Directions (Questions 1 – 10): Read the following passages and answer the questions that follow each passage.

Passage 1

Since the world has become industrialized, there has been an increase in the number of animal species that have either become extinct or are nearing extinction. Bengal tigers, for instance, which once roamed in the jungles in vast numbers, now number only 2,300 and by the year 2025 their population is estimated to go down to zero. What is **alarming** about the case of Bengal tiger is that this extinction would have been caused almost entirely by poachers who according to some sources, are not interested in material gain but in personal gratification. This is an example of the callousness that is part of what is causing the problem of extinction. Animals like the Bengal tiger, as well as other endangered species, are a valuable part of the world's ecosystem. International laws protecting these animals must be enacted to ensure their survival, and the survival of our planet. Countries around the world have begun to deal with this problem in various ways. Some countries, in order to circumvent the problem, have allocated large amounts of land to animal reserves. They then charge admission fee to help defray the costs of maintaining the parks and often must also depend on world organizations for support. When they get the money, they can invest in equipment and patrols to protect the animals. Another solution that is an attempt to **stem the tide** of animal extinction is an international boycott of products made from endangered species. This seems fairly effective, but it will not by itself prevent animals from being hunted and killed.

1. What is the author's main concern in the passage?
   (1) Problems of industrialization (2) The Bengal tiger
   (3) Endangered species (4) Callousness of man

2. According to the passage, poachers kill for
   (1) Material gain (2) Personal satisfaction
   (3) Both (1) and (2) (4) None of these

3. Which of the following words is closest in meaning to the word **'alarming'** ?
   (1) Serious (2) Dangerous (3) Distressing (4) Frightening

4. Certain species are becoming extinct because of
   (1) Industrialisation (2) Poaching
   (3) Love of products made from them (4) All of these

5. The phrase **'stem the tide'** means
   (1) save (2) stop (3) touch (4) spare

Passage 2

Globalisation, liberalisation and free market are some of the most significant modern trends in economy. Most economists in our country seem **captivated** by the spell of the free market. Consequently, nothing seems good or normal that does not accord with the requirements of the free market. A price that is determined by the seller or, for that matter, established by anyone other than the aggregate of consumers seems **pernicious.** Accordingly, it requires a major act of will to think of price-fixing as both normal and having a valuable economic function. In fact, price-fixing is normal in the industrialised societies because the industrial system itself provides, an effortless consequence of its own development, the price-fixing that it requires. Modern industrial planning requires and rewards great size. Hence, a comparatively small number of large firms will be competing for the same group of consumers. That each large firm will act with consideration of its own needs and thus avoid selling its products for more than what its competitors charge is commonly recognised by **advocates** of free-market economic theories. But each large firm will

also act with full consideration of the needs that it has in common with the other large firms competing for the same customers. Each large firm will thus avoid significant price-cutting, because price-cutting will be prejudicial to the common interest in a **stable** demand for products. Most economists do not see price-fixing when it occurs because they expect it to be brought about by a number **of explicit** agreements among large firms; it is not.

Moreover, some economists argue that allowing the free-market to operate without interference is the most efficient method of establishing prices in all cases, except for the economies of non-socialist countries. Most of these economies employ intentional price-fixing, usually in an **overt** fashion. Formal price-fixing by cartels and informal price-fixing by agreements covering the members of an industry are common. Were there something peculiarly efficient about the free market and inefficient about price-fixing, the countries that have avoided the first and used the second would have suffered drastically in their economic development. There is no indication that they have.

Socialist industry also works within a framework of controlled prices. In the early 1970s, the Soviet Union began to give firms and industries some flexibility in adjusting prices that a more informal evolution has accorded the capitalist system. Economists in the USA have hailed the change as a return to the free market. But the Soviet firms were not in favour of the prices established by a free market, over which they exercised little influence. Rather, Soviet firms acquired some power to fix prices.

6. The author's primary objective of writing the passage seems to
   (1) belie the popular belief that the free-market helps enhance development of industrial societies
   (2) advocate that price-fixing is un-avoidable and it is beneficial to the economy of, any industrialized society
   (3) explain the methodology of fixing price to stabilize free-market
   (4) prove that price-fixing and free-market are compatible and mutually beneficial to industrialised societies

7. Which of the following statements I, II and/or III is/are TRUE in the context of the information given in the passage ?
   The information in the passage is helpful to
   I. know some of the ways in which prices can be fixed.
   II. identify the products for which price-fixing can be more beneficial
   III. differentiate between the economies of various countries
   (1) Only I (2) Only II (3) Only III (4) Both I and II

8. Considering the literal meaning and connotations of the words used in the passage, the author's attitude towards "most economists" can best be described as
   (1) derogatory and antagonistic (2) impartial and unbiased
   (3) spiteful and envious (4) critical and condescending

9. The author feels that price fixed by seller seems pernicious because
   (1) people don't have faith in large firms
   (2) people don't want the Government to fix prices
   (3) most economists believe that consumers should determine prices
   (4) most economists believe that no one group should determine prices

10. Which of the following statements is definitely true in the context of the passage ?
   (1) a profitable result of economic development
   (2) an inevitable result of the industrial system
   (3) the joint result of a number of carefully organised decisions
   (4) a phenomenon uncommon to industrialised societies

Directions (Questions 11–15): Choose the order of the sentences marked I, II, III and IV that forms a logical paragraph.

11. I. The men jumped up and rushed to the river.
II. They poured it on the glowing bed of charcoal.
III. The water gurgled out and the dying embers hissed and sent up little curls of vapour.
IV. They quickly came back with pitchers laden with water.
(1) IV, I, II, III (2) II, I, IV, III (3) III, II, I, IV (4) I, IV, III, II

12. I. I also believe in the possibility as well as the desirability of applying science to problems arising in social science.
II. Believing as I do in social science, I can only look with apprehension upon social pseudo-science.
III. I am a rationalist, which means that I believe in discussion and argument.
IV. I may say why I have chosen this particular subject.
(1) III, IV, I, II (2) IV, III, I, II (3) II, III, I, IV (4) IV, II, I, III

13. I. The investigation was confined to manufacturing firms in the area.
II. Those concerned with mining and quarrying, construction, transport, and trade and commerce, were excluded.
III. The number of workers employed by the firms in the area ranged from a dozen to approximately 35,000.
IV. A long search produced a comprehensive list of 203 manufacturing firms.
(1) I, II, IV, III (2) II, III, IV, I (3) IV, III, II, I (4) III, II, IV, I

14. I. But I found that it is almost foolproof.
II. Most people respond to the question. "Are there people that you really just don't talk to?" It's a strange topic of conversation.
III. The basic structure of a conversation with a boring person is that you have to entertain yourself.
IV. They're not going to do it.
(1) II, IV, I, III (2) IV, I, II, III (3) III, IV, I, II (4) III, IV, II, I

15. I. We all know that exercise is good for you.
II. Staying physically active helps keep your heart healthy and your muscles strong, and in cancer patients it has even been shown toward off relapse.
III. Now a series of independently conducted studies on the effects of exercise in healthy older adults, published on Monday in the Archives of Internal Medicine, confirms that.
IV. Logging time at the gym not only helps maintain good health but may even prevent the onset of chronic diseases, such as heart disease, osteoarthritis and dementia.
(1) I, II, III, IV (2) IV, I, II, III (3) III, IV, I, II (4) III, IV, II, I

Directions (Questions 16–20): The sentences given below have none, one or more errors The errors can be of any type: they can be one of spelling or grammar or incorrect usage of words etc. Count the number of errors. If the sentence has:

only one error, mark - (1)
only two errors, mark - (2)
more than two errors, mark - (3)
and No errors, mark - (4)

16. Dear Jolly, weaving this opportunities, I send my love to you and Paul.

17. Theirs been a lot of smog in this year and we can expect a worse winter next year.

18. Ones warned to ones language when ones angry.

19. The arrogant fellow, sitting at the backside of the taxi, rudely ordered the driver to turn to the side.

20. After his father's death, Gaurav had to finally address himself to business of earning his own living.

Directions (Questions 21–25): In each of the following sentences, choose the word opposite in meaning to the underlined word to fill in the blanks.

21. My plans may sound rather *nebulous* to you, but they are very ..... to me.
(1) clear (2) concrete (3) prominent (4) conspicuous

22. People often prefer *ambiguity* to .....
(1) clarity (2) perversity (3) rationality (4) certainty

23. Never *dissipate* energy resources, but always ..... them.
(1) utilise (2) organise (3) mobilise (4) conserve

24. Just *incorporate* the necessary details and ..... the rest.
(1) dissect (2) differentiate (3) disjoin (4) exclude

25. Such talks are *absurd;* you should indulge in ..... talks.
(1) correct (2) fictional (3) proportional (4) rational

Directions (Questions 26–30) For the word given at the top of each table, match the dictionary definitions on the left (A,B,C,D) with their corresponding usage on the right (E, F, G, H). Out of the four possibilities given below the table, select the one that has all the definitions and their usages correctly matched.

26. Blow

Dictionary definition		Usage	
A.	To treat with unusual expenditure	E.	He blew off the gasket
B.	To rupture by too much pressure	F.	I'll blow you to a steak
C.	To foul up hopelessly	G.	She blew the town
D.	To leave hurriedly	H.	He blew his chances of success

(1) A-G, B-F, C-H, D-E (2) A-F, B-E, C-H, D-G
(3) A-F, B-H, C-E, D-G (4) A-F, B-G, C-H, D-G

27. Put

Dictionary definition		Usage	
A.	To throw with an overhand pushing motion	E.	The king put the traitors to death
B.	To cause to endure or suffer something	F.	Can you put the shot
C.	To translate into another language or style	G.	He's likely to put the poem into English
D.	To adapt	H.	It's unlikely that the lyrics be put to music.

(1) A-F, B-E, C-G, D-H
(2) A-F, B-E, C-H, D-G
(3) A-F, B-G, C-E, D-H
(4) A-E, B-G, C-F, D-E

28. Hand

Dictionary definition		Usage	
A.	Style of execution	E.	He wrote in a fancy hand
B.	A person employed at manual labour or general tasks	F.	Who had a hand in the victory?
C.	An instrumental part	G.	What a ranch hand !
D.	Style of penmanship	H.	That's the hand of a master

(1) A-E, B-F, C-G, D-H
(2) A-E, B-H, C-F, D-G
(3) A-H, B-G, C-F, D-E
(4) A-G, B-H, C-F, D-E

29. Kick

Dictionary definition		Usage	
A.	To heap reproaches upon (oneself)	E.	He is feeling that this relocation is nothing but a kick upstairs
B.	To function with vitality and energy	F.	He kicked up his heels once the results were out
C.	To show sudden delight	G.	Don't worry, he is alive and kicking
D.	To promote to a higher but less desirable position	H.	They kicked themselves for not going.

(1) A-H, B-G, C-E, D-F
(2) A-H, B-G, C-F, D-E
(3) A-H, B-F, C-G, D-E
(4) A-F, B-H, C-G, D-E

30. Happen

Dictionary definition		Usage	
A.	To come especially by way of injury or harm	E.	Accept it, mistakes will happen
B.	To come into being or occur as an event, process, or result	F.	It happened upon a system that worked
C.	To meet or discover something by chance	G.	I promise nothing will happen to you
D.	To occur by chance	H.	If so happens I ' m going your way

(1) A-G, B-E, C-F, D-H
(2) A-E, B-G, C-F, D-H
(3) A-E, B-G, C-H, D-F
(4) A-G, B-E, C-H, D-F

31. In how many ways can 6 professors and 5 engineers be seated in a row so that they are positioned alternately ?
(1) 7732 (2) 1177 (3) 8640 (4) 9524

32. Find the total number of signals that can be made by using 5 different colored flags when any number of them may be hoisted at a time.
(1) 125 (2) 225 (3) 325 (4) 425

33. A and B play a game where each is asked to select a number from 1 to 16. If the two numbers match, both of them win a prize. Find the probability that they will not win a prize in a single trial.
(1) 16/15 (2) 15/16 (3) 11/13 (4) 3/16

34. A speaks truth in 75% of cases and B in 80% of cases. In what percent of cases are they likely to contradict each other in narrating the same incident?
(1) 44% (2) 56% (3) 32% (4) 35%

35. Find the numbers between 200 and 300 such that when they are divided by 6, 8 or 9 leaves no remainder, i.e. exactly divisible.
(1) 216, 288 (2) 215, 290 (3) 124, 258 (4) 88, 259

36. Which one of the following fractions is less than 1/3 ?
(1) 22/63 (2) 4/11 (3) 15/46 (4) 33/98

37. Groundnut oil is now being sold at ₹ 27 per kg. During last month its cost was ₹ 24 per kg. Find by how much % a family reduces its consumption so as to keep the expenditure fixed.
(1) $11\frac{1}{9}\%$ (2) 22% (3) $11\frac{1}{5}\%$ (4) None of these

38. A reduction of ₹ 2 per kg enables a man to purchase 4 kg more sugar for ₹ 16. Find the original price of sugar.
(1) ₹ 8 / kg (2) ₹ 6 / kg (3) ₹ 7 / kg (4) ₹ 4 / kg

39. The average weight of 29 students in a class is 48 kg. If the weight of the teacher is included, the average weight rises by 500 g. Find the weight of the teacher ?
(1) 23 kg (2) 63 kg (3) 88kg (4) None of these

40. The sum of the present age of A, B and C is 90 years. Six years ago, their ages were in the ratio 1 : 2 : 3. What is the present age of C ?
(1) 41 years (2) 42 years (3) 23 years (4) 53 years

41. Divide 62 into two parts such that fourth part of the first and two-fifth part of the second are in the ratio 2 : 3.
(1) 31, 31 (2) 40, 22 (3) 32, 30 (4) 28, 34

42. Two equal glasses filled with mixtures of alcohol and water in the proportions of 2 : 1 and 1 : 1 respectively were emptied into a third glass. What is the proportion of alcohol and water in the third glass?
(1) 7:9 (2) 7:4 (3) 7:5 (4) 5:7

43. Ten men begin to work together on a job, but after some days, 4 of them leave. As a result, the job which could have been completed in 40 days is completed in 50 days. How many days after the commencement of the work did the 4 men leave?
(1) 20 days (2) 22 days (3) 25 days (4) 30 days

44. Four Lorries carrying 4 tons each move 128 tons in 8 days. In how many days will 6 Lorries carrying 3 tons each move 540 tons?
(1) 30 days (2) 28 days (3) 40 days (4) None of these

45. The cost price of 25 articles is equal to the selling price of 20 articles. Find the gain % ?
(1) 25% (2) 20% (3) 15% (4) 12%

46. What annual installment will discharge a debt of ₹ 4,200 due in 5 years at 10% simple interest ?
(1) ₹ 700 pa (2) ₹ 650 pa (3) ₹ 545 pa (4) None of these

47. The income of A and B are in the ratio 3 : 2 and expenses are in the ratio 5 : 3. If both save ₹200, what is the income of A?
(1) ₹1,100 (2) ₹1,240 (3) ₹1,200 (4) ₹800

48. The share of A in a partnership is ₹1,000 more than that of B, but capital of A is invested for 8 months while capital of B for 12 months. If the share of A of the yearly profits is the same as that of B, what is the capital of A?
(1) ₹9,000 (2) ₹4,500 (3) ₹2,800 (4) ₹3,000

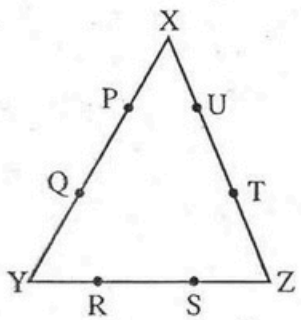
49. How many kg of salt at 42 paise per kg must a man mix with 25 kg of salt at 24 paise per kg so that he may, on selling the mixture at 40 paise per kg gain 25% on the outlay?
(1) 20kg (2) 25kg (3) 32kg (4) None of these

50. One thousand men in a fortress have provisions for 12 days. How long will the provisions last if 200 more men join them?
(1) 8 days (2) 12 days (3) 10 days (4) 15 days

51. If 12 men can build a wall 100 metres long, 3 m high, and 0.5 metre thick in 25 days, in how many days will 20 men build a wall 60 m x 4 m x 0.25 m.
(1) 8 days (2) 6 days (3) 9 days (4) 4 days

52. For a set of six true/false questions, no student has written all correct answers, and no two students have given the same sequence of answers. What is the maximum number of students in the class, for this to be possible ?
(1) 6^2 (2) 63 (3) 2^6 (4) 12

53. Consider all triangles that can be drawn using any three points (X, Y, Z, P, Q, R, S, T and U). How many triangles are possible such that only one side of these triangles is along the sides of ΔXYZ ?



(1) 24 (2) 36 (3) 39 (4) None of these

54. If $A_n = \{x : x \text{ is a multiple of } n \text{ and } n \in \mathbb{N}\}$, then which of the following is correct ?

(1) $A_5 \subseteq A_7$ (2) $A_5 \subseteq A_{35}$

(3) $A_5 \cup A_7 = A_{35}$ (4) $A_5 \cap A_7 = A_{35}$

55. A vessel is in the form of an inverted cone. Its height is 4 cm and the radius of its top which is open is 10 cm. It is filled with water upto the brim. When the spheres of radius 0.5 cm are dropped into the vessel, ¼th of water flows out. Find the number of spheres dropped in the vessel.

(1) 100 (2) 150 (3) 200 (4) 250

56. If $x = \frac{1}{7}$ and $y = -\frac{7}{2}$, then which of the following is true ?

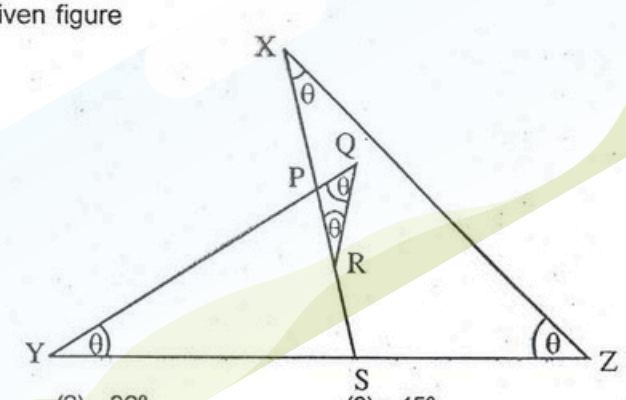
(1) $(x+y)^2 < \frac{1}{7}$ (2) $(x-y)^2 > \frac{1}{7}$ (3) $xy = \frac{1}{2}$ (4) $xy > \frac{1}{5}$

57. What is the geometric mean of (n +1) terms of the sequence 1, 4, 16, 64, 256 .... ?

(1) 4^{2n} (2) $4^{\frac{2n(n+1)}{2n+1}}$

(3) $4^{\frac{n(n+2)}{n+1}}$ (4) $4^{n/2}$

58. Find angle Q in the given figure



(1) 30° (2) 36° (3) 45° (4) 60°

59. Two cars start simultaneously from cities X and Y, towards Y and X respectively, on the same route. Once the two cars reach their destinations they turn around and move towards the other city without any loss of time. The two cars continue shuttling in this manner for exactly 20 hours. If the speed of the car starting from X is 60 km/h and the speed of the car starting from Y is 40 km/h and the distance between the two cities is 120 km, find the number of times the two cars cross each other.

(1) 12 (2) 8 (3) 10 (4) 20

60. A square whose side is 8m has its corners cut away so as to form an octagon with all sides equal and all angles equal. Then the length of each side of the octagon in metres is

(1) $\frac{4\sqrt{2}}{\sqrt{2}-1}$ (2) $\frac{4\sqrt{2}}{\sqrt{2}+1}$ (3) $\frac{8}{\sqrt{2}+1}$ (4) $\frac{8}{\sqrt{2}-1}$

61. $f(x)=\sqrt{x+1}, g(x)=x^2+x+3,\ h(x)=g(f(x))$, what is h (8)/g(8)=?

(1) $\frac{1}{5}$ (2) $\frac{3}{5}$ (3) $\frac{3}{25}$ (4) Both (1) and (3)

62. Three runners A, B and C cross the same point together , all running at the same speed in straight lines. Two of them are running in exactly opposite directions. Now at any point in time. if a triangle is drawn with the three runners as three vertices, what kind of a triangle will it be ?

(1) Equilateral triangle (2) Right angled triangle
(3) Isosceles triangle (4) None of these

63. Santa distributes 100 gifts in the 1st hour on Christmas. His efficiency decreases by 20% in 2nd hour, increases by 50% in 3rd hour, decreases by 15% in 4th hour and increases by 50% in 5th hour. If Santa has to distribute gifts for more than 1 hour, how long should he distribute so that the number of gifts per hour will be maximum ?

(1) 3 h (2) 4 h (3) 5 h (4) Cannot be determined

Directions (Questions 64–65) : Read the information below and answer the questions that follow :

In USA, companies follow a particular system of holidays for their employees. Employees are given holidays on the days where the first letter of the day of the week is the same as the first letter of their names. All employees work at the same rate.

64. Romeo starts working on February 25, 2008 and finishes the job on March 2, 2008. How much time would Tom and Jack take to finish the same job if both start on the same day as Romeo ?

(1) 4 days (2) 4.5 days (3) 3.5 days (4) Insufficient data.

65. Starting on February 25, 2008, Romeo had finished his job on April 2, 2008. When would Tom and Sam have completed the job, had they started on the same day as Romeo ?

(1) March 11, 2008 (2) March 17, 2008
(3) March 22, 2008 (4) March 25, 2008

66. A spiral is made up of 13 successive semicircles, with centre alternately at A and B, starting with centre at A. The radii of semicircles, thus developed, are 0.5 cm, 1.0 cm, 1.5 cm and 2.0 cm and so on. The total length of the spiral is

(1) 144 cm (2) 143 cm (3) 174 cm (4) None of these

67. The mean salary in ICM Ltd. was ₹1500, and the standard deviation was ₹400. A year later each employee got a ₹100 raise. After another year each employee's salary (including the above mentioned raise) was increased by 20%. The standard deviation of the current salary is

(1) 460 (2) 480 (3) 580 (4) None of these

68. 3001 × 749 ÷ 1001 – 1399 = ?

(1) 650 (2) 700 (3) 950 (4) 850

69. $\sqrt{2642} - \sqrt{1156} + \sqrt{459} = ?$

(1) 50 (2) 90 (3) 40 (4) 20

70. DSBO company produces Z units of output at a total cost of ₹ R, where $R = \frac{1}{10}Z^3 - 5Z^2 + 10Z + 5$. At what level of output will the average variable cost attain its minimum ?
(1) 20 (2) 33 (3) 25 (4) None of these

71. If $H_1, H_2, H_3 \ldots\ldots H_n$, are n Harmonic means between 'a and 'b' ($\neq$ a), then value of $\frac{H_1 + a}{H_1 - a} + \frac{H_n + b}{H_n - b}$ is equal to
(1) $n + 1$ (2) $2n$ (3) $2n + 3$ (4) $n - 1$

72. If ${}^{n+2}C_8 : {}^{n-2}P_4 = 57 : 16$, then n is equal to
(1) 20 (2) 22 (3) 15 (4) None of these

73. If three positive real numbers a, b and c ($c > a$) are in Harmonic Progression, then $\log (a + c) + \log (a - 2b + c)$ is equal to
(1) $2 \log (c - b)$ (2) $2 \log (a - c)$
(3) $2 \log (c - a)$ (4) $\log a + \log b + \log c$

74. Sum of the series $1^2 - 2^2 + 3^2 - 4^2 + \ldots\ldots + 2001^2 - 2002^2 + 2003^2$ is
(1) 2007006 (2) 1005004 (3) 200506 (4) None of these

75. The number of ways in which a mixed double tennis game can be arranged amongst 9 married couples if no husband and wife play in the same game is
(1) 1514 (2) 1512 (3) 3024 (4) None of these

76. The interior angles of a polygon are in Arithmetic Progression. If the smallest angle is 120° and common difference is 5°, then number of sides in the polygon is
(1) 7 (2) 8 (3) 9 (4) None of these

77. A ladder 25 m long is placed against a wall with its foot 7m away from the foot of the wall. How far should the foot be drawn out so that the top of the ladder may come down by half the distance of the total distance if the foot is drawn out ?
(1) 6 m (2) 8 m (3) 8.75 m (4) None of these

78. If one root of the equation $ax^2 + bx + c = 0$ is double of the other, then $2b^2$ is equal to
(1) $9ca$ (2) $c\sqrt{2a}$ (3) $2\sqrt{3ac}$ (4) None of these

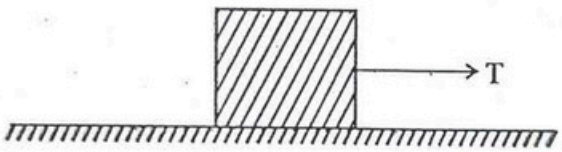
79. A boat goes 30 km upstream and 44 km downstream in 10h. In 13 h, it can go 40 km upstream and 55 km down stream. The speed of the boat in still water is
(1) 3 km/h (2) 4 km/h (3) 8 km/h (4) None of these

80. A pole has to be erected on the boundary of a circular park of diameter 13 m in such a way that the difference of its distances from two diametrically opposite fixed gates A and B on the boundary is 7 m. The distance of the pole from one of the gate is
(1) 8 m (2) 8.25 m (3) 5 m (4) None of these

81. The kinetic energy k of a particle moving along a circle of radius R depends on the distance covered s as $k = as^2$. The force acting on the particle is

(1) $2a\frac{R^2}{s}$ (2) 2as (3) $2as\left(1+\frac{s^2}{R^2}\right)^{1/2}$ (4) $2a\frac{s^2}{R}$

82. In the figure shown, a block of weight 10N resting on a horizontal surface ? The coefficient of static friction between the block and the surface μ_s =0.4. A force of 3.5 N will keep the block in uniform motion, once it has been set in motion. A horizontal force of 3 N is applied to the block, then the block will



(1) First it will move with a constant velocity for some time and then will have accelerated motion.
(2) Will not move
(3) Move having accelerated motion over the surface
(4) Move over the surface with constant velocity.

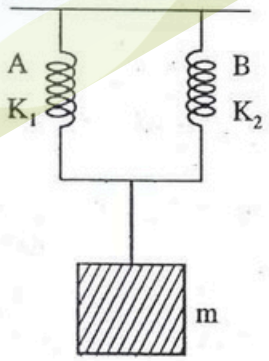
83. A body of mass M at rest explodes into three pieces, two of which of mass M/4 each are thrown off in perpendicular directions with velocities of 3 m/s and 4 m/s respectively. The third piece will be thrown off with a velocity of

(1) 3.0 m/s (2) 2.5 m/s (3) 2.0 m/s (4) 1.5 m/s

84. If a gas is heated at constant pressure, its isothermal compressibility

(1) Decreases linearly with temperature
(2) Decreases inversely with temperature
(3) Remains constant
(4) Increases linearly with temperature

85. A mass m is suspended by means of two coiled spring which have the same length in unstretched condition as in figure. Their force constant are K_1 and K_2 respectively. When set into vertical vibrations, the period will be



(1) $2\pi\sqrt{\left(\frac{m}{K_1+K_2}\right)}$ (2) $2\pi\sqrt{\left(\frac{m}{K_1-K_2}\right)}$

(3) $2\pi\sqrt{m\left(\frac{K_1}{K_2}\right)}$ (4) $2\pi\sqrt{\left(\frac{m}{K_1K_2}\right)}$

86. Light from sodium lamp is passed through sodium vapours, the spectrum of transmitted light consists of
(1) Sodium doublet lines
(2) A line at 5890 Å
(3) A line at 5896 Å
(4) No spectral features

87. A bar magnet has a magnetic moment equal to 5×10^{-5} weber × m. It is suspended in a magnetic field which has a magnetic induction (B) equal to $3\pi \times 10^{-4}$ tesla. The magnet vibrates with a period of vibration equal to 15 sec. The moment of inertia of the magnet is
(1) 0.57 kgm^2
(2) 5.62 kgm^2
(3) 11.25 kgm^2
(4) 22.5 kgm^2

88. A charge particle is free to move in an electric field. It will travel
(1) Along a line of force, if tit has some initial velocity is the direction of an acute angle with the line of force
(2) Always along a line of force
(3) Along a line of force, if its initial velocity is zero
(4) None of the above

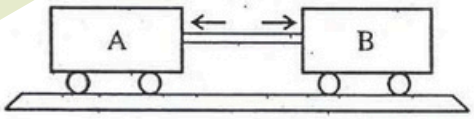
89. The truth table belongs to

A	B	Y
1	0	1
1	1	0
0	1	1
0	0	1

(1) NAND
(2) NOR
(3) NOT
(4) AND

90. The electrostatic force at the center of equilateral triangle of each side L is
(1) zero
(2) $\frac{1}{4\pi\varepsilon_o}\frac{q^2}{L^2}$
(3) $\frac{1}{4\pi\varepsilon_o}\frac{3q^2}{L^2}$
(4) $\frac{1}{12\pi\varepsilon_o}\frac{q^2}{L^2}$

91. Two carts of masses 200 kg and 300 kg on horizontal rails are pushed apart. Suppose the coefficient of friction between the carts and the rails are same. If the 200 kg cart travel a distance of 36m and stops, then the distance travelled by the earth weighing 300 kg is



(1) 32m
(2) 12 m
(3) 24m
(4) 16 m

92. Dimensions of charge are
(1) $M^0L^0T^{-1}A^{-1}$
(2) $MLTA^{-1}$
(3) $T^{-1}A$
(4) TA

93. When a negative charge is taken at a height from earth's surface, then its potential energy
(1) Increases
(2) Decreases
(3) Remains unchanged
(4) Will become infinity

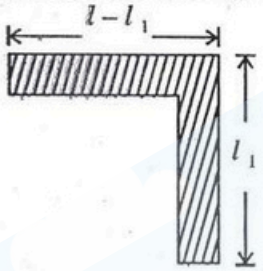
94. Which of the following quantities has the same dimensions as that of energy ?
(1) Work (2) Momentum (3) Force (4) Power

95. Dimensional formula of magnetic flux is
(1) $M^0L^{-2}T^{-2}I^3$ (2) $ML^2T^{-2}I^3$ (3) $ML^0T^{-2}I^{-2}$ (4) $ML^2T^{-2}I^{-1}$

96. A body is thrown vertically upwards. If air resistance is to be taken into account, then the time during which the body rises is
(1) Greater than the time of fall (2) Twice the time of fall
(3) Equal to the time of fall (4) Less than the time of fall

97. A ball is thrown upwards and it returns to ground describing a parabolic path. Which of the following remains constant ?
(1) Vertical component of velocity (2) Horizontal component of velocity
(3) Speed of the ball (4) Kinetic energy of the ball.

98. A uniform rope of length l lies on a table. If the coefficient of friction is μ, then the maximum length l_1 of the part of this rope which can overhang from the edge of the table without sliding down is



(1) $\frac{l}{\mu+1}$ (2) $\frac{\mu l}{\mu-1}$ (3) $\frac{l}{\mu}$ (4) $\frac{\mu l}{\mu+1}$

99. The energy of a photon of wavelength λ is given by
(1) $ch\lambda$ (2) $h\lambda$ (3) hc/λ (4) h/λ

100. The minimum energy required to remove an electron is called
(1) Kinetic energy (2) Stopping potential
(3) Work function (4) None of these

101. In an elastic collision of two particles which one the following is conserved ?
(1) Total kinetic energy of both the particles (2) Speed of each particle
(3) Momentum of each particle (4) Kinetic energy of each particle

102. The electric intensity E, current density j and specific resistance k are related to each other by which relation ?
(1) k = jE (2) E = k/j (3) E = jk (4) E = j/k

103. Forty electric bulbs are connected in series across a 220V supply. After one bulb is fused, the remaining 39 are connected again in series across the same supply. The illumination will be
(1) More with 39 bulbs than with 40 (2) More with 40 bulbs than with 39
(3) Equal in both the cases (4) In the ratio of $49^2 : 39^2$

104. The Avogadro's number is 6×10^{23} per gm mole and electronic charge is 1.6×10^{-12} C. The Faraday's number is

(1) $\frac{1.6\times10^{-19}}{6\times10^{23}}$ (2) $\frac{1}{6\times10^{23}\times1.6\times10^{-19}}$

(3) $6\times10^{23}\times1.6\times10^{-19}$ (4) $\frac{6\times10^{23}}{1.6\times10^{-19}}$

105. The magnetic induction at a point P which is distance 4 cm from a long current carrying wire is 10^{-8} tesla. The field of induction at a distance 12 cm from the same current would be

(1) 1.11×10^{-4} tesla (2) 9×10^{-2} tesla
(3) 3.33×10^{-9} tesla (4) 3×10^{-3} tesla

106. Inductance L can be dimensionally represented as

(1) $ML^2T^{-4}I^{-3}$ (2) $ML^2T^{-2}I^{-2}$
(3) $ML^2T^4I^3$ (4) $ML^{-2}T^{-2}I^{-2}$

107. A stone dropped from the top of the tower touches the ground in 4 sec. The height of the tower is

(1) 12.8 m (2) 24.0 m (3) 52.2 m (4) 78.4 m

108. A tachometer is a device to measure

(1) Surface tension (2) Tension in a spring
(3) Gravitational pull (4) Speed of rotation

109. A disc is of mass M and radius r. The moment of inertia of it about an axis tangential to its edge and in plane of the disc is

(1) $\frac{Mr^2}{2}$ (2) $\frac{3}{2}Mr^2$ (3) $\frac{Mr^2}{4}$ (4) $\frac{5}{4}Mr^2$

110. Two Identical wires of rubber and iron are stretched by the same weight, then the number of atoms in the iron wire will be

(1) More than that of the rubber (2) Equal to that of rubber
(3) Less than that of the rubber (4) None of the above

111. The work done in blowing a soap bubble of radius r of the solution of surface tension T will be

(1) $\frac{4}{3}\pi r^3T$ (2) $4\pi r^2T$ (3) $2\pi r^2T$ (4) $8\pi r^2T$

112. In adiabatic expansion

(1) ΔW = Zero (2) ΔU = positive (3) ΔU = negative (4) $\Delta U = 0$

113. Inside a hollow spherical conductor, the potential

(1) Varies inversely as the square of the distance from the centre
(2) Varies inversely as the distance from the centre
(3) Varies directly as the distance from the centre
(4) Is constant

114. The distance between the two charges each of 1 coulombs are at a distance 1 km apart, the force between them is
(1) 10^4 newton
(2) 1.1×10^{-4} newton
(3) 9×10^{-3} newton
(4) 9×10^3 newton

115. Can a metal be used as a medium for dielectric ?
(1) No
(2) Yes
(3) Depends on its shape
(4) Depends on dielectric

116. The moment of momentum is called
(1) Torque
(2) Couple
(3) Angular momentum
(4) Impulse

117. A spring having a spring constant 'K' is loaded with a mass 'm'. The spring is cut into two equal parts and one of these is loaded again with the same mass. The new spring constant is
(1) K^2 (2) 2K (3) K/2 (4) K

118. A man with defective eyes cannot see distinctly object at the distance more than 60 cm from his eyes. The power of the lens to be used will be
(1) $\frac{1}{1.66}$D (2) –1.66 D (3) –60 D (4) + 60 D

119. In the Bohr's hydrogen atom model, the radius of the stationary orbit is directly proportional to (n = principle quantum number)
(1) n^2 (2) n^{-2} (3) n^{-1} (4) n

120. Which of the following pair does not have the identical dimensions ?
(1) Impulse and Momentum
(2) Angular momentum and Planck's constant
(3) Work and Torque
(4) Moment of inertia and Moment of force

121. In $_{88}Ra^{226}$ nucleus, there are
(1) 226 neutrons and 138 electrons
(2) 226 protons and 88 electrons
(3) 138 neutrons and 88 protons
(4) 138 protons and 88 neutrons

122. At which temperature the fahrenheit and centigrade scales are equal ?
(1) 80 (2) –40 (3) 37 (4) 40

123. Thermocouple thermometer is based on
(1) Compton effect
(2) photoelectric effect
(3) Seebeck effect
(4) Peltzier effect

124. A particle of mass m is projected with velocity v making an angle of 45° with the horizontal. The magnitude of the angular momentum of the particle about the point of projection when the particle is at its maximum height is (where g = acceleration due to gravity)
(1) $mv^3/(\sqrt{2g})$ (2) $mv^2/2g$ (3) $mv^3/(4\sqrt{2g})$ (4) Zero

125. A mass is revolving in a plane, then its angular momentum will be in the direction of
(1) Normal to the plane of rotation
(2) Along the radius of the orbit
(3) Along the tangent of the orbit
(4) None of the above

126. Solids expand on heating because
(1) The P.E. curve is asymmetric about the equilibrium distance between neighbouring atoms
(2) Total energy of the atoms increases
(3) Potential energy of the atoms increases
(4) Kinetic energy of the atoms increases

127. Two identical vessels are filled with equal amount of ice. The vessels are made from different materials. If the ice melts in two vessels in time t_1 and t_2 respectively, then their thermal conductivities are in the ratio
(1) $t_1^2 : t_2^2$ (2) $t_2^2 : t_1^2$ (3) $t_1 : t_2$ (4) $t_2 : t_1$

128. Blue colour of sea water is due to
(1) Large depth of sea water
(2) Sea water is saltish
(3) Bottom of sea is blue
(4) Reflection of light and scattering of light from water particles.

129. If an object is placed closer than the near point of a far sighted person, then
(1) The image is formed in front of the retina and a converging lens produces a sharp retinal image
(2) The image is formed behind the retina and a diverging lens produced a sharp retinal image
(3) The image is formed in front of the retain and a divergent corrective lens will lead to sharp potential image
(4) The image is formed behind the retina and a coverging lens produces a sharp retinal image.

130. In a P-N junction diode
(1) The reverse biased current is very small comparison to reverse biased current
(2) The reverse biased current is strongly dependent on the applied bias voltage
(3) The current in the reverse bias condition is small but the forward biased current is independent of the bias voltage
(4) The current in the reverse biased condition is generally very small.

131. Soil containing both Al and Fe is called
(1) Laterite (2) Bauxite (3) Pedalfers (4) Clay

132. Pyrolusite is
(1) Carbonate ore (2) Sulphur ore (3) Silicon ore (4) None of these

133. 1 molar solution contains
(1) 1000g of solute
(2) 1000g of solvent
(3) 1 litre of solvent
(4) 1 litre of solution

134. Which one of the following has zero valency ?
(1) Sodium (2) Beryllium (3) Aluminium (4) Krypton

135. Which one is the weakest acid ?
(1) HNO_3 (2) $HClO_4$ (3) H_2SO_4 (4) HBr

136. If a chemical change is brought about by one or more methods in one or more steps, then the amount of heat absorbed or evolved during the complete course of reaction is same, which ever method was followed. This law is known as
(1) Joule Thomson effect (2) Le Chatelier principle
(3) Hess law (4) None of these

137. The correct relationship is
(1) $\Delta H + P\Delta V = \Delta V$ (2) $\Delta H - \Delta nRT = \Delta E$
(3) $\Delta E + \Delta nRT = \Delta P$ (4) None of these

138. All colloids are
(1) Formed by one solid and one liquid (2) Two phase systems
(3) Suspensions (4) True solutions

139. Cuprous ions are formed when
(1) Copper is oxidized by HNO_3 (2) Cupric ions are oxisized by SO_2
(3) Cupric ions are reduced by Cu (4) None of these

140. Copper cannot replace ..... from solution.
(1) Fe (2) Au (3) Hg (4) Ag

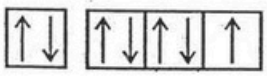
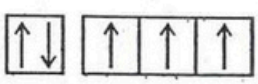
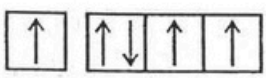
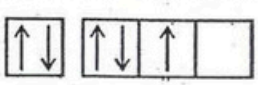
141. Optically active compound is
(1) 3 – chloropentane (2) 2 – chlorobutane
(3) 2 – chloropropane (4) None of these

142. Following reaction is known as

$$\text{Phenol} \xrightarrow[\text{(ii) } H^+]{\text{(i) } CHCl_3 / NaOH} \text{salicylaldehyde}$$

(1) Gatterman aldehyde synthesis (2) Duff reaction
(3) Perkin reaction (4) Reimer - Tiemann reaction

143. The shape of carbonium is
(1) Planar (2) Pyramidal (3) Linear (4) None of these

144. The orbital diagram in which Aufbau principle is violated is
(1) 
(2) 
(3) 
(4) 

145. Potash alum is used in purification of water because
(1) It catalyses the removal of impurities
(2) It removes the hardness of water
(3) It precipitates the colloidal matter
(4) It kills the micro organisms.

146. Hematite is an ore of
(1) Copper (2) Manganese (3) Iron (4) Boron

147. The end product of the reaction is

$$CH_3OH \xrightarrow[300^\circ C]{A} A \xrightarrow{NaOH} B$$

(1) Ketone (2) Alkane
(3) Sodium salt of carboxylic acid (4) Carboxylic acid

148. Which type of radiation is not emitted by the electronic structure of atoms ?
(1) X-rays (2) Ultraviolet light
(3) γ-rays (4) Visible light

149. For the reaction A + B $\rightarrow$ AB, if the concentrations of A and B are doubled, the rate of reaction will
(1) Be halved (2) Be doubled
(3) Increase to 4 times (4) Nothing can be said

150. Which one of the following is Lowry Bronsted acid ?
(1) $C_2H_5O^-$ (2) HSO_4^- (3) Cl^- (4) OH^-

151. 1 mole of any gas :
(1) Always occupies a fixed volume at NTP (2) Can occupy any volume at NTP
(3) Always occupies 22.4 litre (4) Always occupies 1 litre

152. HNO_3 acts as
(1) Reducing agent (2) Oxidizing agent
(3) Both (1) & (2) (4) None of these

153. The treatment of propinaldehyde with dil. NaOH solution gives
(1) $CH_3CH_2COCH_2CH_2CHO$ (2) $CH_3CH_2CHOHCH_2CH_2CHO$
(3) $CH_3CH_2CHOHCH(CH_3)CHO$ (4) $CH_3CH_2COOCH_2CH_2CH_3$

154. Which pair has elements containing same number of electrons in the outermost orbit ?
(1) Pb, Sb (2) As, Bi (3) Na, Ca (4) N, O

155. Which of the following contains both Ca and Mg ?
(1) Felspar (2) Chalk (3) Dolomite (4) Limestone

156. Sodium atom differs from sodium ion in the number of
(1) Electrons (2) Protons (3) Neutrons (4) Neutrons and protons

157. The Nessler's reagent contains
(1) HgI_4^{2-} (2) HgI_2^- (3) Hg^{2+} (4) Hg_2^{2+}

158. Which is least soluble in water ?
(1) I^- (2) Ce^- (3) Br^- (4) F^-

159. Which of the following is most stable ?
(1) $CH_3CH(OH)_2$ (2) $CH_{3c}Cl(OH)_2$ (3) $(CH_3)_2C.(OH)_2$ (4) $CCl_3CH(OH)_2$

160. HCHO and HCOOH are distinguished by treating with
(1) Fehling's solution (2) Benedict solution
(3) Tollen's reagent (4) $NaHCO_3$

161. Perkin's reaction is used for the preparation of
(1) Phthalic acid (2) Cinnamic acid
(3) Salicylic acid (4) Benzoic acid

162. The volume of water needed to dissolve 1g of $BaSO_4$ ($K_{sp} = 1.1 \times 10^{-10}$) at 25°C is
(1) 410 litre (2) 205 litre (3) 410 litre (4) 820 litre

163. For an endothermic reaction where ΔH represents the enthalphy of the reaction in kJ/mol, the minimum value of the energy of activation will be
(1) Equal to ΔH (2) More than ΔH
(3) Equal to ΔH (4) Zero

164. Gypsum, $CaSO_4 . 2H_2O$ on heating to 120°C forms plaster of paris which is
(1) $CaSO_4$ (2) $2CaSO_4 .H_2O$ (3) $CaSO_4 . H_2O$ (4) $2CaSO_4 . 3H_2O$

165. Antiknock compound is
(1) Sublimed white lead (2) Tetra ethyl lead
(3) Lead tetra acetate (4) Basic lead carbonate

166. Which of the following is not an alcohol ?
(1) C_6H_5OH (2) $C_6H_5CH_2OH$ (3) $CH_2 = CHCH_2OH$ (4) CH_2OHCH_2OH

167. The mathematical form of the first law of thermodynamics when heat (q) is supplied and (w) is work done by the system (+ve) is
(1) $\Delta E = -q - w$ (2) $\Delta E = -q + w$ (3) $\Delta W = q + w$ (4) $\Delta E = q - w$

168. Which set of conditions represents easiest way to liquefy a gas ?
(1) High temperature and high pressure (2) Low temperature and low pressure
(3) Low temperature and high pressure (4) High temperature and low pressure

169. The wavelength of a spectral line for an electronic transition is inversely related to
(1) The velocity of the electron undergoing the transition
(2) The difference in the energy of energy levels involved in the transitions
(3) The nuclear charge of the atom
(4) The number of electrons undergoing the transition.

170. On heating one end of a piece of a metal, the other end becomes hot because of
(1) minor perturbation in the energy of atoms (2) energised electrons moving to the other end
(3) mobility of atoms on the metal (4) resistance of the metal

171. The oxide, which cannot act as a reducing agent, is
(1) ClO_2 (2) CO_2 (3) NO_2 (4) SO_2

172. The oxidation of toluene with CrO_3 in the presence of $(CH_3CO)_2O$ gives a product A, which on treatment with aqueous NaOH, produces
(1) $(C_6H_5CO)_2O$ (2) C_6H_5COONa (3) C_6H_5CHO (4) 2, 4-diacetyl toluene

173. The IUPAC name for
$CH_3CH = CHCH_2\underset{\displaystyle NH_2}{\underset{|}{C}H}CH_2COOH$ is
(1) β-amino δ-heptenoic acid (2) 3-amino 5 - heptenoic acid
(3) 5-amino hex - 2- ene-carboxylic acid (4) 5-amino-2-heptenoic acid

174. Identify the correct statement
(1) Plaster of Paris is obtained by partial oxidation of gypsum
(2) Plaster of Paris can be obtained by hydration of gypsum
(3) Gypsum contains a lower percentage of calcium than plaster of Paris
(4) Gypsum is obtained by heating plaster of Paris.

175. The mercury is the only metal which is liquid at 0°C. This is due to its
(1) high vapour pressure (2) weak metallic bond
(3) high ionization energy (4) both (2) and (3)

176. Half-life for radioactive ^{14}C is 5760 years. In how many years 200 mg of ^{14}C will be reduced to 25 mg ?
(1) 11520 years (2) 17280 years (3) 23040 years (4) 5760 years

177. An ideal gas, obeying kinetic theory of gases can not be liquefied, because
(1) its molecules are relatively small in size
(2) it solidifies before becoming a liquid
(3) its critical temperature is above 0°C
(4) forces acting between its molecules are negligible.

178. For a reaction to occur spontaneously
(1) $(\Delta H + T\Delta S)$ must be negative (2) ΔS must be negative
(3) $(\Delta H - T\Delta S)$ must be negative (4) ΔH must be negative

179. The bakelite is prepared by the reaction between
(1) ethylene glycol (2) urea and formaldehyde
(3) phenol and formaldehyde (4) tetramethylene glycol

180. The pH value of a 10 M solution of HCl is
(1) equal to 2 (2) equal to 1 (3) equal to 0 (4) less than 0

189. "A Better India, A better World" is a book authored by
(1) Nandan Nilekani (2) APJ Abdul Kalam
(3) N.R. Narayana Murthy (4) Gurucharan Das

190. National Disaster Management Authority has been established by the Government of India under the Ministry of
(1) Home Affairs (2) HRD (3) Urban Development (4) Defence

191. Which is the Nodal Union Ministry for implementing the Biodiesel Mission ?
(1) Ministry of Agriculture (2) Ministry of New and Renewable Energy
(3) Ministry of Science and Technology (4) Ministry of Rural Development

192. Where will the 2012 Olympic Games be held ?
(1) Los Angeles (2) Beijing (3) Seoul (4) London

193. National Consumer Rights Day is observed on
(1) December 4 (2) December 7 (3) December 24 (4) December 10

194. How many gold medals won by India in the Commonwealth Games 2010 ?
(1) 39 (2) 36 (3) 38 (4) 37

195. Who is the present Chairman of Telecom Regulatory Authority of India or TRAI ?
(1) Shri Arun Ramanathan (2) Dr. J.S. Sharma
(3) Shri Sahib Dayal Singh (4) None of these

196. The host of 2018 World Cup of Football is
(1) Qatar (2) Russia (3) Japan (4) India

197. On the tributary of which river has Rihand Dam been constructed ?
(1) Chambal (2) Yamuna (3) Sone (4) Periyar

198. AGMARK is
(1) A cooperative for egg production (2) Regulated agricultural market
(3) Farmer's cooperative (4) A quality guarantee stamp for commodities.

199. The largest freshwater lake in the world is
(1) Lake Victoria (2) Lake Michigan (3) Lake Balkhash (4) Lake Superior

200. Match the following celebrities and the products they endorse :

Celebrity		Product	
A.	Virender Sehwag	I.	Sprite
B.	Rahul Khanna	II.	Slice
C.	Sania Mirza	III.	Britannia
D.	Katrina Kaif	IV.	Frito Lays Chips

(1) A-II, B-I, C-IV, D-III (2) A-I, B-II, C-III, D-IV
(3) A-III, B-IV, C-I, D-II (4) A-IV, B-III, C-II, D-I