weather is favourable for the patients of blood pleasure.
   c) They are advised by the physicians to do so.
   d) Atmospheric pressure decreases with the height from sea level.

4. Wet clothes dry more quickly on a dry day than a rainy day because
   a) Breeze blows rapidly during the dry days.
   b) The sun does not rise on a rainy day.
   c) Wet clothes absorb the moisture of air on a rainy day.
   d) The air is moister on a rainy day than a dry day.
5. Ice floats on water because
   a) It is transparent.
   b) It is spongy.
   c) Its weight is less than the weight of water of equal volume.
   d) It is a substance which melts quickly.

6. In summer people want to wear light coloured dress because
   a) In this dress they look very smart.
   b) They will be unsafe against the excess of heat.
   c) The light coloured material is cheap.
   d) Light colour dress will not absorb the external heat.

7. Fire brigade buses are of red colour because
   a) Red colour indicates the sign of danger.
   b) Red colour is officially recommended by the department.
   c) They should look prominent out of all buses.
   d) Red colour is durable.

8. Science research scholars wear Aprons because
   a) Apron is the uniform of the research scholars.
   b) Aprons indicate a sign of scholarship.
   c) Apron keeps them smart.
   d) Aprons keep their dresses safe.

9. The national income of a nation is
   a) Government annual income.
   b) Sum total of factor income.
   c) Surplus of public sector enterprises.
   d) Export minus import

10. People use rubber soles in their shoes because
    a) They are fashionable
    b) Rubber is more porous than leather.
    c) They produce less sound
    d) They are durable.
III. Identifying unstated assumptions:

**Meaning:** In this type of questions a statement is given followed by two assumptions, the given candidate is required to assess the given statement and then decide which of the given is implicit in the statement.

**Directions:** In each question below is given a statement followed by two assumptions numbered I or II. Consider the statement and decide which of the given assumption is implicit.

Give the answer (a) Assumption I is only implicit.
   (b) Assumption II is only implicit.
   (c) Either I or II is implicit.
   (d) Neither I nor II is implicit.
   (e) Both I and II are implicit

Select the most accurate alternative and write in the space provided.

1. **Statement:** Detergents should be used to clean clothes.
   **Assumptions:** I. Detergents form more lather.
   II. Detergents help to discharge grease and dirt.

2. **Statement:** Children are influenced more by their teachers nowadays.
   **Assumptions:** I. The children consider teachers as their models
   II. A large amount of time is spent by children in school

3. **Statement:** A part from the entertainment value of television its educational value cannot be ignored.
   **Assumptions:** I. people take television to be a mean of entertainment only
   II. The educational value of television is realized properly

4. **Statement:** Provide mid-day meals to the children in primary schools to increase the number of students attending schools
   **Assumptions:** I. Mid–day meals will attract the children to the schools
   II. Those children who are otherwise deprived of good food will attend the schools.
5. **Statement:** The campaign of “keep your city clean” started by the civil council did not evoke any response from the citizen.

**Assumptions:** I. People do not desire to keep their city clean  
II. The civil council has failed in its campaign.

6. **Statement:** If he is intelligent, he will pass the examination

**Assumptions:** I. To pass, he must be intelligent.  
II. He will pass the examination.

7. **Statement:** Traffic jams on most of the roads in the city have become a regular feature during monsoon.

**Assumptions:** I. Material used for road construction cannot withstand the fury of monsoon resulting innumerable pot holes on the roads.  
II. Number of vehicles coming on the roads is much more in monsoon as compared to other seasons.

8. **Statement:** The state government has abolished the scheme of providing concessional air ticket to the students.

**Assumptions:** I. Students will not travel by air in future  
II. The students who resort to travel by air can bear the expenses of air ticket.

9. **Statement:**” Private property, trespassers will be prosecuted” – a notice on a plot of land.

**Assumptions:** I. The passerby may read the notice and may not trespass.  
II. The people are scared of prosecution.

10. **Statement:** Please consult us before making any decision on investment suggests that

**Assumptions:** I. we may take wrong decision if we don’t consult them.  
II. It is important to take a right decision.
IV Determining the strength of an argument or claim:

**Meaning:** Identify the quality or merit or reasons given in support of a conclusion.

**Directions:** Each question given below consists of a statement, followed by three or four arguments numbered a, b, c and d. choose the correct reason in support and accordingly choose your answer from the given alternatives and write in the box provided.

1. **Statement:** India should go in for computerization in all possible sectors  
   **Arguments:**
   
   a) It will bring efficiency and accuracy in the work.  
   b) It will be an injustice to the human resources which are at present underutilized.  
   c) Computerization demands a lot of money. We should not waste money on it.  
   d) When advanced countries are introducing computers in every field, how can India afford to lag behind?  

2. **Statement:** children should be prevented completely from watching television.  
   **Arguments:**
   
   a) We get vital information regarding education through television  
   b) It hampers the study of children.  
   c) Young children are misguided by certain programmes featuring sex and violence.  
   d) This is the only way to educate the masses.
3. **Statement:** There should be only one university throughout India.  
**Arguments:**

a) This is the only way to bring uniformity in the educational standards.

b) This is administratively impossible.

c) This will not make the degree procured by students, comparable for offering jobs.

d) This will help the students to study across the country.

4. **Statement:** The number of holidays of government employees should be reduced.  
**Arguments:**

a) Our government employees are having the maximum number of holidays among the countries of the world.

b) It is a sign of British agency.

c) It will speed up work and all the pending jobs can be completed well in time.

d) Employees must be given ample spare time to spend with their family.

5. **Statement:** There should be a complete ban on manufacture and use of fire crackers  
**Arguments:**

a) This will not render thousands of workers jobless.

b) The firecracker manufacturers use child labour to a large extent.

c) This will be a concrete step to reduce noise and air pollution.

d) Use of firecrackers makes certain special occasion lively.
6. **Statement:** There should be total ban on tobacco products and smoking in India.
   **Arguments:**
   
   a) It is wrong to smoke away millions of money.
   b) It will throw thousands of workers in the tobacco industry out of employment.
   c) It is the first step to reduce the risk of exposing people to some diseases.
   d) There is no confirmed evidence that such products have adverse effects on human body.

7. **Statement:** There should be compulsory military training for each college student in India.
   **Arguments:**
   
   a) This is only way to build a powerful and strong nation.
   b) Number of people joining military services is declining day by day.
   c) To instill discipline and a sense of belonging to one's country.
   d) Youngsters have better career than joining military services.

8. **Statement:** The parliamentary elections in India should be held every three years as against five years at present.
   **Arguments:**
   
   a) This will not enhance wastage of money and resources.
   b) This will help voters to change non-performing representative without much delay.
   c) The elected representative will not have enough time to settle and concentrate on developmental activities.
   d) This will help to select a right leader for the nation.

9. **Statement:** The internal assessment in colleges should be abolished.
   **Arguments:**
   
   a) This will help in reducing the possibility of favoritism.
   b) Teaching faculty will lose control over the students.
   c) Merit and studious students are only benefited from this.
   d) Most of the students will fail and not able to pursue higher education.
10. **Statement**: There should be uniforms for the students in the colleges.

**Arguments**:

a) This will make students conservative in grooming of their personality.

b) All the students will be decently dressed and brings discipline in the college.

c) This will curtail their personality development.

d) A sense of unity and integrity cannot be brought in.

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1. One factor of the expression $2a^3 + 4a^2$ is $(a+2)$ then other factor is 
   a) $(a+2)$ b) $2a^2$ c) $6a^2$ d) $2a^3$

2. Factors of $x^3 + y^3$ are 
   a) $(x+y)(x^2 - xy + y^2)$ b) $(x-y)(x^2 + xy + y^2)$
   c) $(x+y)(x^2 - xy - y^2)$ d) $(x-y)(x^2 - xy - y^2)$

3. The factors of $a^2 - b^2$ is 
   a) $(a-b)(a+b)$ b) $(a+b)(a-b)$
   c) $(a-b)(a+b)$ d) $(a - b)^2$

4. In the equation $y = 5x+5$ if $x=5$ then the value of $y$ is 
   a) 125 b) 50 c) 20 d) 30

5. A square matrix in which all the elements are zero except the principal diagonal elements is
a) Scalar matrix  

b) Skew Symmetric matrix  

c) Null matrix  

d) Diagonal matrix  

6. If \( A = \begin{pmatrix} x+6 & 6 \\ 4 & 8 \end{pmatrix} \) and \( B = \begin{pmatrix} 15 & 6 \\ 4 & 8 \end{pmatrix} \) then the value of \( x \) is____

a) 6  
b) 9  
c) 15  
d) 21

7. If \( x^2y^2-16 \) can be expressed in the form______________

a) \((a+b)(a-b)\)  
b) \((a + b)^2\)  
c) \((a - b)^2\)  
d) \((x+a)(x+b)\)

8. If \( a=x \) and \( b=2 \) then \((a^2 - 2ab + b^2) = \) _______

a) \((x-2) \cdot (x-2)\)  
b) \((x-2)(x+2)\)  
c) \((x - 2)^2\)

9. If \( U = \{ 1,2,3,4,5,6,7,8,9 \} \) A = \{ 3,4,5,7 \}  \( B = \{ 1,4,5,7,8 \} \) then \((A \cap B)'\) is_____

a) \{ 1,2,3,4 \}  
b) \{ 1,2,3,6,8,9 \}  
c) \{ 4,5 \}  
d) \{ 7,8,9 \}

10. If \( U = \{ 1,3,5,7,9 \} \) A = \{ 3,9 \} then \((A \cup A)'\) is_____

a) \( \phi \)  
b) \( U \)  
c) \{ 3,2 \}  
d) \{ 1,3 \}

11. In the fig \( \angle ABC = 80^0 \) Reflex of \( \angle AOC = \)_______

a) \( 80^0 \)  
b) \( 200^0 \)  
c) \( 180^0 \)  
d) \( 260^0 \)
12. The slant height of a square based prism is 6 mts. Perimeter of the base is 40 mts and its lateral surface area is 120 sq.mts then total surface area is ______
   a) 220 sq. mts  b) 160 sq. mts  c) 280 sq. mts  d) 300 sq. mts

13. The side of the base of a square pyramidal tent is 12mts and its height is 8 mts the air space in the tent is ________
   a) 300 cms  b) 348 cms  c) 200 cms  d) 384 cms

14. The volume of triangular base prism is $160 \sqrt{3}$ cc and each side of the base is 8 cm then height is ________
   a) 5cm  b) 10cm  c) 15cm  d) 20cm

15. A solid figure having number of faces equal to number of vertices is ______
   a) Prism  b) pyramid  c) cylinder  d) sphere

16. A solid figure having polynomial one base and triangular lateral faces which converge at a point__________
   a) Cone  b) pyramid  c) prism  d) cylinder

17. Solid figures are ________
   a) One dimensional  b) two dimensional  
   c) Three dimensional  d) four dimensional

18. The length of biggest chord of a circle of radius 4 cm is ______
   a) 6 cm  b) 4 cm  c) 8 cm  d) 10 cm

19. Angle subtended by the greatest chord at the centre of a circle is______
a) Right angle  b) straight angle  c) obtuse angle  d) acute angle

20. The circles having the same radii, but different centres are called_______ circles.
   a) concentric  b) circum  c) semi  d) congruent

21. The shaded portion in the given circle is_______

   a) Sector  b) semicircle  c) minor segment  d) major segment

22. In the figure of $\angle BOC = 100^0$, then $\angle BAC = ______$

   a) $50^0$  b) $60^0$  c) $70^0$  d) $75^0$

23. In the formula $V = \frac{1}{3} Bh$ if $V=900$ cm $a=15$ cm and $B= a^2$ then the value of $h$ is _____

   a) 10 cm  b) 12 cm  c) 15 cm  d) 20 cm

24. A matrix which can be both square and rectangular matrix is _______

   a) identity matrix  b) zero matrix  c) scalar matrix  d) diagonal matrix

25. if $U = \{1,2,3,4,5,6,7,8\}$, $A = \{2,4,6,8\}$ then $A ' = ______$
26. If $A = \begin{pmatrix} 4 & 0 & 0 \\ 0 & 4 & 0 \\ 0 & 0 & 4 \end{pmatrix}$ is the example for the________________

a) Scalar matrix          b) identity matrix

c) symmetric matrix       d) Skew symmetric matrix

27. In the given diagram set $B$ is ______

a) \{ 1,2,3 \}          b) \{ 1,2,3,4,5 \}

c) \{ 1,2,3,4,5,6,7,8 \}    d) \{ 1,2,3,4,5,6,7,8 ,9,10\}

28. A matrix with order 2 X 3 is ______

\[ a) \begin{pmatrix} 4 & 5 \\ 6 & 7 \end{pmatrix} \quad b) \begin{pmatrix} 4 & 5 \\ 6 & 7 \end{pmatrix} \quad c) \begin{pmatrix} 4 \\ 5 \end{pmatrix} \quad d) \begin{pmatrix} 4 & 5 & 6 \\ 7 & 8 & 9 \end{pmatrix} \]

29. If $A = \{ 1,2,3,4,5,6 \}$ B = \{ 2,3,5,7,9 \} then $A-B$ is ______

a) \{ 7,9 \}          b) \{ 1,4,6 \}    c) \{ 2,3,5 \}    d) \{ 1,5,9 \}

30. In the adjoining figure, the shaded region represents.
31. If \( A = \begin{pmatrix} 1 & 2 \\ 4 & 5 \end{pmatrix} \) then \( A' \) is ________

   a) \( \begin{pmatrix} 1 & 4 \\ 2 & 5 \end{pmatrix} \)  
   b) \( \begin{pmatrix} 1 & 5 \\ 4 & 2 \end{pmatrix} \)  
   c) \( \begin{pmatrix} 1 & 2 \\ 5 & 4 \end{pmatrix} \)  
   d) \( \begin{pmatrix} 1 & 4 \\ 2 & 5 \end{pmatrix} \)

32. Factors of \( a^3 + b^3 \) are \((a+b)\) and ________

   a) \( (a^2 - ab + b^2) \)  
   b) \( (a^2 + ab + b^2) \)  
   c) \( (a^2 - 2ab - b^2) \)  
   d) \( (a^2 - 2ab - b^2) \)

33. The factors of \((a + b)^2 - C^2\) are ________

   a) \((a+b+c)(a+b-c)\)  
   b) \((a+b+c)(a+b+c)\)  
   c) \((a-b-c)(a-b-c)\)  
   d) \((a + b + c)^2\)

34. If the two Matrices are having same order and number of the Elements are same then the set is said to be known as__________

   a. Equal Matrices  
   b. Same Matrices  
   c. diagonal Matrix  
   d. Square Matrix
35. Which of the following is not a set?
   a) All the teachers of your school
   b) Tall buildings of Bangalore City
   c) The colours of the Rainbow
   d) Days of the week.

36. The matrix in which all its elements are zero is known as __________
   a) Zero Matrix  b) identity matrix
   c) square matrix               d) row Matrix

37. A square based prism has its base 10 cms and its height 20 cms. Its lateral surface area is ___
   a) 400 sq. cm       b) 100 sq. cm   c) 18 cm.   D) 5 cm

38. In the given figure OP=OQ, if AB=10 cm, then CD=_____

   ![Diagram]

   a) 20 cm       b) 10 cm   c) 18 cm   d) 5 cm

39. In the given figure, ∠BAC = 30°, then ∠BDC =_____
40. If all the elements of a set A are in the set U, then set A is called as _____
   a) Subset of U   b) finite set   c) superset of U   d) infinite set
WORKSHEET-1

TOPIC-SET

1. Define a set, Give examples.

2. Give examples to illustrate the difference between a collection and a set.
3. Which of the following collections are sets?

   a) All the students of your school

   b) Members of Indian parliament

   c) The colors of rainbow

   d) The people of Karnataka having green ration card

   e) Good teachers in a school

   f) Honest persons of your village

4. Represent the following sets in roster method

   a) Set of all alphabet in English language.
b) Set of all odd positive integers less than 25.

c) The set of all odd integers.

d) The set of natural numbers divisible by 5.

e) The set of colors in the Indian flag.

f) The set of letters in the word ELEPHANT.

5. Represent the following sets by using their standard notation.
   a) Set of natural numbers

   b) Set of integers

   c) Set of positive integers
d) Set of rational numbers

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e) Set of real numbers

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6. Write the following sets in set builder form.

A= \{5, 6, 7, 8, 9, 10, 11, 12,\}

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B= \{1,2,3,4,6,8,12,16,24,48\}

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C= \{11, 13, 17, 19, 23, 29, 31, 37\}

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7. Write the following statement in words:

P U Q = \{a,e,i,o,u\}

WORKSHEET -2

1. Find the union of A and B where A= \{1,2,3,4,8,9\} B=\{1,2,3,5\}

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2. Find the union of P and Q and represented by using Venn Diagram where P=\{1,2,3\} Q=\{4,5,6\}
3. Find the intersection of $A$ & $B$ where $A = \{a, b, c, d, e\}$ $B = \{b, d, e, f\}$

4. Find the union and intersection of $M$ and $N$ where $M$ is the set of all prime numbers and $N$ is the set of all composite natural numbers.

5. If $A$ is the subset of $B$, then $A$ union $B$ is equal to $B$ and $A$ intersection $B$ is $A$. prove this statements by taking example by your choice.
WORK SHEET-3

1. Differentiate between
   (a) right prism and oblique prism
   (b) height and slant height of a pyramid
   (c) Prism and a Pyramid
2. Classify the following solids into regular and irregular prism.
   (a) Rectangular based prism

   (b) Equal lateral based prism

   (c) Square based prism

   (d) Right angle based prism

3. The side of a square based prism is 2.5 cm and its height is 6.5 cm find its lateral and total surface area
4. The perimeter of a regular based prism is 18 meters and its height is 13 meters find its lateral and total surface area.

5. Find the area of the equilateral triangular based prism where $a=4$cm and $h=6$cm.
6. The total surface area of a triangular base prism is 576sqcm and its height is 22 cm. If the area of its base is 24sqcm find the perimeter of its base.

7. Find the lateral and total surface area of the square based pyramid with base 6cm and slant height 14cm.
8. Find the LSA of the triangular based pyramid with base 12cm and height 20cm