

SAMPLE PAPER



Aakash
NATIONAL

TALENT HUNT EXAM

ANTHE
— 2019 —

Class X Studying Students



Aakash

Medical | IIT-JEE | Foundations

(Divisions of Aakash Educational Services Limited)

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Aakash National Talent Hunt Exam 2019

(For X Studying)

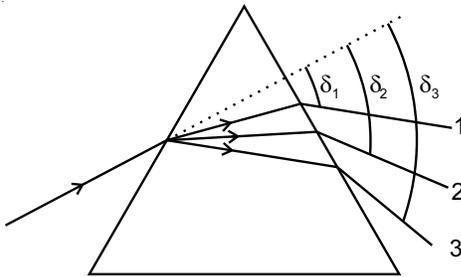
(The questions given in sample paper are indicative of the level and pattern of questions that will be asked in ANTHE-2019)

SECTION-A : SCIENCE

1. The refractive index of atmospheric layers decreases with increase in height above the earth's surface. If we view near the horizon, the apparent position of a star will be

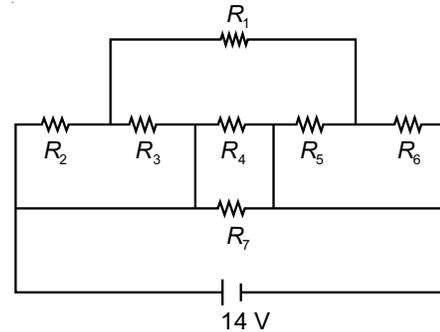
- (1) Above its actual position
- (2) Below its actual position
- (3) First above, then below its actual position
- (4) First below, then above its actual position

2. A ray of white light incident on a glass prism gets separated into its various components of colours. If δ_1 , δ_2 and δ_3 are deviations of colour of light 1, 2 and 3 respectively with respect to original incident ray, then rays 1, 2 and 3 can respectively be



- (1) Blue, green and yellow
- (2) Orange, yellow and red
- (3) Red, orange and yellow
- (4) Indigo, blue and green

3. Seven resistors each of resistance 7Ω are connected across a 14 V battery as shown below.



Choose the incorrect statement among the following.

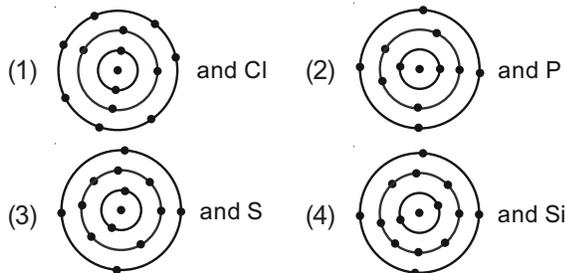
- (1) Voltage drop across resistor R_1 is 7 V
 - (2) Current flowing through resistors R_3 and R_5 is $\frac{1}{2} \text{ A}$
 - (3) Current flowing through resistor R_4 is 1 A
 - (4) Net power dissipated in the circuit is 70 W
4. A stone of mass 400 g , when immersed completely in water displaces 250 cm^3 of water. The relative density of the stone is
- (1) 2.32
 - (2) 3.23
 - (3) 0.625
 - (4) 1.60
5. A boy clapped his hands in front of a cliff and heard the echo after 16 s . Then he moves away from the cliff, clapped again and heard the echo after 25 s . The distance moved by the boy is [Speed of sound in air = 340 ms^{-1}]
- (1) 1255 m
 - (2) 1530 m
 - (3) 1380 m
 - (4) 1680 m

Space for Rough Work

6. The difference between the total number of hydrogen atoms in 78 g of ethyne and 168 g of baking soda is

- (1) $2N_A$ (2) $3N_A$
 (3) $6N_A$ (4) $4N_A$

7. The correct schematic atomic structure and symbol of the element having 4 valence electrons in the M shell is



8. Consider the following

- (i) Aqueous solution of compound A is used for white washing.
 (ii) Compound B gives a shiny finish to the walls.
 (iii) Compound C is used in black and white photography

Compounds C, A and B respectively are

- (1) AgCl, CaCO_3 and Ca(OH)_2
 (2) CaCO_3 , AgCl and Ca(OH)_2
 (3) AgCl, CaO and CaCO_3
 (4) CaO, CaCO_3 and AgBr

9. Which of the following groups contains the salts of same family?

- (1) NaCl, KCl, Na_2SO_4 , NaNO_3
 (2) NaCl, Na_2SO_4 , MgSO_4 , Na_2SO_3
 (3) KCl, MgCl_2 , NaCl, Na_2SO_4
 (4) Na_2SO_4 , NaCl, NaNO_3 , CH_3COONa

10. Which of the following pairs of metals are poor conductors of heat?

- (1) Gallium and Caesium
 (2) Lead and mercury
 (3) Copper and silver
 (4) Iron and lead

11. At night, transport of water and minerals in plants occurs mainly due to the effect of

- (1) Transpiration pull (2) Root pressure
 (3) Suction pressure (4) Systolic pressure

12. Following are the different steps regarding nutrition obtained by *Amoeba*. Arrange these steps (I-IV) in proper order and select the correct option.

- I. The remaining undigested material is moved to the surface of the cell and thrown out.
 II. It takes food using temporary finger-like extensions of the cell surface.
 III. Inside the food-vacuole, complex substances are broken down into simpler ones.
 IV. Its pseudopodia fuse over the food particle forming a food vacuole.

- (1) IV, III, I, II (2) II, III, IV, I
 (3) II, IV, III, I (4) I, IV, III, II

13. **Statement-1** : Muscle cells have special hormones that change both their shape and their arrangement in the cell in response to nervous electrical impulses.

Statement-2 : Plant cells change shape by changing the amount of proteins in them in response to external stimuli.

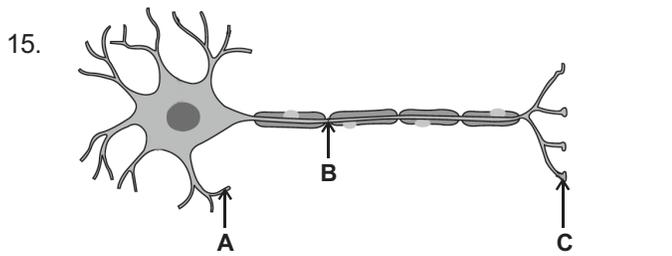
After interchanging the above given underlined words

- (1) Both the statements will become correct
 (2) Both the statements will become incorrect
 (3) Only statement-1 will become correct
 (4) Only statement-2 will become correct

14. Which of the following changes that occurs in early teenage years is not common to both boys and girls?

- (1) Thinner hair appears on legs and arms
 (2) Skin frequently becomes oily and begins to develop pimples
 (3) Genital area becomes darker in colour
 (4) Voices begin to crack

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Match the labelled parts A, B and C in the given diagram of a neuron with their following functions (i), (ii) and (iii) and choose the correct option.
 (i) This part converts impulse into chemical signal.

- (ii) This part acquires information.
- (iii) Information travels as an electrical impulse through this part.

	A	B	C
(1)	(iii)	(i)	(ii)
(2)	(ii)	(i)	(iii)
(3)	(i)	(ii)	(iii)
(4)	(ii)	(iii)	(i)

SECTION-B : MATHEMATICS

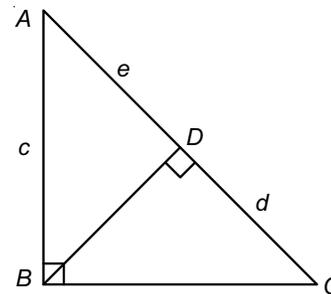
16. If one end of the diameter of a circle with centre as origin is $(-2, 10)$, then the length of diameter of the circle is
- (1) $3\sqrt{97}$ units
 - (2) $2\sqrt{86}$ units
 - (3) $\sqrt{183}$ units
 - (4) $\sqrt{416}$ units

17. $\sqrt{\frac{2\sin^2 38^\circ + 3 + 2\sin^2 52^\circ}{3\operatorname{cosec}^2 17^\circ - 2 - 3\tan^2 73^\circ}}$ equals
- (1) 5
 - (2) $\sqrt{5}$
 - (3) 1
 - (4) $\frac{1}{5}$

18. An A.P. consists of 43 terms, if the sum of five middle most terms is 195, then the sum of the A.P. is
- (1) 1793
 - (2) 1677
 - (3) 1501
 - (4) 1479

19. The curved surface area of a cone is $20\pi \text{ cm}^2$ and its slant height and radius are consecutive natural numbers. Then, its volume equals
- (1) $16\pi \text{ cm}^3$
 - (2) $32\pi \text{ cm}^3$
 - (3) $20\pi \text{ cm}^3$
 - (4) $8\pi \text{ cm}^3$

20. In the given figure, the value of $e^2 + ed$ is



- (1) $\frac{c^2}{2}$
- (2) c^2
- (3) $2c$
- (4) c

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2018

89 Classroom + 1 Distance

751 in NTSE

Stage-I 2018-19

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188 in NTSE

Stage-II 2018

157 Classroom + 31 Distance

576 in NSEs

2018

548 Classroom + 28 Distance

481 in IMO

Level-I 2018-19

466 Classroom + 15 Distance

791 in NSO

Level-I 2018-19

776 Classroom + 15 Distance

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ANSWERS

Class X Studying

- | | | |
|--------|---------|---------|
| 1. (1) | 9. (4) | 17. (2) |
| 2. (3) | 10. (2) | 18. (2) |
| 3. (3) | 11. (2) | 19. (1) |
| 4. (4) | 12. (3) | 20. (2) |
| 5. (2) | 13. (3) | 21. (2) |
| 6. (4) | 14. (4) | 22. (4) |
| 7. (4) | 15. (4) | 23. (1) |
| 8. (3) | 16. (4) | 24. (3) |
| | | 25. (2) |