PINNAACLE CLASSES

ADMISSION TEST

CLASS: VIII - IX

TEST ID :   **Date:**

Time: 3 Hours   **Max Marks: 400**

IMPORTANT INSTRUCTIONS:

1. The test is of 3 hours duration.

2. The Test Booklet consists of 100 questions. The maximum marks are 400.

3. There are FIVE parts in the question paper Physics, Chemistry, Mathematics, Biology and Mental Ability having 20 questions in each part of equal weightage. Each question is allotted 4 (four) marks for correct response.

4. Candidates will be awarded marks as stated above in instruction No. 3 for correct response of each question. -1(minus one) marks will be deducted for indicating incorrect response of each question. No deduction from the total score will be made if no response is indicated for an item in the answer sheet.

5. There is only one correct response for each question. Filling up more than one response in any question will be treated as wrong response and marks for wrong response will be deducted accordingly as per instruction 4 above.

6. Do not open the seal before starting the examination.

PHYSICS

1. The force of friction is always

    a) Parallel to the surface of contact   b) Perpendicular to the surface of contact
    c) both (a) & (b)   d) None

2. Observe the given activity. What do you conclude from this?

    a) The frictional force depends on the nature of the two surfaces in contact.
    b) Frictional force increases as mass increases
    c) Rolling friction is less than sliding friction
    d) Frictional force is muscular force

3. When the applied force is doubled on an object and the object is still at rest, then friction becomes

    a) Doubled   b) Halved   c) Quadrupled   d) zero

4. The friction acting on a body when the body is in motion is called

    a) Static friction   b) Dynamic friction   c) Limiting friction   d) None

5. A block of mass 100 kg is placed on a rough horizontal surface having coefficient of friction
   $\mu = 0.5$. If a force of 100 N is acting on it. Then acceleration of the block is

    a) $0.5 m/s^2$ b) $5 m/s^2$ c) $10 \ m/s^2$ d) $0 \ m/s^2$

6. A force of 40N acting on a car of mass 100 Kg enable to move with a uniform velocity of $60 \ m/sec$
   over a horizontal road. The coefficient of friction between the tyres and ground is $(g = 10 m/s^2)$

    a) 0.5   b) 0.4   c) 0.2   d) 0.04

7. Two bodies are in contact but not moving with respect to each other can exert

    a) Static friction on each other   b) Kinetic friction on each other
    c) rolling friction on each other   d) No friction on each other

8. A candle is held at 100 cm from the concave mirror of focal length 500 cm. What is the position of
   its image?

    a) 12.5 cm   b) 125 cm   c) 1.25 cm   d) 135.6 cm

9. A body slipping on a rough horizontal plane moves with a deceleration of $4.0 \ m/s^2$. What is the
   coefficient of kinetic friction between the block and the plane?

    a) 0.4   b) 0.5   c) 0.3   d) 0.8

10. John carried out an experiment to find out how different surfaces $(P, Q, R \text{ and } S)$ affect the distance a car travelling at 50 km/h needed to stop once the brakes are applied.
The results are shown below:

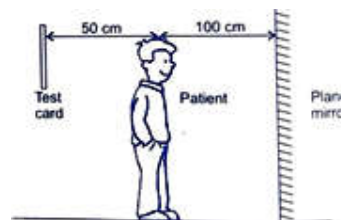| Type of road surfaces	P	Q	R	S
Stopping distance (m)	18	15	19	27

Which type of road will provide the most friction for the car to stop?

a) P   b) Q   c) R   d) S

11. The Number of images formed by two mirrors at 30° to each other is (for symmetric position of object)

a) 11   b) 10   c) 12   d) 9

12. An optician holds a test card 50 cm behind a patient. The Patient then looks in the plane mirror which is 100 cm away. How far away from the patient's eyes is the image of the test card?
a) 100 cm   b) 150 cm
c) 200 cm   d) 250 cm

13. Two vertical plane mirrors are placed inclined at an angle θ with each other. When an object placed between them seven images are seen find θ

a) 25°   b) 45°   c) 75°   d) 95°

14. If the radius of curvature of convex mirror is 0.8 cm then focal length is

a) $0.2\ cm$ b) $0.1\ cm$ c) $0.4\ cm$ d) $0.8\ cm$

15. United Football is playing an evening match. The team's jersey has blue and white stripes. What colour would the stripes appear under floodlights which produce a yellow light?

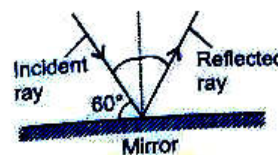a) Black and yellow   b) Blue and white   c) Blue and yellow   d) Black and white

16. A prism splits up light into different colours but a glass slab does not show dispersion because

a) The emergent ray is deviated from the direction of the incident ray by the angle of deviation
b) The incident and emergent rays are parallel to each other
c) The emergent ray is laterally displaced from glass slab and changes its direction
d) The incident and emergent rays are not parallel to each other

17. The diagram shows a ray of light reflected at a plane mirror.
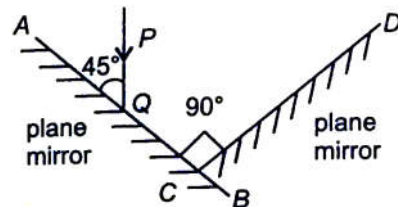Which pair of the angle of incidence and angle of reflection is correct?

	Angle of Incidence	Angle of reflection
i)	30°	30°
ii)	30°	60°
iii)	60°	30°
iv)	60°	60°

a) i & iv   b) ii & iii   c) iii & iv   d) i & iii

18. Two plane mirrors AB and CD are placed at right angles to one another. A ray of light PQ hits AB at Q making an angle 45° as shown in the diagram. This ray will be reflected from mirror CD at an angle

a) 20° b) 35° c) 45° d) 60°

19. Light of wave length of 5000Å falls on a plane reflecting surface. What is the wave length of reflected light is

a) $5 \times 10^{-7}m$ b) $5 \times 10^{-8}m$ c) $5 \times 10^{-9}m$ d) $5 \times 10^{-6}m$

20. A man 0f 180 cm height stands in front of a plane mirror. His eyes are at a height of 170 cm from floor. Then the minimum length of a plane mirror required for him to see his full image is

a) 90 cm b) 180 cm c) 45 cm d) 360 cm

CHEMISTRY

21. Heavy motor vehicles like trucks run on

a) Petrol b) Diesel c) Coal d) Coal tar

22. Which is an almost pure form of carbon?

a) Coke b) Coal tar c) Coal gas d) None of these

23. The characteristics of coal is

a) tough b) Black in colour c) Porous d) All of these

24. Which one of these is monoatomic gas?

a) Hydrogen b) Helium c) Ozone d) Oxygen

25. Which one of the following is variable valency?

a) Iron b) Florine c) Potassium d) Sodium

26. Which of the following is symbol of gold?

a) Au b) Pb c) Ag d) Gd

27. Mass number of an atom is

a) no. of protons b) no. of neutrons c) Both (a) and (b) d) no. of electrons

28. Ca on loosing 2 electrons becomes

a) Ca^{-2} b) Ca^{-1} c) Ca^{+2} d) Ca^{+}
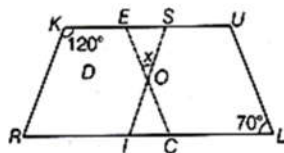
29. A mole of any substance contains

a) $6.022 * 10^{22}$ particles b) $6.022 * 10^{23}$ particles
c) $6.022 * 10^{24}$ particles d) $6.022 * 10^{25}$ particles

30. Over 70% of earth's crust is covered with

   a) Water   b) land   c) coal   d) trees

31. List which contains only elements is

   a) Air, water, oxygen   b) Hydrogen, oxygen, brass
   c) Air, water, fire, earth   d) Calcium, Sulphur, carbon

32. Number of protons in nucleus constitute its

   a) Atomic mass   b) atomic number   c) nucleon number   d) number of neutrons

33. 6.022×10^{23} Atoms of Sulphur contains

   a) 2 moles   b) 3 moles   c) 4 moles   d) 1 mole

34. Petroleum is mixture of

   a) Petrol   b) Diesel   c) Petroleum gas   d) All of these

35. The layer containing petroleum oil & gas is

   a) Above that of water   b) Below water   c) between water and sand   d) Below sand

36. What is the full form of PCRA?

   a) Petroleum Conservation Research Association
   b) Petroleum Consumption Research Association
   c) Petroleum Conservation Resource Association
   d) Petrochemical Consumption Research Association

37. What is used for surfacing of roads?

   a) Paraffin wax   b) Coke   c) Lubricants   d) Bitumen

38. LPG stands for?

   a) Liquified Petroleum Gas   b) Liquid petroleum Gas
   c) Liquified Petro Gas   d) Liquefied Petrochemical Gas

39. Petroleum and coal are…….

   a) Gases   b) Metals   c) Energy   d) Fossil fuels

40. Hydrogen gas is obtained from…

   a) Petroleum   b) Coal   c) Coke   d) Natural Gas

MATHEMATICS

41. The value of m for given expression $3^m \div 3^{-3} = 3^4$ is

   a) 6   b) 5   c) 1   d) 0

42. Which of the following numbers has no reciprocal?

   a) 1   b) -1   c) 0   d) 5

43. RENT is a rectangle. Its diagonals meet at O. The value of x, if OR $= 2x + 4$ and OT $= 3x + 1$, is

   a) 4   b) 3   c) 5   d) 6

44. Two numbers are in the ratio 4 : 5. If sum of these two numbers is 27. Then, the product of numbers is

   a) 190   b) 180   c) 225   d) 240

45. If the measure of two adjacent angles A and B of a parallelogram are in the ratio 3 : 2, then the measure of the angle opposite to angle A is

   a) 72°   b) 108°   c) 90°   d) 144°

46. Evaluate and mark the correct option. $\left[(24^2 + 7^2)^{\frac{1}{2}}\right]^3$

   a) 62525   b) 25625   c) 15265   d) 15625

47. If $(2^{3x-1} + 10) \div 6 = 7$, then x is equal to

   a) -2 b) 0   c) 1   d) 2

48. If $\frac{25 \times a^{-4}}{5^{-3} \times 10 \times a^{-8}} = K \times a^4$. Then, the value of K is

   a) 5^3 b) 5^4 c) $\frac{1}{2} \times 5^4$ d) 5^2

49. A shopkeeper earns a profit of 12% after selling a book at 10% discount on printed price. Then, the ratio of the cost price and printed price of the book is

   a) 45 : 56   b) 50 : 61   c) 99 : 125   d) None of these

50. In the given figure, if RISK and CLUE are parallelograms. Then, the value of x is

   a) 50°   b) 60°   c) 80°   d) 70°

51. The profit earned by selling an article for Rs. 317 is equal to loss incurred when the same article is sold for Rs. 233. The SP of article in order to gain of 20% is

   a) Rs. 390   b) Rs. 370   c) Rs. 350   d) Rs. 330

52. If the ratio between exterior angle and interior angle of a regular polygon is 1 : 5, then the number of sides of polygon is

   a) 5   b) 8   c) 12   d) 10

53. If $\frac{a}{b} = \frac{4}{3}$ find the value of $\frac{a^2+b^2}{a^2-b^2}$.

   a) $\frac{25}{7}$
   b) $\frac{26}{7}$
   c) $\frac{25}{4}$
   d) 4

54. Manish borrowed a sum of Rs. 2000 at 20% per annum at compound interest compounded half-yearly. Immediately, he lends it another person at the same rate on the condition that the interest is compounded for every $\left(\frac{1}{4}\right)^{th}$ year. The amount gained by Manish in 1 yr is

   a) Rs. 11.01
   b) Rs. 12.02
   c) Rs. 13.03
   d) Rs. 14.04

55. The range of 9, 13, 18, 21, 33, 46 and x is 39. Which of the following can be the value of x?

   a) 47
   b) 50
   c) 7
   d) 48

56. A man's monthly salary is Rs. 2400 and his monthly expenses on travel are 250. The central angle of the sector representing travel expenses in the pie chart would be

   a) 30°
   b) $37\frac{1}{2}°$
   c) 45°
   d) 60°

57. In a simultaneous throw of three dice, the number of possible outcomes is

   a) 216
   b) 12
   c) 8
   d) 18

58. Two cards are drawn from a well shuffled pack of 52 cards. The probability of drawing two ace cards is

   a) $\frac{1}{52}$
   b) $\frac{2}{13}$
   c) $\frac{1}{26}$
   d) $\frac{1}{13}$

59. A bag contains x red balls, $(x + 5)$ blue balls and $(3x + 10)$ white balls. If the probability of drawing a white ball is $\frac{11}{18}$. What is the number of blue balls?

   a) 15
   b) 20
   c) 35
   d) 55

60. A letter is chosen at random from the letters in the word "PROBABILITY". What is the probability that the letter will be a "B" or a vowel?

   a) $\frac{5}{11}$
   b) $\frac{6}{11}$
   c) $\frac{2}{11}$
   d) $\frac{7}{11}$

BIOLOGY

61. Who proposed that new cells arise through cell division of pre-existing cells?

   a) Robert Hook
   b) Rudolf Virchow
   c) Robert Brown
   d) Singer

62. It is the Smallest Cell.

   a) Bacteria
   b) Mycoplasm
   c) Yeast
   d) Blue green algae

63. The materials essential for dark reaction are located in

   a) Circular-DNA
   b) Thylakoids
   c) Stroma
   d) Ribosomes

64. In each chromosome centromere possessing disc shaped structure is

    a) Satellite   b) Kinetochore   c) Long arm   d) Short arm

65. The largest cell in the human body is -

    a) Nerve cell   b) Muscle cell   c) Liver cell   d) Lymphocytes

66. The term 'Cell' was given by -

    a) Leeuwenhoek   b) Robert Hooke   c) Flemming   d) Robert Brown

67. Centrosome is found in -

    a) Cytoplasm   b) Nucleus   c) Chromosomes   d) Nucleolus

68. Double membrane is absent in -

    a) Mitochondrion   b) Chloroplast   c) Nucleus   d) Lysosome

69. The network of Endoplasmic Reticulum is present in the -

    a) Nucleus   b) Nucleolus   c) Cytoplasm   d) Chromosomes

70. Lysosome is reservoir of -

    a) Fat   b) RNA   c) Secretory Glycoprotein   d) Hydrolytic Enzymes

71. Cholera is caused by

    a) Bacteria   b) Virus   c) Protozoa   d) Fungi

72. The bread dough rises because of

    a) Kneading   b) Heat   c) Grinding   d) Growth of yeast cells

73. Carrier of dengue virus is

    a) House fly   b) Dragon fly   c) Female Aedes Mosquito   d) Butterfly

74. The vaccine for smallpox was discovered by

    a) Robert Koch   b) Alexander Fleming   c) Sir Ronald Ross   d) Edward Jenner

75. Chickenpox is caused by

    a) Virus   b) Fungi   c) Protozoa   d) Bacteria

76. Carrier of malaria causing protozoan is

    a) Butterfly   b) Housefly   c) Female Anopheles Mosquito   d) Cockroach

77. Microbes are classified into _____ groups.

    a) 3   b) 5   c) 4   d) 7

78. _____ reproduces inside a living organism.

    a) Viruses   b) Fungi   c) Protozoa   d) Bacteria

79. Microbes _____ by fixing nitrogen.

    a) Make food for plants   b) Make food for themselves
    c) Corrode soil   d) Increase soil fertility

80. _____ organism promotes fermentation of milk to form curd.

    a) Staphylococcus   b) Lactobacillus   c) Mycobacterium   d) None

MENTAL ABILITY TEST

81. Find the missing numbers 0, 9, 26, 65, 124, ?

    a) 215   b) 214   c) 216   d) 217

82. Find the wrong terms in the series 2, 6, 12, 24, 30, 42

    a) 6   b) 12   c) 24   d) 30

83. Find the missing term in the given figures?

1	2	3
4	5	6
15	?	27

    a) 19   b) 20   c) 21   d) 22

84. If RAIN is coded as 37-3-19-29 the WATER will be coded as?

    a) 47-3-41-11-37   b) 23-1-20-5-18   c) 47-3-41-10-36   d) 41-39-37-11-3

85. If PIN =39, ABC=6 then NTSE will be equal to?

    a) 48   b) 58   c) 38   d) 225

86. If 30- 20 = 40 and 20 - 15 = 20, then 50-30=?

    a) 60   b) 70   c) 80   d) 90

87. Vijay went to the movies nine days ago. She goes to the movies only on Thursday. What day of the week is today?
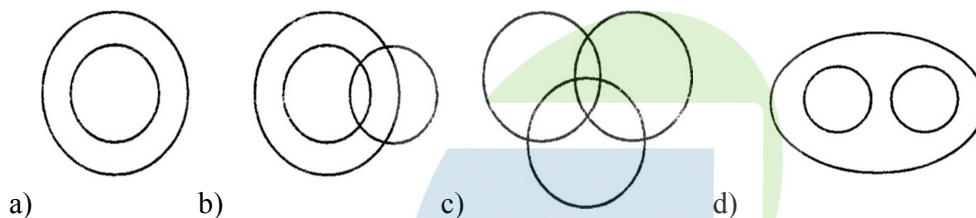
    a) Sunday   b) Tuesday   c) Friday   d) Saturday

88. In a family of six persons, A is the grandfather of F. D and E are children of B and C. C and D are females. How is B related to C?

    a) Father   b) Mother   c) Husband   d) Wife

89. A clock is so placed that at 12 noon, its minute hand points towards north-east. In which direction does its hour hand point at 1:30 p.m.?

    a) South East   b) East   c) North   d) South

90. A lady runs 14 km towards north, then 6 km towards south and then 6 km East, how far is she from her starting point and in which direction?

    a) 8 km N   b) 10 km N-E   c) 10 km E   d) 10 km S-W

91. A couple has five married sons and each one of them have four children. How many members are there in the family?

    a) 11   b) 32   c) 31   d) 26

92. If red is called 'air', air is called 'black', black is called 'sky', sky is called 'blue', blue is called 'wind' and wind is called 'white', where do birds fly '?

    a) Sky   b) wind   c) blue   d) white

Direction (93-94): From the five logical diagrams given below, select the one which best illustrates the relationship among the three given classes in the following questions.

a)   b)   c)   d)

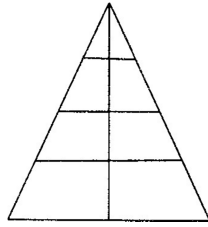93. Smart, Engineers, Women.

94. Doctors, Architect, Humans.

Directions: (Q. 95 to 96): Select the alternative which correctly depicts how a paper will appear, when it is folded along the dotted line?

95.

    (X)   (1)   (2)   (3)   (4)

    a) 4   b) 3   c) 2   d) 1

96.

    (X)   (1)   (2)   (3)   (4)

    a) 4   b) 3   c) 2   d) 1

97. If A stand for ' -', B stands for 'x ', C stands for '+'and D stand for '/' then what is the value of 21 D 3A 1B 8C 5?

    a) 4   b) 2   c) 53   d) 32

98. Find the number of triangles in the figure below:

    a) 12   b) 15   c) 10   d) 8

99. Arrange the following in a systematic order:

    1. Fruits   2. Roots   3. Trunks   4. Leaves   5, Flowers   6. Branches

    a) 2,4,3,6,5,1   b) 3,4,2,6,5,1   c) 1,5,6,2,4,3   d) 2,3,6,4,5,1

100. How many times are the hands of a clock coincide in a day?

    a) 12   b) 24   c) 22   d) 11

"In order to succeed, your desire for SUCCESS should be greater than your fear of failure".

ABOUT SPARK PROGRAMME

Three decades ago it was all right to start the preparation for IIT–JEE NEET just after class XI, and in late nineties students started preparing for IIT right from the beginning of class XI. But now the awareness among students and parents about IITs, NEET has risen steeply resulting in a keen competition. In addition, IITs have restricted the number of attempts for JEE Advanced to just two – the first one after the XII Standard Board Exams and the second one the immediately following year. Students must try to succeed in IIT–JEE Advanced in the first attempt itself to avoid unnecessary pressure that results from uncertainty and anxiety that the students are bound to face in the final attempt. Keeping in view the current scenario, it is wise, we thought, to start IIT–JEE preparation much earlier.