

**Instructions:** There are three sections of the paper i.e. English (25 marks), Logical, Analytical, and Quantitative Reasoning (25 marks), and Subject (30 + 20). From English section, 25 questions to be attempted (each questions carries one mark). From Logical, Analytical, and Quantitative Reasoning section, 25 questions to be attempted (each questions carries one mark). From subject MCQs section, 30 questions to be attempted (each questions carries one mark), from subject descriptive questions, two questions to be attempted (each questions carries 10 marks).

**SECTION-1. ENGLISH**

**Q1.** Select the synonym for “**Pernicious**”:

- a) Harmless
- b) Deleterious
- c) Innocuous
- d) Benign

**Correct Answer: b**

**Q2.** Choose the pair that best complete the analogy;

*OBSTINATE : YIELD ::*

- a) Frugal : Conserve
- b) Garrulous : Talk
- c) Capricious : Predict
- d) Erudite : Learn

**Correct Answer: c**

**Q3.** Idiom “*Throw down the gauntlet*” means:

- a) To admit defeat politely
- b) To issue a challenge boldly
- c) To withdraw from competition
- d) To avoid direct confrontation

**Correct Answer: b**

**Q4.** Sentence Completion:

Despite his reputation for \_\_\_\_, the researcher was remarkably open to new perspectives and alternative methodologies.

- a) Flexibility
- b) Dogmatism
- c) Curiosity
- d) Humility

**Correct Answer: b**

**Passage (short & crisp)**

Organizations that centralize decision-making often gain strategic coherence and economies of scale, but they can be slow to respond to local contingencies. Decentralized units respond faster and tailor actions to context, yet their autonomy can produce conflicting priorities and duplication of effort. The optimal design, the author argues, is not pure centralization or pure decentralization but institutional mechanisms that preserve coordinated strategy while enabling timely local adaptation.

Q1. Which one of the following is **best supported** by the passage?

- a) Centralized organizations always outperform decentralized ones in implementing strategy.
- b) Decentralized units never achieve economies of scale.
- c) An organization that lacks mechanisms for coordination risks incoherence across units.
- d) Local adaptation is unnecessary when strategy is clear.

**Correct Answer: c**

Q2. The author's conclusion that mechanisms should preserve coordination while enabling adaptation depends most on which assumption?

- a) Local managers prefer autonomy over consultation.
- b) Strategic coherence and timely local response are both valuable organizational goals.
- c) Central offices always have better information than local units.
- d) All organizations face identical local contingencies.

**Correct Answer: b**

Q3. Which of the following, if true, would most strengthen the author's conclusion?

- a) Case studies showing some centralized firms achieved coherence but lost market share due to slow local responses.
- b) Evidence that local units in all industries always make better decisions than central offices.
- c) Data showing that decentralization eliminates all duplication of effort.
- d) A theory asserting that strategy is irrelevant to organizational performance.

**Correct Answer: a**

## SECTION 2

### ANALYTICAL, LOGICAL, and QUANTITATIVE REASONING

**Q1.** If a number is increased by 25% and then decreased by 25%, the final value becomes 225. What was the original number?

- a) 280
- b) 300
- c) 320
- d) 240

**Correct Answer: d**

**Q2.** The ratio of two numbers is 5:7. If the smaller number is increased by 25%, the ratio becomes 25:36. What is the larger number?

- a) 84
- b) 90
- c) 96
- d) 108

**Correct Answer: a**

**Q3.** A train **190 m long** passes a pole in **15 seconds**. What is its speed in km/h?

- a) 40 km/h
- b) 45.6 km/h
- c) 48 km/h
- d) 52 km/h

**Correct Answer: b**

**Q4.** Four colleagues A, B, C, D sit in a row. A is left of B. C sits at one of the ends. D sits between A and C. Which is true?

- a) A is at leftmost end.
- b) B is rightmost.
- c) D is between B and C.
- d) C is rightmost.

**Correct Answer: b**

**Q5.** Statement: “The university will increase research grants next year.” Which assumption is required for this statement to affect faculty behavior immediately?

- a) Faculty are aware of the announcement.
- b) Grants are distributed equally.
- c) Students will benefit from grants.
- d) Faculty salaries will rise

**Correct Answer: a**

**Q6.** Premise: “Company sales fell by 10% in Q1.” Which is the best inference?

- a) Company will cut staff.
- b) Demand for product decreased in Q1.
- c) Company’s market share decreased.
- d) Sales revenue in Q1 is 90% of last year’s Q1.

**Correct Answer: d**

### **SECTION-3. SUBJECT QUESTIONS**

#### **PART-1-MCQs**

**Q1.** The amortized time complexity of push and pop operations in a stack implemented with a dynamic array is:

- (a)  $O(1)$
- (b)  $O(n)$
- (c)  $O(\log n)$
- (d)  $O(n \log n)$

**Correct Answer: a**

**Q2.** Which of the following is true about non-deterministic Turing machines?

- (a) They are less powerful than deterministic Turing machines
- (b) They can solve undecidable problems
- (c) They have the same computational power as deterministic Turing machines
- (d) They only accept regular languages

**Correct Answer: c**

**Q3.** What is the effect of using the const qualifier with a pointer in C?

- (a) The pointer cannot be changed to point elsewhere
- (b) The data pointed to cannot be changed
- (c) Both the pointer and the data pointed to are constant
- (d) The pointer is a null pointer

**Correct Answer: b**

**Q4.** Abstract class cannot:

- (a) Be instantiated
- (b) Have abstract methods
- (c) Be inherited
- (d) Have constructors

**Correct Answer: a**

**Q5.** De-normalization is used to:

- (a) Eliminate redundant data
- (b) Improve query performance by reducing joins
- (c) Ensure referential integrity
- (d) Enforce BCNF

**Correct Answer: b**

**Q6.** The maximum number of devices that can be connected in a Class C IPv4 network (without subnetting) is:

- (a) 126
- (b) 254
- (c) 1024
- (d) 65534

**Correct Answer: b**

**Q7.** In multiprocessor scheduling, load balancing ensures:

- (a) One CPU executes all processes
- (b) Context switches are minimized
- (c) Equal distribution of work among processors
- (d) Only batch jobs run efficiently

**Correct Answer: c**

## **PART-2– DESCRIPTIVE QUESTIONS.**

**Q1.** Design an algorithm to merge k sorted linked lists.

**Q2.** Design a TM for palindrome strings over  $\{0,1\}$ .

**Q3.** How to design a C function that checks whether a number is a power of 2?

**Q4.** Design a class diagram for an online shopping cart.

**Q5.** Design a system for load balancing across multiple servers.

**Good luck and the End.**