VISTO - 2016 - 17

(VELAMMAL INTER SCHOOL SCIENCE TALENT OLYMPIAD)

SEASON - I (MOCK TEST 1)

CLASS - VIII

Duration : 2hrs **Max.Marks : 100**

Instructions To the Candidate

1. a) Write your **NAME** and **CLASS** in the space provided on **OMR** Response sheet.
   b) You have to mark the answers on the **OMR** Response sheet only.
   c) You have to handle the **OMR** Response sheet with utmost care.
   d) Do not fold / mutilate or make any unnecessary markings on the **OMR** Response sheet.
   e) Use **BLUE** or **BLACK BALL POINT PEN** only to darken the appropriate circles in **OMR** Response sheet.
2. Answers marked with **PENCIL** will not be considered for evaluation.
3. This Question Paper consists of **100 QUESTIONS**, under four subjects heads, **MATHEMATICS (40 Questions), PHYSICS (20 Questions), CHEMISTRY (20 Questions) and BIOLOGY (20 Questions).**
4. Each question has four alternative responses marked a, b, c, d. You have to darken the appropriate circle provided in the OMR Response sheet against each question.
5. **1 MARK** will be awarded for every correct response for all the questions in **ALL THE FOUR SUBJECTS.**
6. **NO** mark will be deducted for incorrect response.
7. Usage of Calculators, Log tables and Electronic gadgets is strictly prohibited in the examination hall.
8. Return the OMR Response sheet to the Invigilator at the end of Examination, before leaving the examination hall.

MATHEMATICS

Single Response Type :

1. How many numbers in the following list are irrational? $\sqrt{3}, \pi, e, \frac{1}{3}, \sqrt[5]{3}, \sqrt{49}, \frac{22}{7}, 0$

   A) 5 B) 4 C) 3 D) 2

2. If a = 2 and b = 3 then value of $\left(\frac{1}{a}+\frac{1}{b}\right)^a$

   A) $\frac{25}{28}$ B) $\frac{24}{26}$ C) $\frac{25}{26}$ D) $\frac{25}{36}$

3. Find the value of $\frac{a^{-1}}{a^{-1}+5^{-1}}+\frac{a^{-1}}{a^{-1}-b^{-1}}$

A) $\frac{2b^2}{b^2-a^2}$ B) $\frac{2b^2}{a^2+b^2}$ C) $\frac{2ab}{b^2-a^2}$ D) $\frac{2a^2}{b^2-a^2}$

4. Find the decimal representation of $\frac{8}{3}$

A) 2.6 B) 2.3 C) $2.\overline{6}$ D) 2

5. What will be the number of zeros in the square of 30?

A) 2 B) 3 C) 1 D) 5

6. How many natural numbers lie between 12^2 and 13^2

A) 27 B) 26 C) 25 D) 24

7. Find the square root of 1764

A) 42 B) 41 C) 40 D) 38

8. 36^2 would have digit _____ at unit place

A) 2 B) 4 C) 6 D) 8

9. Find cube root of -2197

A) -13 B) 3 C) 23 D) -23

10. If m is ones digit and n is tens digit of a two digit number, then the cube of the number will be _____

A) $(10n-m)^2$ B) $(10n+m)^2$ C) $(10m+n)^3$ D) None

11. If $x^3=\frac{9261}{42875}$ and $y^3=\frac{729}{2197}$ then find x + y

A) $\frac{65}{84}$ B) $\frac{82}{65}$ C) $\frac{65}{82}$ D) $\frac{84}{65}$

12. 1681 plants are to be planted in a garden in such a way that each row contains as many plants as the number of rows. Find the number of rows

A) 41 B) 43 C) 49 D) 47

13. The opposite sides of a parallelogram are of _____ length

A) not equal B) equal C) different D) none

14. Two adjacent angles of a parallelogram have equal measure. Find the measure of each of the angles of the parallelogram.

A) 120° B) 30° C) 60° D) 90°

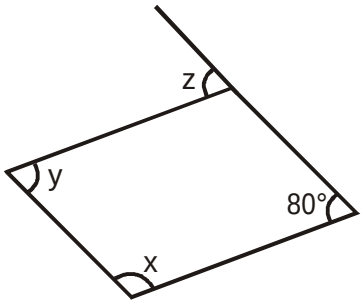
15. The diagonals of a _____ are perpendicular bisectors of each other

A) kite B) rectangle C) square D) trapezium

16. The sum of the measures of the external angles of any polygon is _____

A) 360° B) 180° C) 90° D) 270°

17. Find the value of the uknown x



A) 80° B) 100° C) 70° D) 90°

18. A polygon with minimum number of sides is ____

A) Angle B) Square C) Triangle D) Pentagon

19. If the three digit number 24x is divisible by 9 what is the value of x?

A) 3 B) 4 C) 5 D) 9

20. Write the following in the uaual form $100 \times 4 + 10 \times 9 + 1 \times 7$

A) 749 B) 947 C) 497 D) 479

21. Suppose that the division $N \div 5$ leaves a remainder of 4 and the division $N \div 2$ leaves a remainder of 1 what must be the one's digit of N?

A) 6 B) 9 C) 3 D) 7

22. How many edges are there in a cuboid?

A) 10 B) 12 C) 8 D) 14

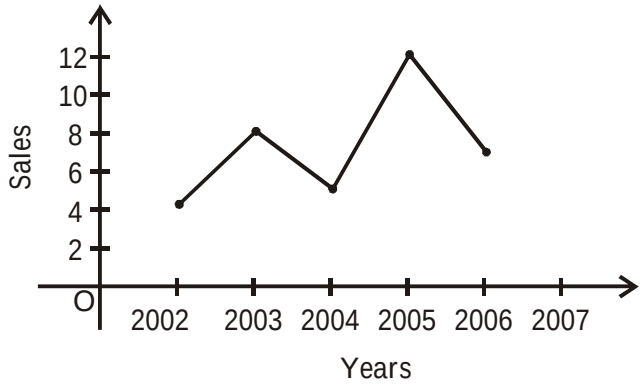
23. By using Euler's formula find the unknown. If vertices = 12, Faces = 4, edges = ?

A) 14 B) 10 C) 12 D) 16

24. On which axis does the point (-8, 0) lie?

A) Y-axis B) X-axis C) Origin D) Ist quadrant

25. The line graph shows the yearly sales figure for a manufacturing company from the graph what were the sales in 2006?



A) 6 B) 4 C) 8 D) 12

26. Evaluate exponential expression -2^5

A) -64 B) 64 C) 32 D) -32

27. Evaluate the exponential expression $(-n)^4 \times (-n)^2$ for n = 5

A) 15625 B) 3125 C) 17625 D) 45625

28. Which of the following is an expression?

A) $\frac{1}{2}$ B) 10 C) 40 D) 4x + 7

29. Using identity (x - a)(x + a) = $x^2 - a^2$ find $6^2 - 5^2$

A) 14 B) 13 C) 12 D) 11

30. Simplify $(xy + yz)^2 - 2x^2y^2z$ find the value when x = -1, y = 1 and z = 2

A) -3 B) 3 C) 4 D) -4

Assertion and Reasoning Type:

31. **Statement 1 :** The rational number between $\frac{a}{b}$ and $\frac{c}{d}$ is $\frac{1}{2}\left(\frac{a}{b}+\frac{c}{d}\right)$

Statement 2 : The rational number between $\frac{1}{2}$ and $\frac{1}{4}$ is $\frac{3}{8}$

A) Statement 1 is true, Statement 2 is true

B) Statement 1 is true, Statement 2 is false

C) Statement 1 is false, Statement 2 is true

D) Statement 1 is false, Statement 2 is false

32. **Statement 1 :** If $a^m \times a^n = a^{m+n}$

Statement 2 : The value of $\left(1^2 + 2^2 + 3^2\right)^{\frac{7}{5}} = 128$

A) Statement 1 is true, Statement 2 is false

B) Statement 1 is false, Statement 2 is false

C) Statement 1 is true, Statement 2 is true

D) Statement 1 is false, Statement 2 is true

Linked Comprehensive Type :

I. a × a × ..... a × (n times) = a^n, a^{-n} is the reciprocal of a^n

33. The reciprocal of $(2016)^{-1} \times (2016) =$

A) 2 B) $\frac{1}{2016}$ C) 1 D) 2016

34. The value of $\left[1 - \frac{15}{64}\right]^{\frac{1}{2}}$ is

A) $\frac{8}{7}$ B) $\frac{7}{8}$ C) $\frac{2}{7}$ D) $\frac{7}{3}$

35. The negative reciprocal of $\left[\frac{(2016)^0 + (2016)^0}{(2015)^0}\right]$ is

A) $\frac{1}{2}$ B) 2 C) -2 D) $-\frac{1}{2}$

Linked Comprehensive Type :

II. If $(a+b)(a-b) = a^2 - b^2$ then

36. $(a+b)^2 - (a-b)^2 =$ _____

A) $2\left(a^2 + b^2\right)$ B) 2(a + b) C) 4ab D) $\left(a^2 + b^2\right)$

37. $2a^9 - 32a =$ _____

A) $2a\left(a^4 + 4\right)\left(a^4 - 4\right)$ B) $2a\left(a^4 - 4\right)^2$

C) $2a\left(a^4 + 4\right)$ D) $2a\left(a^4 - 4\right)$

38. $a^5 - a^3 =$ _____

A) $a^2\left(a^3 - 1\right)$ B) $a^3\left(a^2 - 1\right)$ C) $a^3(a+1)$ D) $a^2\left(a^3 + 1\right)$

Match the following/ Matrix Matching:

39.

Column - I	**Column - II**
1) $\sqrt{13.32}$	p) 7.977
2) $\sqrt{3.1428}$	q) 35.776
3) $\sqrt{1280}$	r) 3.6498
4) $\sqrt{432}$	s) 20.784

A) 1 - r, 2 - q, 3 - p, 4 - s B) 1 - p, 2 - q, 3 - s, 4 - r

C) 1 - r, 2 - p, 3 - q, 4 - s D) 1 - q, 2 - p, 3 - r, 4 - s

40.

Column - I	**Column - II**
1) $\left(\frac{5}{4}\right)^{-x} \div \left(\frac{5}{4}\right)^{-4} = \left(\frac{5}{4}\right)^{5}$ then x	p) $\frac{32}{81}$
2) $\left\{\left(\frac{2}{3}\right)^{2}\right\}^{3} \times \left(\frac{1}{3}\right)^{-4} \times 3^{-1} \times 6^{-1}$	q) $\frac{216}{125}$
3) $\left(5^{-1} \div 6^{-1}\right)^{3}$	r) -9
4) $(-4)^{-1} \times \left(\frac{-3}{2}\right)^{-1}$	s) $\frac{1}{6}$

A) 1 - p, 2 - r, 3 - s, 4 - q B) 1 - p, 2 - s, 3 - q, 4 - r

C) 1 - r, 2 - p, 3 - q, 4 - s D) 1 - s, 2 - p, 3 - r, 4 - q

PHYSICS

Single Response Type :

41. The pair of physical quantities having the same unit is

A) thrust and pressure B) thrust and weight

C) force and pressure D) weight and pressure

42. As the depth of a liquid increases, the pressure of liquid

A) decreases B) increases C) remains same D) none of these

43. A box of mass 10 kg has a base area of 1 m^2. What is the pressure exerted by it on the ground ? (Take 1kg wt = 10 N)

A) 50 Pa B) 70 Pa C) 100 Pa D) 120 Pa

44. The pressure of water on the ground floor is 50000 Pa and at the first floor is 20000Pa. Find the height of the first floor. Take density of water is 10^3 kgm^{-3} and g = 10 ms^{-2}

A) 3 m B) 4 m C) 5 m D) 6 m

45. A cubical block of wood of density 5g cm^{-3} stands on table with a sides of 10 cm Find the thrust by the block of wood on the table if 10 m s^{-2} .

A) 55 N B) 60 N C) 50 N D) 80 N

46. Friction is a

A) Contact force acting in same direction B) Non-contact force in same direction

C) Contact force acting in opposite direction D) Non-contact force in opposite direction

47. Friction is exerted by :-

A) solid B) liquid C) gas D) all the above

48. The force of friction

A) increases with the weight of the body. B) decreases with the weight of the body

C) is not affected by the weight of body D) none of these

49. Friction does not depend on the following factor

A) The nature of the surface B) The normal reaction

C) The roughness of the surface D) The area of contact

Assertion and Reason Type :

50. Statement I :Friction is due to the irregularities of the two surfaces in contact

Statement II :Friction is a necessary evil

A) Both Statements are true, Statement II is the correct explanation of Statement I.

B) Both Statements are true, Statement II is not correct explanation of Statement I.

C) Statement I is true, Statement II is false.

D) Statement I is false, Statement II is true.

51. A force of 100 g wt. is required to pull a body weighing 1 kg over ice. What is the co-efficient of friction ? [g = 9.8m/s^2]

A) 0.01 B) 0.1 C) 1 D) 10

52. Sound waves are

A) longitudinal B) transverse

C) partly longitudinal, partly transverse

D) sometimes longitudinal, sometimes transverse

53. Choose the correct statements :

A) Sound is a form of energy B) Sound travels in the form of waves

C) Sound causes sensation of hearing D) All the above statements are correct

54. Speed of sound in air is

A) 330 ms^{-1} B) 1450 ms^{-1} C) 5100 ms^{-1} D) 3×10^8 m/s

55. A man heard the sound of thunder 15s after he saw a flash of lightning. How far away from him did the lightning strike? [velocity of sound = 330 m/s].

A) 495 m B) 4950 km C) 495 km D) 4.95 km

56. The time interval between a lightning flash and the sound of thunder was found to be 5s. If the speed of sound in air is 330 ms^{-1}, Find the distance of the flash from the observer

A) 1600 m B) 1650 m C) 650 m D) 1050 m

57. When the temperature of an ideal gas in increased by 600 K, the velocity of sound in the gas becomes $\sqrt{3}$ tiems the intial velocity in it. The intial temperature of the gas is.

A) $-73°C$ B) $27°C$ C) $127°C$ D) $327°C$

58. What minimum force is required to move a body of mass 5 kg over a surface whose coefficient of friction is 0.3 ? g = 10 ms^{-2}.

A) 15 N B) 13 N C) 12 N D) 10 N

59. Calculate the total pressure at the bottom of a lake of depth 5.1 m (atm. pressure = 10^5 Pa), density of water = 10^3 kg/m^3,g = 10 m/s^2.

A) 15.1×10^4 Pa B) 15.1×10^3 Pa C) 15.1×10^2 Pa D) 15.1×10^1 Pa

60. The area of cross-section of the pump plunger and the press plunger of hydraulic press are 0.03 m^2 and 9 m^2 respectively . How much is the force acting on the pump plunger of the hydraulic press overcomes a load of 900 kgf?

A) 2 kgf B) 3 kgf C) 4 kgf D) 5 kgf

CHEMISTRY

Single Response Type :

61. Of these most ductile metal is :

A) Al B) Au C) Cu D) Ag

62. Of these, the most reactive metal is _____.

A) Fe B) Zn C) Al D) K

63. Which of the following pairs will give displacement reactions?

A) NaCl solutions and copper metal

B) $MgCl_2$ solution and aluminum metal

C) $FeSO_4$ solution and silver metal

D) $AgNO_3$ solution and copper metal

64. Which of the following is a half metal?

A) Silicon B) Boron C) Arsenic D) Chlorine

65. By which reaction metal is obtained from metal oxide?

A) Liquefaction B) Reduction C) Calcination D) Roasting

66. Soft metals which can be cut with knife is/are:

i) Lithium ii) Gold iii) Sodium iv) potassium

A) Only i and iii B) Only ii and iii C) Only i,iii and iv D) i, ii, iii and iv

67. Statement –I : Diamond and boron being non-metals are soft

Statement – II : all metals show the same amount of malleability

A) Both Statements – I and II are correct

B) Both Statements – I and II are incorrect

C) Statement – I is correct and Statement – II is incorrect

D) Statement – I is incorrect and Statement – II is correct

68. An element reacts with oxygen to give a compound with a high melting point. This compound is also soluble in water. The element is likely to be

A) Calcium B) Carbon C) Silicon D) Iron

69. Generally, metallic oxides are basic and non-metallic oxides are acidic in nature. Solution of which of the following oxides in water will change the colour of blue litmus to red?

A) Sulphur dioxide B) Magnesium oxide C) Iron oxide D) Copper oxide

70. When sodium reacts with cold water, then the product formed will be

A) Na_2O B) NaOH C) Na_2CO_3 D) All the above

71. The plastics which do not remould again on heating are called:

A) thermosetting plastics B) thermoplast plastics

C) both of these D) none of these.

72. Statement –I: Nylon fibre is strong.It is very popular in making clothes.

Staement –II: PET is a very familiar type of polyster.

A) Both Statements – I and II are correct

B) Both Statements – I and II are incorrect

C) Statement – I is correct and Statement – II is incorrect

D)Statement – I is incorrect and Statement – II is correct

73. Which of the following statements are true?

a) The synthetic fibers melt on heating.

b) Synthetic fibers are very hard to maintain.

c) Synthetic fibers are not readily available.

d) Bakelite is poor conductor of electricity

A) a and b B) a and d C) b and c D) All of these

74. Identify the biodegradable in the following material.

i) left over food stuff ii) cotton cloth iii) Woolen items

iv) wood v) plastic bags vi) Tin

A)only i,ii,iii and vi B) only i,ii,iii and v

C) only ii, iv and v D) only i,ii,iii,and iv

75. The property of metal by which it can be drawn into wires is called _____

A) Ductility B) Sheetability C) Metallic D) Malleability

76. Which of the following set of features belong to thermoplastics?

A) soft and less brittle B) Hard and less brittle

C) hard and strong D) soft and brittle

77. Cellulose is used to prepare:

A) Nylon B) Polyethylene C) Rayon D) Acrylic

78. The oldest synthetic plastic is :

A) Melamine B) Polyester C) Polythene D) Bakelite

79. Best alternative to wool is :

A) Rayon B) Nylon C) Acrylic D) Bakelite

80. Statement incorrect for synthetic fibres is / are:

A) non-biodegradable B) Long lasting

(C) Very expensive D) All the above

BIOLOGY

Single Response Type :

81. The last step in crop production is

A) Soil preparation B) Crop harvesting C) Irrigation D) Sowing

82. The method in which water enters the field through channels made between two rows of crops is :

A) basin irrigation B) sprinkler system C) furrow irrigation D) drip system

83. Weedicides when sprayed in the field will destroy :

A) pests B) unwanted plants C) crop plants D) germs

84. Falling of mature crops due to excessive irrigation is known as

A) water logging B) water lodging C) transplantation D) none of these

Assertion and Reasoning Type:

85. Statement I : Buffer stock is the extra stock of food grains which has to be maintained for emergency conditions.

Statement II : For storage, extra moisture is removed by drying the food grains in the sun.

A) Both statements I and II are correct.

B) Both statements I and II are incorrect.

C) Statement I is correct and statement II is incorrect.

D) Statement I is incorrect and statement II is correct.

Match the following/ Matrix Matching:

86.

Column I	**Column II**
a) sowing	p) sprinklers
b) irrigation	q) trowel
c) weeding	r) sickle
d) harvesting	s) seed drills
e) manuring	t) manually

A) a - s, b - r, c - p, d - q, e - t B) a - s, b - p, c - q, d - r, e - t

C) a - q, b - r, c - s, d - p, e - t D) a - r, b - s, c - p, d - q, e - t

87. Rod shaped Bacteria are called

A) Cocci B) Bacillus C) Spirillum D) Vibrio

88. Group of bacteria with irregular shapes

A) Monococccus B) Riplococcus C) strepto coccus D) Staphylococcus

89. Rod - shaped bacteria are

A) Mycobacteria B) cocci C) Vibrio D) Bacilli

90. Father of bacteriology is

A) de bary B) Lister C) pasteur D) koch

91. Cynobacteria are

A) Prokaryotes B) Eukaryotes C) acellular D) Actinomycetes

Assertion and Reasoning Type:

92. **Assertion :** Monerans are most primitive organisms

Reason : monerans includes only bacteria

A) If both assertion and reason are true and reason is the correct explanation of assertion.

B) If both assertion and reason are true but reason is not the correct explanation of assertion.

C) If assertion is true but reason is false.

D) If assertion is false but reason is true.

93. Which of the following groups indicates flora that exclusively belongs to pachmarhi biosphere reserve:

A) chinkara, mango, jamun, sal

B) teak, sal, ashok, silver ferns

C) wild dog, barking deer, blue-bull, black bear

D) teak, sal, cheetal, blue-bull

94. Species is a group of population capable of :

A) interbreeding B) intercommunication

C) interequilibrium D) interfeeding

95. The biosphere consists of a extensive network of inter-connected :-

A) forests B) countries C) food chains D) ecosystems

96. The first reserve forest of India is :

A) Satpura national park B) Eastern Ghats

C) Sunderbans D) Jim Corbett national park

97. Which of the following are living resources in nature?

A) Flora B) Fauna C) Soil D) Both (A) and (B).

98. A similarity among black buck, gharial rhinoceros and marsh crocodile is that they are

A) animals with thick chitinous skin B) oviparous

C) endangered species D) found in the forests of North-East India.

Assertion and Reasoning Type:

99. Statement I : A sanctuary is formed for the conservation of animals only.

Statement II :Restricted human activities are allowed in sanctuaries.

A) Both statements I and II are correct.

B) Both statements I and II are incorrect.

C) Statement I is correct and statement II is incorrect.

D) Statement I is incorrect and statement II is correct.

Match the following/ Matrix Matching:

100.

Column - A	**Column - B**
a) Extinct species	p) crocodile
b) Endangered species	q) Siberian crane
c) Rare species	r) Chinkara deer
d) Vulnerable species	s) sarpagandha
e) Migrating species	t) Himalayan porcupine

A) a - s, b - r, c - p, d - q, e - t B) a - s, b - p, c - t, d - r, e - q

C) a - q, b - r, c - s, d - p, e - t D) a - r, b - s, c - p, d - q, e - t

****** **ALL THE BEST** ******