

ELITE 20

PRE- FOUNDATION COURSE CLASS – IX

SAMPLE PAPER

PLEASE READ THE INSTRUCTIONS CAREFULLY

A. GENERAL

1. This booklet is your question paper.
2. This question paper contains **25** questions.
3. This question paper contains blank pages for your rough work.
4. Blank papers, clip boards, log tables, slide rule, calculators, cellular phones or any other electronic items, in any form are NOT allowed.
5. Write your Roll Number and Name on Question Paper and before answering the Question paper fill up the required details in the blank space provided in the Answer sheet.

B. ANSWERING

1. Every question has 4 choices for its answer (1), (2), (3) and (4).
2. Only one of them is the right answer.

C. MARKING SCHEME

1. For each correct answer carries **3** marks. There will be **negative marking**. For each wrong answer **-0.5** mark will be deducted.

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1. The sum of the monthly salaries of Vidyut and Ranjan is ₹ 15000. If the salary of Vidut is increased by 11.11% and that of Ranjan by 16.67%, the resulting salary of Ranjan will be 70% of the resulting salary of Vidyut. What is the original annual salary Ranjan?
1. ₹ 7200 2. ₹ 10800 3. ₹ 6000 4. ₹ 9000

2. $77^3 + 13^3 - 90^3$ is divisible by
1. Both 13 and 17 2. Both 11 and 17
3. Both 11 and 13 4. Both 3 and 19

3. The numbers p, q, r and s satisfy the following equations:

$$p + 2q + 3r + 4s = k \quad \text{and} \quad 4p = 3q = 2r = s$$

What is the smallest value of k for which p, q, r and s are all positive integers?

1. 20 2. 24 3. 25 4. 77
4. Aman, Baman and Chaman each have some sweets. Aman gives one third of his sweets to Baman. Baman gives one third of all the sweets he now has to Chaman. Then Chaman gives one third of all the sweets he now has to Aman. All the boys end up having the same number of sweets. Chaman begins with 40 sweets. How many sweets does Baman have originally?
1. 20 2. 30 3. 40 4. 50
5. The value of sum $2^2 + 4^2 + 6^2 + \dots + 28^2 + 30^2$ is:
1. 4500 2. 4960 3. 4800 4. 4640
6. The price of a Bus ticket increased by 5% and then decreased by 20% in a special offer. It was then ₹4 less expensive than its original price. What was the original price of the ticket?
1. ₹ 8.60 2. ₹ 13 3. ₹ 20.40 4. ₹ 25

7. $x + \frac{1}{y + \frac{1}{z}} = \frac{68}{21}$, where x, y and z are natural numbers. Find the value of $x + y + z$.
1. 9 2. 12 3. 11 4. 14

8. $\frac{5^{x^2} \times 5^{xy}}{5^{-y^2}} = 625$ and $\frac{3^{x^3}}{3^{y^3}} = 81$, find the value of $y - x$
1. 1 2. 0 3. -2 4. -1

9. Which of the following has the largest value?

1. $1 + \frac{2}{3 + \frac{4}{5}}$ 2. $2 - \frac{1}{2 + \frac{1}{3}}$ 3. $1 + \frac{1}{2 + \frac{1}{2}}$ 4. $3 - \frac{1}{2 - \frac{1}{3}}$

10. How many of the following statements are true?
- I. Every rectangle is parallelogram.
II. Diagonals of a parallelogram are equal.
III. All angles of a rectangle are equal.



- IV. Diagonals of a rhombus are perpendicular.
 V. Every rational number is an integer.
 VI. Every whole number is an integer.
 VII. Sum of two supplementary angles is 180°
 VIII. Sum of two complementary angles is 180°

1. 4 2. 5 3. 6 4. 7

11. The site of respiration in bacteria is

1. Ribosome 2. Microsome
 3. Episome 4. Mesosome

12. During Biological Nitrogen fixation, inactivation of nitrogen by oxygen poisoning is prevented by:

1. Carotene 2. Cytochrome
 3. Leghaemoglobin 4. Xanthophylls

13. The first stable product of fixation of atmospheric nitrogen in leguminous plant is:

1. NO_3^- 2. Glutamate 3. NO_2^- 4. Ammonia

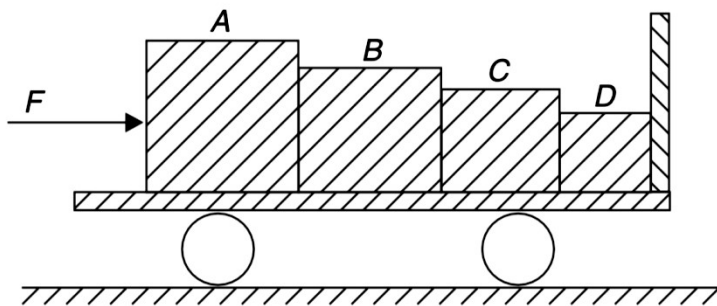
14. Select the method(s) of irrigation which can be employed in an uneven land.

- (i) Moat
 (ii) Sprinkler
 (iii) Chain Pump
 (iv) Drip System
1. (ii) and (iv) 2. Only (iv)
 3. (i), (ii) and (iii) 4. (i) and (ii)

15. Food production can be increased to meet the demand of an increasing population by

- (i) Practicing efficient land management and development.
 (ii) Continuous research to ensure sustainable development.
 (iii) Using more pesticides to control pests.
1. (i) and (ii) 2. (i) and (iii)
 3. (ii) and (iii) 4. (i), (ii) and (iii)

16. A toy cart has mass of 4kg and is kept on a smooth horizontal surface. Four blocks A, B, C and D of masses 2kg, 2kg, 1kg and 1kg respectively have been placed on the cart. A horizontal force of $F = 40 \text{ N}$ is applied to the block A (see figure). Find the contact force between block D and the front vertical wall of the cart.

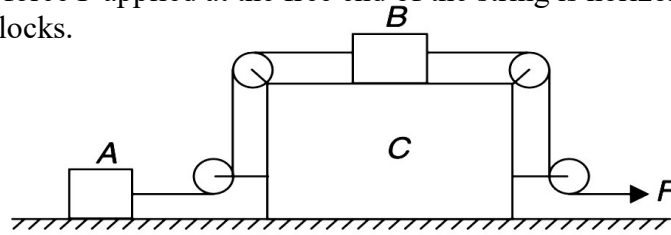


1. 16N 2. 20N 3. 24N 4. 32N



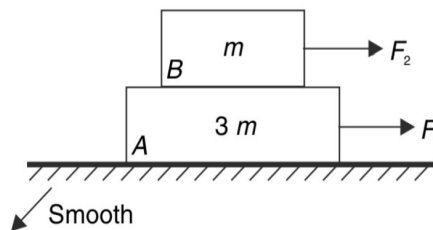


17. In the system shown in the figure, all surfaces are smooth. Block A and B have mass m each and mass of block C is $2m$. All pulleys are massless and fixed to block C. Strings are light and the force F applied at the free end of the string is horizontal. Find the acceleration of all three blocks.



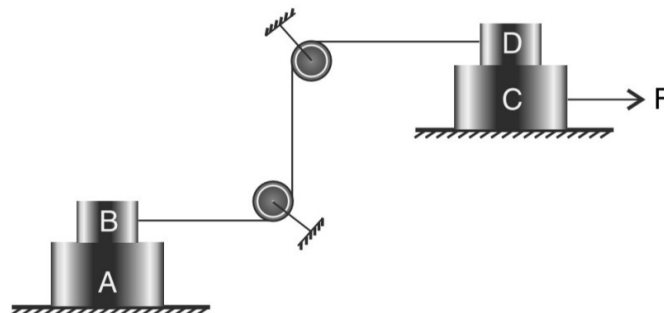
- | | | | |
|----|--|----|---|
| 1. | $a_A = a_B = \frac{F}{2m} \cdot a_c = 0$ | 2. | $a_A = a_B = \frac{F}{4m} \cdot a_c = \frac{F}{2m}$ |
| 3. | $a_A = a_B = \frac{F}{m} \cdot a_c = \frac{F}{2m}$ | 4. | $a_A = a_B = \frac{F}{2m} \cdot a_c = \frac{F}{4m}$ |

18. Block B of mass m has been placed on block A of mass $3m$ as shown. Block A rests on a smooth horizontal table. F_1 is the maximum horizontal force that can be applied on the block A such that there is no slipping between the blocks. Similarly, F_2 is the maximum horizontal force that can be applied on the block B so that the two blocks move together without slipping on each other. When F_1 and F_2 both are applied together as shown in figure.



Find the friction force acting between the blocks.

- | | | | | | | | |
|----|---|----|-----------------|----|-----------------|----|-----------------------|
| 1. | 0 | 2. | $\frac{F_1}{4}$ | 3. | $\frac{F_2}{4}$ | 4. | $\frac{F_1 + F_2}{4}$ |
|----|---|----|-----------------|----|-----------------|----|-----------------------|
19. In the system shown in figure, block A and C are placed on smooth floors and both have mass equal to m_1 . Blocks B and D are identical having mass m_2 each. Coefficient of friction between A and B and that between C and D are both equal to μ . String and pulleys are light. A horizontal force F is applied on block C and is gradually increased. Find the maximum value of F (call it F_0) so that all the four blocks move with same acceleration.



- | | | | |
|----|--|----|---|
| 1. | $F_0 = \frac{2\mu m_1 g(m_1 + m_2)}{(2m_1 + m_2)}$ | 2. | $F_0 = \frac{2\mu m_2 g(m_1 + m_2)}{(2m_1 + 2m_2)}$ |
| 3. | $F_0 = \frac{2\mu m_1 m_2 g}{m_1 + 2m_2}$ | 4. | $F_0 = \frac{2\mu m_1 m_2 g}{(m_1 + m_2)}$ |



20. Two identical small conducting spheres having unequal positive charges q_1 and q_2 are separated by a distance r . If they are now made to touch each other and then separated again to the same distance, the electrostatic force between them in this case will be
1. less than before
 2. Same as before
 3. more than before
 4. Zero
21. Which of the following represents the correct match for items in column A with these in column B?

	Column A		Column B
A	Nylon	i.	Thermoplastic
B	PVC Plastic	ii	Thermosetting
C	Bakelite	iii	Fiber

1. A-ii, B-iii, C-i
 2. A-ii, B-i, C-i
 3. A-iii, B-i, C-ii
 4. A-iii, B-ii, C-i
22. How many of the following statements are correct?
- I. Metals lose their luster on keeping in air.
 - II. Gold is lustrous.
 - III. Metals are lustrous and can be polished.
 - IV. All metals are ductile.
 - V. Sodium is a very reactive metal.
 - VI. Coal can be drawn into wires.
1. 3
 2. 4
 3. 5
 4. 6
23. Ramu performing experiment using $N_2(g)$ and $O_2(g)$.
- Experiment-I:** Excess amount of $O_2(g)$ is taken to form the higher most oxide of Nitrogen with formula N_xO_y .
- Experiment-II:** Excess amount of $N_2(g)$ taken forms the lower most oxide of Nitrogen with formula N_zO_k .
- What is value of $x + y + z + k$.
1. 8
 2. 10
 3. 11
 4. 7
24. A trivalent Metal Cation is isoelectronic with $CO_2(g)$ and metal is isotone of Fe_{26}^{57} then the correct statements are:-
- a. Metal is isobar of Fe_{26}^{56}
 - b. Metal Contains 25 protons
 - c. Metal contains 24% more neutron than proton.
1. Only a and b
 2. Only b
 3. All a, b and c
 4. Only b and c.
25. Coal gas is mainly a mixture of
1. CH_4 , CO and H_2
 2. CO , CO_2 , N_2 and O_2
 3. Saturated and unsaturated hydrocarbons
 4. CO , CO_2 , and CH_4

