

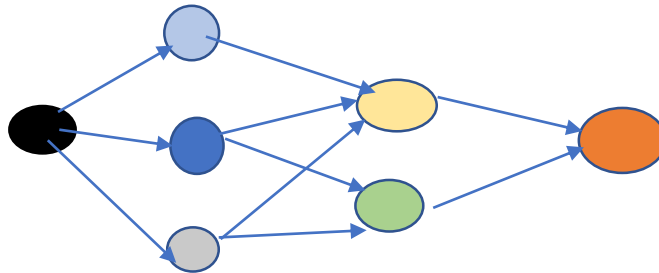
GS FOUNDATION 1.0 & 2.0 (2023-24)
BOOKLET 26
ROUTES AND NETWORKS

1) INTRODUCTION

This chapter is an extension of counting exercise. Questions typically are about finding number of possible routes between different nodes.

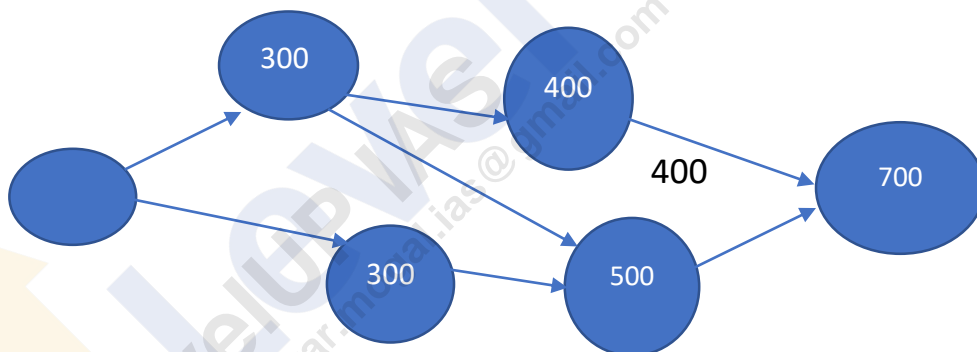
2) TYPES OF QUESTIONS

1.



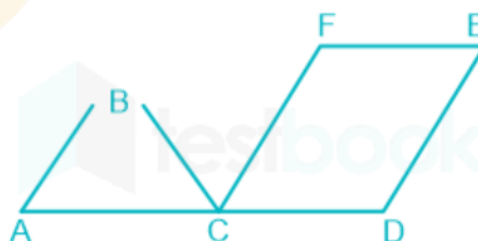
Q. Number of ways to reach from black (leftmost) to orange (rightmost)?

2.



Demand at each node is as indicated inside circle. Arrows indicate supply of the same good. If demand and supply match exactly at each node, find out missing entries when supply from one node cannot exceed 1300.

3. How many possible routes are there such that every node is travelled exactly once.



3) PYQS

CSE 2017: Directions for the following 3 (three) items: Consider the given information and answer the three items that follow.

Eight railway stations A, B, C, D, E, F, G and H are connected either by two-way passages or one-way passages. One-way passages are from C to A, E to G, B to F, D to H, G to C, E to C and H to G. Two-way passages are between A and E, G and B, F and D, and E and D.

Q. While travelling from C to H, which one of the following stations must be passed through?

- (a) G
- (b) E
- (c) B
- (d) F

Q. To move from C to H one must go from C to A and from A to E.

In how many different ways can a train travel from F to A without passing through any station more than once?

- (a) 1
- (b) 2
- (c) 3
- (d) 4

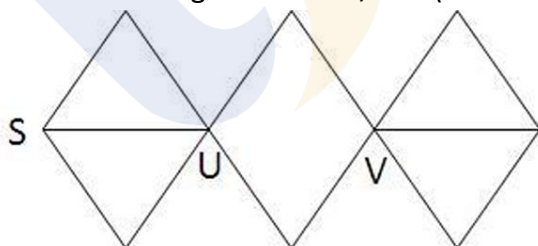
Q. Possible ways to move from F to A without passing through any station more than once:

- 1. FDHGCA
- 2. FDEA
- 3. FDECA
- 4. FDEGCA

Q. If the route between G and C is closed, which one of the following stations need not be passed through while travelling from H to C?

- (a) E
- (b) D
- (c) A
- (d) B

CSE 2014: With reference to the figure given below number of different routes from S to T without retracing from U and/or V (T is the next node after V), is



- (a) 3
- (b) 6

- (c) 9
- (d) 18

CSE 2013: Directions for the following 4 (four) items: Read the following statements and answer the four items that follow: Five cities P, Q, R, S and T are connected by different modes of transport as follows: P and Q are connected by boat as well as rail. Sand R are connected by bus and boat. Q and T are connected by air only. P and R are connected by boat only. T and R are connected by rail and bus.

41. Which mode of transport would help one to reach R starting from Q, but without changing the mode of transport?

- (a) Boat
- (b) Rail
- (c) Bus
- (d) Air

42. If person visits each of the places starting from P and gets back to P, which of the following places must he visit twice?

- (a) Q
- (b) R
- (c) S
- (d) T

43. Which one of the following pairs of cities is connected by any of the routes directly without going to any other city?

- (a) P and T
- (b) T and S
- (c) Q and R
- (d) None of these

44. Between which two cities among the pairs of cities given below are there maximum travel options available?

- (a) Q and S
- (b) P and R
- (c) P and T
- (d) Q and R

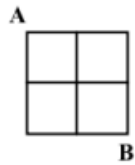
CSE 2013: Only six roads A, B, C, P, Q and R connect a military camp to the rest of the country. Only one out of A, P and R is open at any one time. If B is closed, so is Q. Only one of A and B is open during storms. P is closed during floods: In this context, which one of the following statements is correct?

- (a) Under normal conditions only three roads are open.
- (b) During storms at least one road is open.

- (c) During floods only three roads are open.
- (d) During calamities all roads are closed.

CSE 2011: Study the following figure:

A person goes from A to B always moving to the right or downwards along the lines. How many different routes can he adopt?



Select the correct answer from the codes given below:

- (a) 4
- (b) 5
- (c) 6
- (d) 7

CSE 2011: There are four routes to travel from city A to city B and six routes from city B to city C. How many routes are possible to travel from the city A to city C?

- (a) 24
- (b) 12
- (c) 10
- (d) 8

4) COMPREHENSION

We live in digital times. The digital is not just something we use strategically and specifically to do a few tasks. Our very perception of who we are, how we connect to the world around us, and the ways in which we define our domains of life, labour and language are hugely structured by the digital technologies. The digital is everywhere and; like air, invisible. We live within digital systems, we live with intimate gadgets, we interact through digital media, and the very presence and imagination of the digital has dramatically restructured our lives. The digital, far from being a tool, is a condition and context that defines the shapes and boundaries of our understanding of the self, the society, and the structure of governance.

Q. Which among the following is the most logical and essential message conveyed by the above passage?

- (a) All problems of governance can be solved by using digital technologies
- (b) Speaking of digital technologies is speaking of our life and living.
- (c) Our creativity and imagination cannot be expressed without digital media
- (d) Use of digital systems is imperative for the existence of mankind in future

This year, at COP27 in Egypt, a dizzying array of topics was on the table for discussion — from the more familiar emissions reductions to the more detailed rules to govern carbon markets. But of significance to developing countries, India included, are the stories to do with climate

finance. As developing countries have rising energy needs and vulnerable populations, they need financial support for low-carbon transformations, building resilience to inevitable climate impacts, and other steep challenges, important among these being loss and damage (L and D) from climate-induced impacts. Possibly the biggest headline after COP27 was the establishment of a new L and D fund.

Q. Which of the following matters discussed in COP 27 are of special interest to India?

1. emissions reduction
2. carbon market
3. support for low-carbon transformations
4. L and D fund

Choose the most appropriate codes as per the passage.

- A. 3 and 4 only
- B. 1, 3 and 4 only
- C. 3 only
- D. 1, 2, 3 and 4

An innovative India will be inclusive as well as technologically advanced, improving the lives of all Indians. Innovation and R&D can mitigate increases in social inequality and relieve the pressures created by rapid urbanization. The growing divergence in productivity between agriculture and knowledge-intensive manufacturing and services threatens to increase income inequality. By encouraging India's R&D labs and universities to focus on the needs of poor people and by improving the ability of informal firms to absorb knowledge, an innovation and research agenda can counter this effect. Inclusive innovation can lower the costs of goods and services and create income - earning opportunities for the poor people.

Q. Which among the following is the most logical and rational assumption that can be made from the above passage?

- (a) Innovation and R&D is the only way to reduce rural to urban migration.
- (b) Every rapidly growing country needs to minimize the divergence between productivity in agriculture and other sectors.
- (c) Inclusive innovation and R&D can help create an egalitarian society.
- (d) Rapid urbanization takes place only when a country's economic growth is rapid.