

ASHANK DESAI CENTRE FOR POLICY STUDIES, IIT BOMBAY

PHD Entrance Test Paper

Part – 1: Analytical Skills and LOGIC [1 Hour]

Venue: LC201 Time: 9:30-11:30 Date: 9<sup>th</sup> May, 2024 Total Duration: 2.0 hours

ADCPS Serial No.: \_\_\_\_\_

**Candidates: Please write your answers to Section One in the Table Below:**

ADCPS MPP Entrance Test May 09, 2024		
Section One - ANSWERS (MCQ)		
	Q. No.	Answer
Sect. 1 - Analytical Skills and Logic	1	
	2	
	3	
	4	
	5	
	6	
	7	
	8	
	9	
	10	
	11	
	12	
	13	
	14	
	15	

**Only For The Examiner:**

Total No. of Correct Answers	Total No. of Incorrect Answers

**Only For The Examiner:**

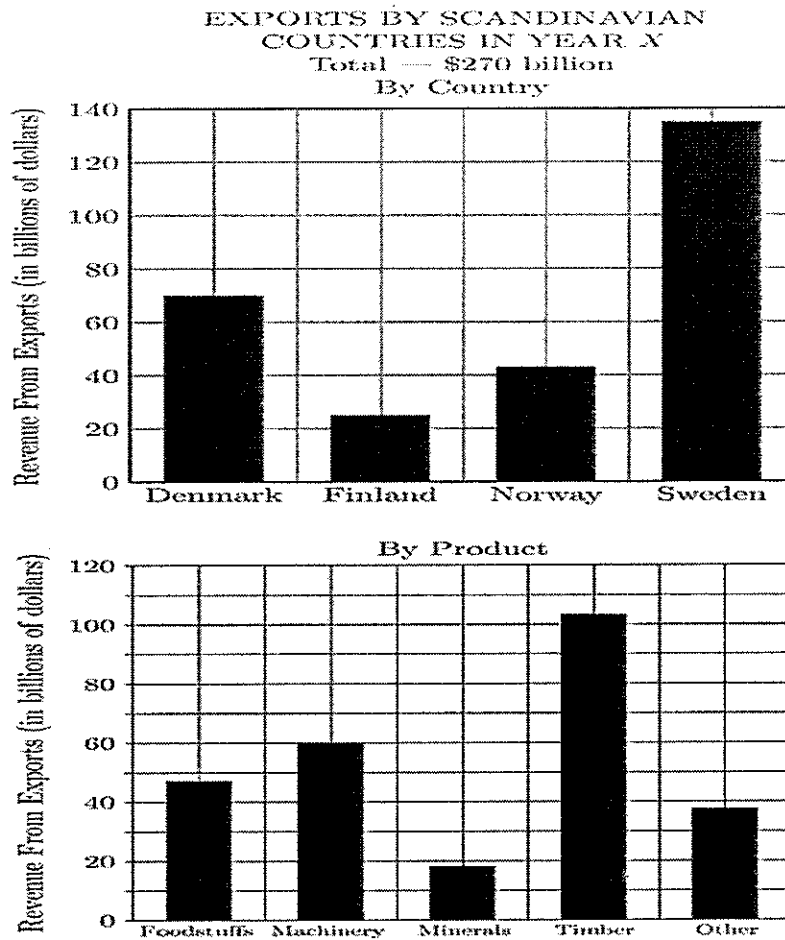
Q. No.	Part 1 (45)	Part 2: Essay (55)	Total: (100)
Marks			

Two Signatories: Checked A) \_\_\_\_\_ B) \_\_\_\_\_



ADCPS Serial No.: \_\_\_\_\_

Q. Questions 1 & 2 are based on the figures given below:



**Q1.** In Year X, which of the following products represented between 15 percent and 20 percent of the total revenue from all Scandinavian exports?

- a) Timber
- b) Foodstuffs
- c) Machinery
- d) Minerals

**Q2.** If Sweden, Denmark, and Finland exported 30, 18, and 6 billion dollars' worth of machinery, respectively, approximately how many billion dollars' worth of machinery did Norway export in Year X?

- a) 62
- b) 43
- c) 19
- d) 6

**Q3.** The temperatures of a recent week in Powai were: 38 degrees C, 35 degrees C, 35 degrees C, 37 degrees C, 35 degrees C, 33 degrees C, and 32 degrees C. What is the mean, median, and mode temperature values for this week, in that order?

- a) 35, 35, 35
- b) 35, 37, 38
- c) 36, 37, 35
- d) 36, 35, 37

**Q4.** A 110-liter mixture of milk and water contains 10% water. How much water must be added to make water 20% in the mixture?

- a) 12.75 liters
- b) 14.5 liters
- c) 13.75 liters
- d) 11 liters.

**Q5.** Hari has five more than five times as many as candies as does Pooja, and half as many candies as does Laxmi. If Pooja has 'x' number of candies, then in terms of 'x', how many candies does do Hair, Pooja and Laxmi have?

- a)  $2x+4$
- b)  $5x+5$
- c)  $15x+16$
- d)  $16x+15$
- e)  $4x+5$

**Q6.** Many fertilizers are given an NPK rating based on the percentages of the three major plant nutrients they contain: nitrogen (N), phosphorous (P), and potassium (K). For example, a fertilizer with an NPK rating of 5-7-3 contains 5 percent nitrogen, 7 percent phosphorous, and 3 percent potassium. A farmer has two fertilizers: fertilizer A, with an NPK rating of 20-10-10, and fertilizer B, with an NPK rating of 50-13-16. If the farmer mixes the two fertilizers such that the mixture contains 30 percent nitrogen, what is the sum of the percentages of phosphorous and potassium in the mixture?

- a) 14.5
- b) 18
- c) 23
- d) 28

**Q7.** A museum has only illustrations and artefacts. Currently,  $\frac{1}{3}$  of the material the museum has are on display, and  $\frac{1}{6}$  of this are artefacts. If  $\frac{1}{3}$  of the material not on display are illustrations, and 200 artefacts are not on display, how many pieces of material does the museum have?

- a) 360
- b) 450
- c) 540
- d) 640

**Q8.** The average (arithmetic mean) high temperature for  $x$  days is 70 degrees. The addition of one day with a high temperature of 75 degrees increases the average to 71 degrees.

Quantity A

Quantity B

$x$

5

- a) Quantity A is greater.
- b) Quantity B is greater.
- c) The two quantities are equal.
- d) The relationship cannot be determined from the information given.

**Q9.** In 2022, the average budget of Computer Science and Centre for Policy was INR 38 L. The average budget of Centre for Policy and Management was INR 48 L, and the average budget of Management and Computer Science was INR 58 L. What is the average budget of all three departments (INR)?

- a) 42 L
- b) 44 L
- c) 48 L
- d) 50 L

**Q10.** The following chart shows the population of City X and the number of televisions in the town through the middle of part of the 20th century.

Year	Population	Number of TVs
1935	680	16
1940	750	20
1945	840	30
1950	960	50
1955	1200	80
1960	1500	150

The ratio of people to televisions in City X decreased by approximately what percent from 1955 to 1960? Give your answer to the nearest integer percent.

- a) 87
- b) 25
- c) 33
- d) 30

**For Questions 11 through 15 – read the paragraph and respond to the stated question:**

**Q11.** Another reason the Economist cites is that Chinese demand for commodities remains subdued, thereby keeping commodity prices, particularly energy prices, at low levels. The situation proves to be beneficial for India, as it stands as a net importer of energy. They also credit the significant infrastructure investments made by the government during the initial two quarters of this fiscal year (FY24) as playing a crucial role. These factors collectively contribute to India's positive trajectory. **Which among following option is a correct assumption as per the paragraph?**

- a) Chinese growth rates were high during this period.
- a) Low cost of oil in international market has helped uplift Indian growth.
- b) India's infrastructure investment was lower than China's.
- c) Indian Exports to China benefited Indian economy.

**Q12.** Read the article below and choose the statements that is closest to the argument:

Climate change caused by CO<sub>2</sub> emissions already in the atmosphere will shrink global GDP in 2050 by about \$38 trillion, or almost a fifth, no matter how aggressively humanity cuts carbon pollution, researchers said Wednesday. But slashing greenhouse gas emissions as quickly as possible remains crucial to avoid even more devastating economic impacts after mid-century, they reported in the journal *Nature*.

Economic fallout from climate change, the study shows, could increase tens of trillions of dollars per year by 2100 if the planet were to warm significantly beyond two degrees Celsius above mid-19th century levels. Earth's average surface temperature has already climbed 1.2C above that benchmark, enough to amplify heatwaves, droughts, flooding and tropical storms made more destructive by rising seas. Annual investment needed to cap global warming below 2C -- the cornerstone goal of the 2015 Paris Agreement -- is a small fraction of the damages that would be avoided, the researchers found. Staying under the 2C threshold "could limit average regional income loss to 20 percent compared to 60 percent" in a high-emissions scenario, lead author Max Kotz, an expert in complexity science at the Potsdam Institute for Climate Impact Research (PIK), told AFP.

Economists disagree on how much should be spent to avoid climate damages. Some call for massive investment now, while others argue it would be more cost-effective to wait until societies are richer and technology more advanced.

**Investment in climate mitigation measures could slow down because:**

- a) Massive investments would be required
- b) Some countries need to develop considerably before investing in climate mitigation
- c) Damages due to disasters are still high priority
- d) Choices A & B
- e) Choices A, B & C
- f) None of the above

**Q13.** The government of Dweepa, an isolated island, proposed eliminating outdoor advertising except for small signs of standard shape that identify places of business. Some island merchants protested that the law would reduce the overall volume of business in Dweepa, pointing to a report done by the government indicating that in every industry the Dweepa businesses that used outdoor advertising had a larger market share than those that did not.

**Which one of the following describes an error of reasoning in the merchants' argument?**

- a) presupposing that there are no good reasons for restricting the use of outdoor advertising in Dweepa
- b) assuming without giving justification that the outdoor advertising increased market share by some means other than by diverting trade from competing businesses
- c) ignoring the question of whether the government's survey of the island could be objective
- d) failing to establish whether the market-share advantage enjoyed by businesses employing outdoor advertising was precisely proportionate to the amount of advertising
- e) disregarding the possibility that the government's proposed restrictions are unconstitutional

**Q14.** Why should the government, rather than industry or universities, provide the money to put a network of supercomputers in place? Because there is a range of problems that can be attacked only with the massive data-managing capacity of a supercomputer network. No business or university has the resources to purchase by itself enough machines for a whole network, and no business or university wants to invest in a part of a network if no mechanism exists for coordinating establishment of the network as a whole.

**Which one of the following indicates a weakness in the argument?**

- a) It does not furnish a way in which the dilemma concerning the establishment of the network can be resolved.
- b) It does not establish the impossibility of creating a supercomputer network as an international network.
- c) It fails to address the question of who would maintain the network if the government, rather than industry or universities, provides the money for establishing it.
- d) It takes for granted and without justification that it would enhance national pre-eminence in science for the government to provide the network.
- e) It overlooks the possibility that businesses or universities, or both, could cooperate to build the network.

**Q15.** The chief foundations of all governments are the legal system and the police force; and as there cannot be a good legal system where the police are not well paid, it follows that where the police are well paid there will be a good legal system.

**The reasoning in the argument is not sound because it fails to establish that:**

- a) many governments with bad legal systems have poorly paid police forces
  - b) bad governments with good legal systems must have poorly paid police forces
  - c) a well-paid police force cannot be effective without a good legal system
  - d) a well-paid police force is sufficient to guarantee a good legal system
  - e) some bad governments have good legal systems
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