



# **NATIONAL INFOTECH Sec. SCHOOL**

**+2 ENTRANCE EXAM-2076**

**SET - II**

**TIME: 2 . 15 Hrs.**

**FM : 100**

**PM : 40**

**Attempt all the questions**

## PHYSICS

1. The mass of planet is 2 times the mass of Earth and radius is also twice the radius of Earth. If  $g = GM/r^2$  then the acceleration due to gravity of planet ( $g'$ ) will be
  - A.  $g = g'$
  - B.  $g' = g/2$
  - C.  $g' = 3g$
  - D.  $g' = 4g$
2. Gravitational force produced between two bodies is 2N when they are at the distance of 2m. How much gravitational force is produced when they are kept 4m apart
  - A. 1N
  - B. 2N
  - C. 0.5N
  - D. 0.75N
3. If a person can lift 100kg on Earth then he can lift ..... kg on the surface of moon.
  - A. 60kg
  - B. 600kg
  - C. 500kg
  - D. 610kg
4. The atmospheric pressure on the surface of Earth is  $P_1$  and on the top of Mt. Everest is  $P_2$ . Then they are related as
  - A.  $P_1 = P_2$
  - B.  $P_1 > P_2$
  - C.  $P_1 < P_2$
  - D.  $P_2 = 0$
5. A heavy ship floats in water because it's ..... is less than that of water
  - A. Volume
  - B. Density
  - C. Average density
  - D. Mass
6. If the weight of the body is equal to the weight of liquid displaced by it then the relation between weight of body ( $w$ ) and weight of liquid displaced ( $w'$ ) is
  - A.  $w = w'$
  - B.  $w > w'$
  - C.  $w < w'$
  - D.  $w \gg w'$
7. Which of the following is an example of nuclear energy?
  - A. Ocean Energy
  - B. Tidal Energy
  - C. Atomic Energy
  - D. Gobargas Energy
8. Ocean thermal energy is due to
  - A. Energy stored by the waves in ocean
  - B. Temperature difference at different levels in the ocean
  - C. Pressure difference at different levels in the ocean
  - D. Tides arising out in the ocean
9. Which of the following is a non-renewable source of energy?
  - A. wood
  - B. sun
  - C. fossil fuel
  - D. wind
10. The CGS unit of heat is
  - A. Calorie
  - B. Erg
  - C. Joule
  - D. Watt
11. How much heat is required to raise the temperature of an aluminum kettle of mass 400gm through  $90^\circ\text{C}$ . If Sp. Heat capacity of aluminum is  $899\text{J/Kg}^\circ\text{C}$ 
  - A. 32364 J
  - B. 134400 J
  - C. 900 J
  - D. 4200 J
12. On the basis of molecular theory, Heat is .....
  - A. Sum of kinetic molecules of substance.
  - B. Sum of average kinetic energy of all molecules of substance.
  - C. Average potential energy of all molecule.
  - D. All of above.

- 13.** A virtual, erect and magnified image can be formed by
- A. Convex lens only  
B. Concave lens only  
C. Both convex and concave lens  
D. None of them
- 14.** An object is held at a distance of 20cm from a concave lens of focal length 80cm. What is the position and size of the image if the object is 2cm high?
- A. -16cm  
B. 16cm  
C. 18cm  
D. -18cm
- 15.** Which one of the following materials cannot be used to make lens?
- A. water  
B. glass  
C. plastic  
D. clay
- 16.** The least distance of distinct vision for a normal human eye is
- A. 25cm  
B. 25m  
C. zero  
D. infinity
- 17.** An electric bulb is connected to a 220V generator. The current is 0.50A. What is the power of bulb?
- A. 110-watt  
B. 880-watt  
C. 2.8-watt  
D. 5-watt
- 18.** An induced emf is produced when a magnet is plunged into a coil. The magnitude of induced emf does not depend upon
- A. The number of turns in the coil  
B. The strength of magnet  
C. the resistivity of the material of coil  
D. the speed with which the magnet moves
- 19.** A dynamo .....
- A. Creates mechanical energy  
B. Creates electrical energy  
C. Converts electric energy into mechanical energy  
D. Converts mechanical energy into electrical energy
- 20.** At the time of short circuit, the current in the circuit is
- A. Reduced substantially  
B. Does not change  
C. Increases heavily  
D. Varies continuously

## CHEMISTRY

- 21.** Three elements B, Si and Ge are
- A. metals  
B. nonmetals  
C. metalloids  
D. all of above
- 22.** Which of the following element would lose an electron easily?
- A. Mg  
B. Na  
C. K  
D. Ca
- 23.** In Mendeleev's periodic table gaps were left for the elements to be discovered later. Which of the following elements found a place in the periodic table later?
- A. Germanium  
B. Chlorine  
C. Oxygen  
D. Silicon
- 24.** Which of the following salt does not contain water of crystallization?
- A. Blue Vitriol  
B. Baking soda  
C. Washing soda  
D. Gypsum

- 25. Which type of chemical reaction take place when magnesium is burnt in air**
- A. Combination reaction  
B. Electrolysis  
C. Decomposition reaction  
D. Displacement reaction
- 26. Which of the following is exothermic reaction?**
- A.  $C + O_2 \rightarrow CO_2 + \text{Heat}$   
B.  $S + O_2 \rightarrow SO_2 + \text{Heat}$   
C. both a. and b.  
D. none
- 27. Which of the following is acidic in nature?**
- A. Lime Juice  
B. Human Blood  
C. Lime water  
D. Antacid
- 28. Which of the following process involve chemical reactions?**
- A. Storing of oxygen gas under pressure in a gas cylinder  
B. Liquefaction of air  
C. Keeping petrol in China dish in the open  
D. Heating copper wire in presence of air at high temperature
- 29. Which of the following is true for acids?**
- A. Bitter & Changes red litmus to blue  
B. Sour & Changes red litmus to blue  
C. Sour & Changes blue litmus to red  
D. Bitter & Changes blue litmus to red
- 30. Aqua-regia is a mixture of conc. HCl and conc. HNO<sub>3</sub> in the ratio**
- A. 3:1  
B. 1:3  
C. 3:2  
D. 2:3
- 31. Which of the following metals exists in their native state in nature**  
i. Cu ii. Au iii. Zn iv. Ag
- A. i. and ii  
B. ii and iii  
C. ii and iv  
D. iii and iv
- 32. Which of the following metal is found in liquid state at room temperature?**
- A. Na  
B. Fe  
C. Cr  
D. Hg
- 33. Which of the following does not belong to the same homologous series?**
- A. CH<sub>4</sub>  
B. C<sub>2</sub>H<sub>6</sub>  
C. C<sub>3</sub>H<sub>6</sub>  
D. C<sub>4</sub>H<sub>8</sub>
- 34. Chlorine reacts with saturated hydrocarbon at room temperature in the**
- A. Absence of sunlight  
B. Presence of sunlight  
C. Presence of water  
D. Presence of HCl
- 35. In which of the following compounds -OH is the functional group**
- A. Butanone  
B. Butanol  
C. Butanoic acid  
D. Butanal
- 36. Zinc react with NaOH to produce**
- A. O<sub>2</sub>  
B. H<sub>2</sub>  
C. NH<sub>3</sub>  
D. NO<sub>2</sub>
- 37. An aqueous solution of sodium bicarbonate is diluted its P<sup>H</sup>**
- A. increases  
B. decreases  
C. remains same  
D. cannot be predicted
- 38. Lead crystal glass have**
- A. Very high refractive index  
B. High Temperature  
C. Both a. and b.  
D. None

**39. Cement is a mixture of**

- A. Sand & water
- B. Sand, clay & water
- C. Sand, gravel & water
- D. Both a. and c.

**40. Water glass is found in**

- A. Liquid form at room temp
- B. Semi liquid form at room temp
- C. Solid state at room temp
- D. None of above

### **BIOLOGY**

**41. Which stage of silkworm should be killed so as to obtain silk thread from cocoon?**

- A. Egg
- B. Larva
- C. Pupa
- D. Adult

**42. Who controls the colony of honeybee?**

- A. Drone Bee
- B. Queen Bee
- C. Worker Bee
- D. None

**43. Apiculture deals with rearing of:**

- A. Earthworm
- B. Honeybee
- C. Silkworm
- D. Tapeworm

**44. Hemoglobin is present in:**

- A. RBC
- B. WBC
- C. Platelets
- D. Lymph

**45. Alligator is a reptile so the heart of Alligator is**

- A. 2 chambered
- B. 3 chambered
- C. 4 chambered
- D. 5 chambered

**46. Hormones are secreted by**

- A. Exocrine gland
- B. Endocrine gland
- C. RBC
- D. WBC

**47. Which of the following is known as "Master Gland"?**

- A. Thyroid Gland
- B. Pancreas
- C. Pituitary Gland
- D. Adrenal Gland

**48. Injury to which part of the brain leads to sudden death?**

- A. Cerebrum
- B. Cerebellum
- C. Pons Varolli
- D. Medulla Oblongata

**49. Reflex action is under the control of**

- A. Cerebrum
- B. Cerebellum
- C. Spinal cord
- D. Pituitary

**50. Yeast is an example of**

- A. Algae
- B. Fungi
- C. Bryophytes
- D. Pteridophytes

**51. First Embryophytes are:**

- A. Algae
- B. Fungi
- C. Bryophytes
- D. Bacteria

**52. The character which is not expressed in F<sub>1</sub> generation of Mendelism is:**

- A. Dominant Character
- B. Recessive Character
- C. Co-dominant Character
- D. None

- 53. "Theory of Natural Selection" was given by**
- |                   |            |
|-------------------|------------|
| A. Charles Darwin | C. Wallace |
| B. Aristotle      | D. Lamarck |
- 54. Who is known as "Father of Biology"?**
- |              |                   |
|--------------|-------------------|
| A. Aristotle | C. Charles Darwin |
| B. Lamarck   | D. Wallace        |
- 55. Potato is a**
- |         |         |
|---------|---------|
| A. Root | C. Stem |
| B. Leaf | D. None |
- 56. Which of the following carries deoxygenated blood?**
- |                     |                    |
|---------------------|--------------------|
| A. Pulmonary Artery | C. Pulmonary Veins |
| B. Aorta            | D. None            |
- 57. Tricuspid valve is present between**
- |                                     |   |
|-------------------------------------|---|
| A. Right atrium and Right ventricle | C. Right ventricle and Pulmonary artery |
| B. Left atrium and left ventricle   | D. Left Ventricle and Aorta             |
- 58. Crossing over occurs in which phase of Meiosis?**
- |              |             |
|--------------|-------------|
| A. Leptotene | C. Amitosis |
| B. Pachytene | D. None     |
- 59. Which of the following is known as "Power house of the cell"?**
- |                  |                 |
|------------------|-----------------|
| A. Cell Membrane | C. Mitochondria |
| B. Chloroplast   | D. None         |
- 60. The transfer of pollen grains from anther to stigma is known as?**
- |                  |                  |
|------------------|------------------|
| A. Pollination   | C. Triple fusion |
| B. Fertilization | D. None          |

### ENGLISH

*Questions given below are incomplete sentences. Beneath each sentence you will see four words or phrases marked A, B, C and D. Choose the word or phrase that best completes the sentence.*

- 61. Jason, the only intrepid one, struggled barehanded with the beast. It means Jason is \_\_\_\_\_.**
- |               |               |
|---------------|---------------|
| A. frightened | C. thoughtful |
| B. masculine  | D. fearless   |
- 62. That is the town \_\_\_\_\_ we will have to drive to reach the destination.**
- |               |                  |
|---------------|------------------|
| A. from which | C. at which      |
| B. of which   | D. through which |
- 63. What does the word 'aural' correspond to?**
- |            |         |
|------------|---------|
| A. Hearing | C. Air  |
| B. Speech  | D. Heat |
- 64. Find the odd man out in the given set of words**
- |           |             |
|-----------|-------------|
| A. Eleven | C. Thirteen |
| B. Nine   | D. Eighteen |
- 65. 'Incredible' means what is \_\_\_\_\_.**
- |                  |                   |
|------------------|-------------------|
| A. Not excitable | C. Trustworthy    |
| B. Not true      | D. Not believable |

**66.** His \_\_\_\_\_ handwriting resulted from haste and carelessness.

- A. Careful
- B. Beautiful
- C. Unreadable
- D. Lucid

**67.** Microscopically thin means:

- A. as slender as a microscope
- B. so thin that they can be just seen by the naked eye
- C. so slender that they have to be seen through a microscope
- D. all of these

**68.** When people suffer from a sense of doom, they think that

- A. the world is coming to an end
- B. the world is progressing day by day
- C. people are getting more and more intelligent
- D. the gap between the poor and rich is widening

**69.** The Science has given the nations new occasions for falling out. Falling out means

- A. quarrelling
- B. making friends
- C. disintegrating into smaller parts
- D. becoming poorer and poorer

**70.** Expectation of life means

- A. their life time achievements
- B. their average life span
- C. the number of years people lived
- D. the things people hope to achieve

**71.** An insomniac is a person who:

- A. enjoys sleeping
- B. lacks respect for maniacs
- C. finds it difficult to sleep
- D. Sleeps more than others

**72.** Hamlet was reluctant to \_\_\_\_\_ the murder of his father.

- A. avenge
- B. revenge
- C. vengeance
- D. none

**73.** Predictable means

- A. we are not at all sure what will happen
- B. it is cautious
- C. it is safe
- D. we can guess what will happen

**74.** Silver is a good investment. \_\_\_\_\_, gold is a better one

- A. Although
- B. However
- C. While
- D. On the other hand

**75.** The conditional clause 'If she were rich, \_\_\_\_\_?' is completed by

- A. She would buy that car.
- B. She will buy the car.
- C. She was going to buy that car.
- D. She bought that car.

**76.** Drew was a ----- boss, one who gave generous holiday bonuses and often overlooked minor lapses in judgment.

- A. miserly
- B. disingenuous
- C. supercilious
- D. gregarious

**Read the following passage and answer the questions given:**

I believe that both these feelings do equal harm: the feeling of marvel as much as the fear. Because they have this in common that they both want to persuade the layman that there is nothing he can do for himself. Science is the new magic, they whisper; it is out of your hands; for good or ill, your salvation or your doom is the business of others.

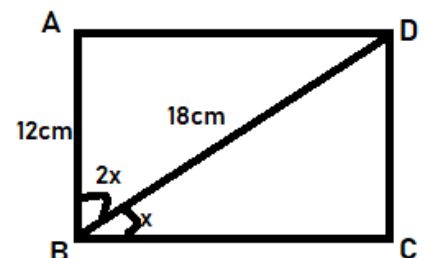
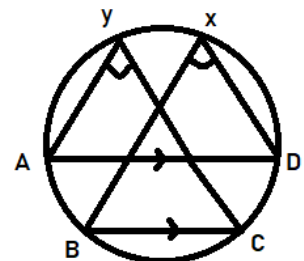
**77.** What makes us think that science is the new magic?

- A. The harm
- B. Belief
- C. The feeling of marvel and fear
- D. Our stupidity

- 78.** Why does a layman think that he can do nothing for himself?  
 A. Lack of experience  
 B. Lack of education  
 C. Helplessness  
 D. Influence of feeling marvel and fear
- 79.** Why do they have to whisper?  
 A. Because they are cunning.  
 B. Because they do not want others to know it  
 C. The sense of marvel and fear overpower them  
 D. It is a great secret
- 80.** The author seems to suggest that \_\_\_\_\_  
 A. our doom is the business of others  
 B. our salvations are the business of others  
 C. science is the new magic  
 D. our irrational feelings cause the loss of faith in science

### MATH

- 81.** If  $A \subset B$  then  $A \cap B =$   
 A. A  
 B. B  
 C. U  
 D.  $\emptyset$
- 82.** Difference between CI (annually) and SI on Rs. 1000 @ 10% pa for 2 years is  
 A. Rs. 11  
 B. Rs. 10  
 C. Rs. 9  
 D. None
- 83.** Exchange rate of \$1 is 100NC. What amount will be exchanged for Rs180 (NC) when NC is evaluated by 10%  
 A. \$1  
 B. \$1.5  
 C. \$2  
 D. \$18/11
- 84.** What is the volume of a square based pyramid with slant height 5cm & side of base 8cm?  
 A.  $63\text{cm}^2$   
 B.  $61\text{cm}^2$   
 C.  $64\text{cm}^2$   
 D.  $40\text{cm}^2$
- 85.** HCF of  $x^5+x^4+1$  and  $x^8+x^4+1$  is  
 A.  $x^2-x+1$   
 B.  $x^2+x-1$   
 C.  $x^2+x+1$   
 D.  $x^2-x-1$
- 86.** If  $x = 2^{1/3} + 2^{-1/3}$  then  $2x^3-6x=...$   
 A. 1  
 B. 0  
 C. -5  
 D. 5
- 87.**  $\angle BXD = \dots\dots$   
 A.  $30^\circ$   
 B.  $90^\circ$   
 C.  $60^\circ$   
 D.  $15^\circ$
- 88.** If  $\Delta ABD = 54\text{cm}^2$  then area of quad ABCD = .....  
 A.  $135.94\text{cm}^2$   
 B.  $135\text{cm}^2$   
 C.  $100\text{cm}^2$   
 D. None
- 89.** What is the probability of getting exactly 1 tail when a coin is tossed three times?  
 A.  $1/2$   
 B.  $3/8$   
 C.  $1/8$   
 D.  $3/4$
- 90.** Mean deviation of 10,20, 30, 40, 50 about mean is  
 A. 12  
 B. 10  
 C. 9  
 D. 11





91. If  $\cot(A+B) = 2$  and  $\cot(A-B) = 1$  then  $\cot 2A = ?$
- A. 3  
B. 1  
C. 2  
D.  $1/2$
92. What is the value of  $\tan 7\frac{1}{2}^\circ$ ?
- A.  $\sqrt{6} - \sqrt{3} - \sqrt{2} + 2$   
B.  $\sqrt{6} - \sqrt{3} + \sqrt{2} - 2$   
C.  $\sqrt{6} - \sqrt{3} - \sqrt{2} - 2$   
D. None
93. Acute angle between straight lines  $\sqrt{3}x + y = 0$  &  $x + \sqrt{3}y = 0$  is
- A.  $60^\circ$   
B.  $45^\circ$   
C.  $30^\circ$   
D.  $75^\circ$
94. Center of circle through (0,0), (6,0) & (0,8) is
- A. (3,0)  
B. (0,4)  
C. (3,4)  
D. (6,8)
95. If OM is median of  $\triangle OAB$  with  $OA=OB$  then  $\overrightarrow{OM} \cdot \overrightarrow{AB} = \dots$
- A. OA  
B.  $OA^2$   
C. 0  
D. 1
96. Sum of 1<sup>st</sup> 'n' odd numbers is
- A.  $n(n+1)$   
B.  $(n^2 - 1)$   
C.  $n^2$   
D.  $(n^2 + 1)$
97. If  $f(x) = \frac{5x+2}{3}$  what is the value of  $f^{-1}(b)$
- A.  $\frac{5b+2}{3}$   
B.  $\frac{3b-2}{5}$   
C.  $\frac{2-3b}{5}$   
D.  $\frac{3b+2}{5}$
98. Range of function  $f: x \rightarrow x^2$  is
- A.  $y \leq 0$   
B.  $y \geq 0$   
C.  $y < 0$   
D.  $y > 0$
99. If  $A = \begin{pmatrix} x & 1 \\ x+6 & x \end{pmatrix}$  is a singular matrix then  $x = \dots$
- A. 3, 2  
B. -3, 2  
C. 3, -2  
D. -3, -2
100. If A and B are square matrices of same order then which of the following is not true in general:
- A.  $A'B' = (BA)'$   
B.  $A^{-1}B^{-1} = (BA)^{-1}$   
C.  $AB = BA$   
D. None

**GOOD LUCK**