

Vidya Vikas Mandal's

Shree Damodar College of Commerce and Economics, Margao-Goa

SY BCA, Semester-III, Semester End Examination **Supplementary June 2025**

Course Name– Reasoning Techniques

Course Code: CSA- 211

Duration: 2hours

Max Marks: 80

Instructions: i. All questions are compulsory and figures to the right indicate full marks
ii. Question of 2 marks to be answered in not more than 40 words
iii. Question of 3 marks to be answered in not more than 60 words
iv. Question of 4 marks to be answered in not more than 80 words
v. Question of 6 marks to be answered in not more than 120 words
vi. Use of non-scientific, non- programmable calculators allowed.

Q1 A. Define the following terms:

[4x2=8Marks]

- i. Ordinary year
- ii. Logical Equivalence
- iii. Odd days
- iv. Central angle of pie chart

B. Write the truth tables of the following: 6

[3x2=6Marks]

- i. $\sim P$
- ii. $p \wedge q$
- iii. $p \rightarrow q$

C. write the procedure of proof by method of contradiction

[2 Marks]

Q2A.

- i. If $A \% B$ means that 'A is smaller than B'
 $A \Delta B$ means that 'A is less than or equal to B'
 $A \# B$ means that 'A is equal to B'.
 $A \& B$ means that 'A is greater than B'
 $A \notin B$ means that 'A is either greater than or equal to B'.
For the following statement, discuss which conclusion follows.

[4 Marks]

Statement: $A \% B, C \notin D, B \# D.$

Conclusion: I) $B \% C$
II) $B \# C.$

- ii. A clock shows the time as 2.30. determine the angle between minute hand and hour hand in degrees.

[2 Marks]

OR

Q2A.

- iii. If sequence of numbers is 2,4,8,16. Identify the next number in the sequence

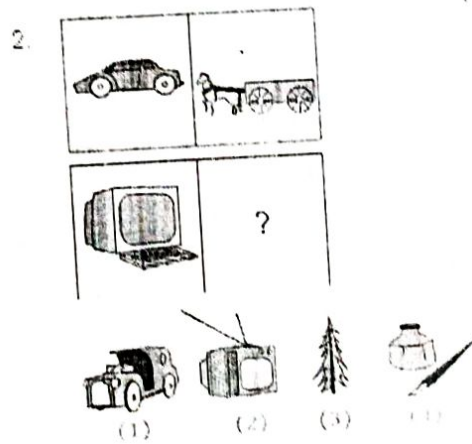
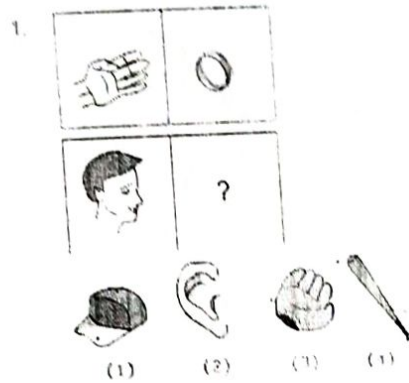
[2 Marks]

iv. A clock shows time as 3.15. Describe what is the angle between the hour and the minute hands at this time. [4 Marks]

Q2
B.

i. You have Rs 100000 in one of the two projects: Project X is expected to return 10% low risk, while Project Y has the potential for a 20% return but carries higher risk. How would you evaluate which project to choose? Discuss the criteria you would use to make your judgement [6 Marks]

ii. identify the picture that would go in the empty box so that the two bottom pictures are related in the same way as the top two are related. [4 Marks]



Q3A.

i. In question below is given a statement followed by two courses of action numbered I and II. You have to assume everything in the statement to be true and on the basis of the information given in the statement, decide which of the suggested courses of action logically follow(s) for pursuing. Give answer [4 Marks]

- (A) If only I follows
- (B) If only II follows
- (C) If either I or II follows
- (D) If neither I nor II follows
- (E) If both I and II follow.

Statement: Reliance Telecommunications is playing dirty tricks with its competitor Tata indicom.

Action:

1. tata indicom should also do the same
2. tata indicom should decrease the tariff rate of phone calls.

- ii. Complete the following series [2 Marks]
- a. 1, 3, 6, 10, 15, _____
 - b. DFE, HJI, LNM, PRQ, _____

OR

- Q3A.** iii. In each question below is given a statement followed by two conclusions numbered I and II. You have to assume everything in the statement to be true, then consider the two conclusions together and decide which of them logically follows beyond a reasonable doubt from the information given in the statement. [4 Marks]

Give answer:

- (A) If only conclusion I follows
- (B) If only conclusion II follows
- (C) If either I or II follows
- (D) If neither I nor II follows and
- (E) If both I and II follow.

Statement : Ram is the only son of Suresh and Mina.

Conclusions –

- I.** Suresh and Mina have one son.
- II.** Ram has one sister.

- iv. Window : pane as book : _____ [2 Marks]
- A. novel B. glass C. cover D. page

- Q3B.** i. Discuss in the following situations, which reaction you would choose and why, providing reasons to support your decision. [6 Marks]

A. If in the examination hall, you find that the question paper is too tough to be answered satisfactorily by you, the best thing to do for you is to :

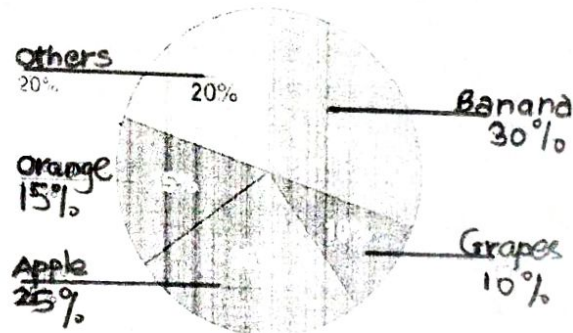
- a) tell the examiner that the questions are out of course.
- b) provoke the candidates to walk out of the examination hall.
- c) try to know something from your neighbor.
- d) try to solve the questions as much as you know with a cool head.

- B. While travelling in a train, you observe some college students pulling the alarm chain simply to get down at their desired point. You would:
- with the help of some passengers, check them from doing so
 - let them pull the chain but check them from detraining.
 - inform the guard of the train as soon as it stops.
 - keep quiet and do nothing.

- ii. The teachers of a school want to hold an essay competition. [4 Marks]
 The topic of the essay has to be such that it resonates with the current affairs going around in the country. At the same time, they want to highlight the issues facing the environment. Which of the following topics is suitable for the test? Justify.
- New Forest Policy Act.
 - Upcoming Elections and Their Expected Results.
 - Drought And Its Prevention.
 - Panchayat Elections And Farmer Issues.

Q4A.

The below pie chart shows the sale of different fruits in a day for a shop. [4 Marks]



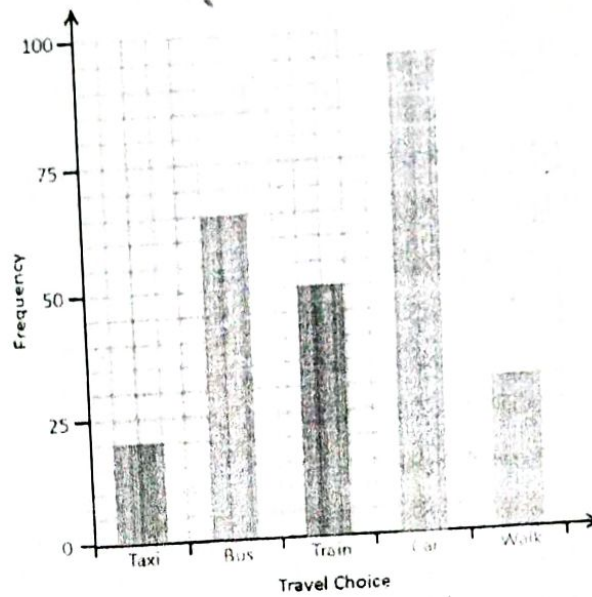
- i. Answer the following questions based on the pie chart:
- If a total of 1200 kg of fruits were sold in a day, calculate the number of bananas sold (in kg).
 - Find the difference between sales of grapes and oranges.
- ii. Let $Q(x)$ be the statement " $x < 2$." Analyze is the truth value of the quantification $\forall x Q(x)$, where the domain consists of all real numbers. Justify your answer briefly. [2 Marks]

OR

Q4A.

iii. Analyze the graph below carefully and answer the questions below

[4 Marks]



- A. Which mode of transport was least popular?
- B. How many more people got the bus than the train?
- C. What was the modal method of travel? How many people opted for the same.

iv. Consider the following predicates:
Let $Q(x,y): x=y+3$. Evaluate the truth values of the propositions $Q(1,2)$ and $Q(3,0)$.

[2 Marks]

Q4B.

i. Deduce the validity of the following argument
If I study then I will pass my Semester End Examination.
I did not study
Therefore, I passed my semester End Examination

[6 Marks]

ii. P, Q, R, S, T, U, V and W are sitting round the circle and are facing the Centre:

[6 Marks]

- A. P is second to the right of T who is the neighbor of R and V.
- B. S is not the neighbor of P.
- C. V is the neighbor of U.
- D. Q is not between S and W. W is not between U and S.

a) which two of the following are not neighbors?

- RV
 - UV
 - RP
 - QW
- b) Which one is immediate right to the V ?
- c) Which of the following is correct ?
- P is to the immediate right of Q
 - R is between U and V
 - Q is to the immediate left of W
 - U is between W and S
- d) What is the position of S ?
- Between U and V
 - Second to the right of P
 - To the immediate right of W
 - Data inadequate.

Q5A. i. Analyze the following list and identify the word that does not fit with the others. Provide reasons for your choice. [4 Marks]

a. Dress, panda, bear, fox

b. Chain, bangle, time, bracelet

ii. **Statements:** All the harmoniums are instruments. All the instruments are flutes. [2 Marks]
Conclusions:
 All the flutes are instruments.
 All the harmoniums are flutes.

Instructions: Analyse the statements and determine the validity of the conclusion: State whether the conclusion/s is/are valid or invalid and provide a brief explanation for your answer.

OR

Q5A. iii. Who is the tallest among the brothers A, B, C, and D? [4Marks]

Statements:

1. C is shorter than only B.
2. D is taller than only A.

Analyse the above data and answer whether Statement 1 or 2 is sufficient on its own?

iv. A tired worker slept at 7.45 p.m. If he woke at 12 noon, analyse the information provided and justify how many hours the worker slept? [2 Marks]

Q5.B

i. Identify whether $\sim p \vee (p \wedge q)$ is a tautology, a contradiction, or a contingency. Justify your answers by providing a brief explanation or truth table for each statement. [4 Marks]

ii. Using Mathematical induction, demonstrate that $1+2+\dots+n = \frac{n(n+1)}{2}$ [4 Marks]
