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JEE (MAIN & ADV.) / XI & XII / NTSE / KVPY / OLYMPIAD

TALENT SEARCH EXAMINATION

Time : 2 Hours

(Class VIII)_PATNA STAGE - 1

Maximum Marks : 180

Name :

Reg. No.:

INSTRUCTIONS

Please read the instructions carefully. You are allotted 5 minutes specifically for this purpose.
You are not allowed to leave the examination hall before the end of the test.

[A] General :

1. Attempt ALL the questions. Answer have to be marked on the OMR sheets
2. This question paper contains 45 questions.
3. The question paper consists of **FIVE Parts Physics (Q.No. 1 to 5), Chemistry (Q.No.6 to 10), Biology (Q.No. 11 to 15), Mathematics (Q.No. 16 to 30), & Mental Ability (Q.No. 31 to 45)**
4. Blank spaces are provided at the bottom of each page for rough work. No additional sheets will be provided for rough work.
5. Balnk paper, clipboard, log tabes, silde rules, calculators, cellular phones, pagers and electronic gadgets in any form are **NOT** allowed.
6. Do not Tamper / mutilate the **OMR sheet** or this booklet.
7. Do not break the seals of the question-paper booklet before instructed to do so by the invigilator.
8. **SUBMIT** the OMR sheet to the invigilator after completing the test & take away the test paper with you.

[B] Filling of OMR Sheet

9. In all the parts, each question will have 4 choices out of which **only one choice is correct**
10. Use only Black/Blue ball point pen for filling the OMR sheet.
11. On the OMR sheet, darken the appropriate bubble for each character of your name, Registration No., Phone No. etc.

[C] Marking Scheme

12. For each correct response you will **awarded 4 marks** and **zero marks** in all other cases
13. There is no negative marking in STAGE-1 exam.

Best of Luck

PART - I (PHYSICS)

This section contains (1-5) multiple choice questions.

Each questions has four choices (A), (B), (C) and (D) out of which **ONLY ONE** is correct.

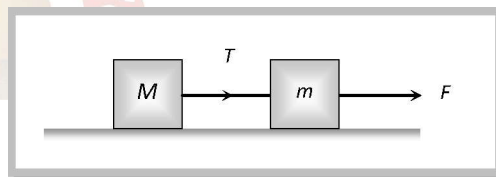
- Q.1 A car accelerates on a horizontal road due to the force exerted by
(A) the engine of the car (B) the driver of the car
(C) the earth (D) the road
- Q.2 While walking on ice, one should take small steps to avoid slipping. This is because smaller steps ensure
(A) larger friction (B) smaller friction
(C) larger normal force (D) smaller normal force
- Q.3 Two cars of unequal masses use similar tyres. If they are moving at the same initial speed, the minimum stopping distance
(A) is smaller for the heavier car (B) is smaller for the lighter car
(C) is same for both cars (D) depends on the volume of the car
- Q.4 Two masses M and m are connected by a weight less string. They are pulled by a force F on a frictionless horizontal surface. The tension in the string will be

(A) $\frac{FM}{m+M}$

(B) $\frac{F}{M+m}$

(C) $\frac{FM}{m}$

(D) $\frac{Fm}{M+m}$



- Q.5 In a tug-of-war contest, two men pull on a horizontal rope from opposite sides. The winner will be the man who
(A) Exerts greater force on the rope
(B) Exerts greater force on the ground
(C) Exerts a force on the rope which is greater than the tension in the rope
(D) Makes a smaller angle with the vertical

Space for rough work

PART - II (CHEMISTRY)

This section contains (6-10) multiple choice questions.

Each questions has four choices (A), (B), (C) and (D) out of which **ONLY ONE** is correct.

-
- Q.6 The reaction, Zinc + Copper sulphate solution \longrightarrow Zinc sulphate solution + Copper, indicates that the metal which appear lower in the reactivity series is,
(A) Zn (B) Cu (C) Zn^{2+} (D) Cu^{2+}
- Q.7 Iron is galvanized by coating it with,
(A) nickel (B) chromium (C) manganese (D) zinc
- Q.8 The essential condition required for rusting of iron is the presence of
(A) Oxygenated air (B) Moisture
(C) Nitrogen (D) Moist oxygenated air
- Q.9 Coal gas is a mixture of
(A) $CO + H_2$ (B) $CO + N_2$ (C) $CH_4 + CO + H_2$ (D) $CH_4 + C_2H_6$
- Q.10 Which one is an ideal fuel
(A) Natural gas (B) Coal (C) Kerosene (D) Wood

PART - III (BIOLOGY)

This section contains (11-15) multiple choice questions.

Each questions has four choices (A), (B), (C) and (D) out of which **ONLY ONE** is correct.

-
- Q.11 The brain and spinal cord are made up of
(A) Nervous tissue (B) Epithelial tissue (C) Muscular tissue (D) Connective tissue
- Q.12 Genes are located on the:
(A) Nuclear membrane (B) Chromosomes (C) Lysosomes (D) Cell membrane
- Q.13 The production and management of fish is called
(A) aquaculture (B) breeding (C) pisciculture (D) insemination

Space for rough work

- Q.14 Which of the following is true for viruses ?
- (A) They multiply only in the host cell (B) They invariably contain DNA
(C) They occur only inside bacteria (D) Their genetic material is RNA and not DNA
- Q.15 Which of the following is a bacterial diseases
- (A) Tuberculosis (B) Measles (C) Small pox (D) Rabies

PART - IV (MATHEMATICS)

This section contains (16-30) multiple choice questions.

Each questions has four choices (A), (B), (C) and (D) out of which **ONLY ONE** is correct.

- Q.16 If $a = \frac{2+\sqrt{3}}{2-\sqrt{3}}$, $b = \frac{2-\sqrt{3}}{2+\sqrt{3}}$, then the value of $a + b$ is -
- (A) 14 (B) -14 (C) $8\sqrt{3}$ (D) $-\sqrt{3}$
- Q.17 If $x = 0.1\bar{6}$, then $3x$ is -
- (A) $0.4\bar{8}$ (B) $1/6$ (C) $0.\bar{5}$ (D) 0.5
- Q.18 $\sqrt{2\sqrt{2\sqrt{2\sqrt{2\sqrt{2}}}}}$ is equal to -
- (A) $4\sqrt{2}$ (B) 2 (C) $2^{\frac{15}{16}}$ (D) $2^{\frac{31}{32}}$
- Q.19 Find area of Quadrilateral with sides 17, 25, 30 and 28 cm and one of its diagonal is 26 cm
- (A) 450 cm^2 (B) 360 cm^2 (C) 540 cm^2 (D) 720 cm^2
- Q.20 Which of the following statements are correct ?
1. $x + 3$ is a factor of $x^3 + 2x^2 + 3x + 18$ 2. $x + 2$ is a factor of $x^3 + 2x^2 - x - 2$
3. $x + 1$ is a factor of $x^3 + x^2 - 4x - 4$ 4. $x - 2$ is a factor of $2x^3 - 3x + 4$
- (A) 2, 3, 4 (B) 1, 3, 4 (C) 1, 2, 4 (D) 1, 2, 3

Space for rough work

- Q.21 The ratio between the present ages of A and B is 5 : 3 respectively. The ratio between A's age 4 years ago and B's age 4 years hence is 1 : 1. What is the ratio between A's age 4 years hence and B's age 4 years ago?
(A) 1 : 3 (B) 2 : 1 (C) 3 : 1 (D) 4 : 1
- Q.22 The sale price of an article including the sales tax is Rs. 616. The rate of sales tax is 10%. If the shopkeeper has made a profit of 12%, then the cost price of the article is :
(A) Rs. 500 (B) Rs. 515 (C) Rs 550 (D) Rs. 600
- Q.23 Area of Quadrilateral ACDE is 36 cm^2 , B is the mid-point of AC. Find area of $\triangle ABE$. If $AC \parallel ED$ and $BE \parallel CD$.
(A) 24 cm^2 (B) 9 cm^2 (C) 12 cm^2 (D) 18 cm^2
- Q.24 Three coins are tossed simultaneously. Find probability of getting at most 2 heads
(A) $3/8$ (B) $1/2$ (C) $3/4$ (D) $7/8$
- Q.25 Two dice are thrown simultaneously. What is the probability of getting two numbers whose product is even ?
(A) $1/2$ (B) $3/4$ (C) $3/8$ (D) $5/16$
- Q.26 A person bought 20 litres of milk at the rate of Rs. 8 per litre. He got it churned after spending Rs. 10 and 5 kg of cream and 20 litres of toned milk were obtained. If he sold the cream at Rs. 30 per kg and toned milk at Rs. 4 per litre, his profit in the transaction is:
(A) 25% (B) 35.3% (C) 37.5% (D) 42.5%
- Q.27 The sum of three numbers is 264. If the first number be twice the second and third number be one-third of the first, then the second number is :
(A) 144 (B) 48 (C) 72 (D) 84
- Q.28 If $\frac{x}{(b-c)(b+c-2a)} = \frac{y}{(c-a)(c+a-2b)} = \frac{z}{(a-b)(a+b-2c)}$, the value of $(x + y + z)$ is -
(A) $a + b + c$ (B) $a^2 + b^2 + c^2$ (C) 0 (D) indeterminate

Space for rough work

- Q.29 A two digit number ab is added to another number ba , which is obtained by reversing the digits then we get a three digit number. Thus $a + b$ equals to
(A) at least 18 (B) $2ab$ (C) $2(a + b)$ (D) $a + b \geq 10$
- Q.30 If one of interior angles of a regular polygon is equal to $\frac{5}{6}$ times of one of the interior angles of a regular pentagon, then number of sides of the polygon is
(A) 3 (B) 4 (C) 6 (D) 8

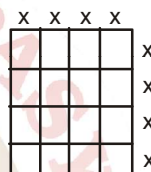
PART - V (MENTAL ABILITY)

This section contains (31-45) multiple choice questions.

Each questions has four choices (A), (B), (C) and (D) out of which **ONLY ONE** is correct.

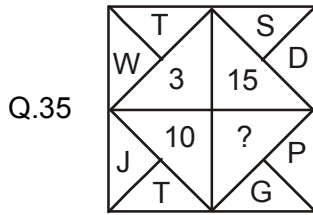
- Q.31 Count the number of squares in the following figure ?

- (A) 16 (B) 17
(C) 30 (D) 55



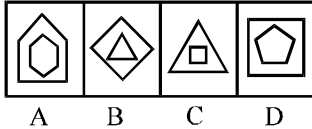
- Q.32 Aman walks 1 km towards East and then he turns to South and walks 5 km. Again he turns to East and walks 2 km, after this he turns to North and walks 9 km. Now, how far is he from his starting point ?
(A) 3 km (B) 4 km (C) 5 km (D) 7 km
- Q.33 If 'when' means 'x', 'you' means ' \div ', 'come' means '-' and 'will' means '+', then what will be the value of "8 when 12 will 16 you 2 come 10" ?
(A) 45 (B) 94 (C) 96 (D) 112
- Q.34 A man has Rs. 480 in the denominations of one-rupee notes, five-rupee notes and ten-rupee notes. The number of notes of each denomination is equal. What is the total number of notes that he has ?
(A) 45 (B) 60 (C) 75 (D) 90

Space for rough work



- (A) 5 (B) 9 (C) 11 (D) 13

Q.36 Out of the following four figures, three are alike in some manner and one differs from these in that manner. Select the odd figures.



Q.37 The question contain two figures forming the problem set followed by four other figures forming the answer set. The problem figures have some common characteristics. You are required to select one of the figures from the answer set which also exhibits the same characteristics.



Q.38 What is the number of dots on the face opposite to the face that contains 2 dots ?



- (A) 1 (B) 3 (C) 4 (D) 6

Q.39 It being given that \times denotes 'greater than', f denotes 'equal to', $<$ denotes 'not less than', \wedge denotes 'not equal to', D denotes 'less than' and $+$ denotes 'not greater than', choose the best possible answer from the given options :

If $a \times b D c$, it follows that

- (A) $a f c D b$ (B) $b < a \times c$ (C) $a < b + c$ (D) $b < a f c$

Space for rough work

Q.40 In the following question, arrange the given words in a meaningful sequence and then choose the most appropriate sequence from amongst the alternatives.

1. College 2. Child 3. Salary 4. School 5. Employment
 (A) 1, 2, 4, 3, 5 (B) 2, 4, 1, 5, 3 (C) 4, 1, 3, 5, 2 (D) 5, 3, 2, 1, 4

Q.41 In a certain code, RIPPLE is written as 613382 and LIFE is written as 8192. How is PILLER written in that code ?

- (A) 318826 (B) 318286 (C) 618826 (D) 328816

Q.42 Fill in the blanks : _ bcdbc _ dcabd _ bcdbc _ dc _ bd

- (A) aaaaa (B) ccccc (C) bbbbb (D) ddddd

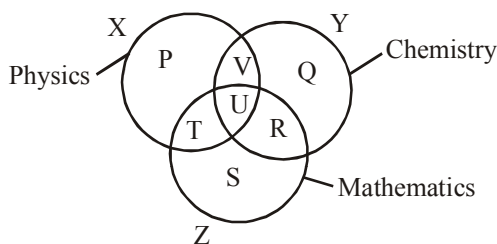
Q.43 'Parliament' is related to 'Great Britain' in the same way as 'Congress' is related to-

- (A) Japan (B) India (C) U.S.A. (D) Netherlands

Q.44 On what dates of August 1980 did Monday fall?

- (A) 4th, 11th, 18th & 25th (B) 3rd, 10th, 17th & 24th
 (C) 6th, 13th, 20th & 27th (D) 9th, 16th, 23th & 30th

Q.45 The diagram below represents the students who study Physics, Chemistry and Mathematics. Study the diagram and identify the region which represents the students who study only one subject



- (A) P + Q + S (B) P + T + S
 (C) P + V + U + T + Q + R + S (D) U + V + R + T

Space for rough work

TALENT SEARCH EXAM 2016 -17

(Class VIII)_STAGE - 1

ANSWER KEY

- | | | | | |
|---------|---------|---------|---------|---------|
| 1. (D) | 2. (B) | 3. (C) | 4. (A) | 5. (B) |
| 6. (B) | 7. (D) | 8. (D) | 9. (C) | 10. (A) |
| 11. (A) | 12. (B) | 13. (A) | 14. (A) | 15. (A) |
| 16. (A) | 17. (D) | 18. (D) | 19. (C) | 20. (D) |
| 21. (C) | 22. (A) | 23. (C) | 24. (C) | 25. (B) |
| 26. (B) | 27. (C) | 28. (C) | 29. (D) | 30. (B) |
| 31. (C) | 32. (C) | 33. (B) | 34. (B) | 35. (B) |
| 36. (B) | 37. (D) | 38. (A) | 39. (C) | 40. (B) |
| 41. (A) | 42. (A) | 43. (C) | 44. (A) | 45. (A) |

Space for rough work