Pavzi Media

Andhra Pradesh
and
Telangana

Jawahar Navodaya Vidyalaya
9th Class Model Papers for 2016
With Answers

From Previous Exam Question Papers

We are provided the Question's with Answers from subject exports and leading educational institutes

HINDI
ENGLISH
MATHEMATICS
GENERAL SCIENCE

HINDI

निर्देश–(i) आठवें प्रश्न का उत्तर उसके साथ दिए हुए खाली स्थान पर ही लिखें.

(ii) शेष सभी प्रश्नों के साथ उनके चार-चार उत्तर दिए हैं. इनमें से केवल एक सही है. सही उत्तर को इंगित कीजिए.

1. निम्नलिखित वाक्यों में से कौनसा वाक्य अशुद्ध है ?
   (A) आप कहाँ जाएँगे ?
   (B) करोल बाग जाऊँगा.
   (C) मैंने भी वहीं जाना है.
   (D) ठीक है, चलते हैं.

2. सबल हो या ····· . कानून सबके लिए समान है.
   उपर्युक्त वाक्य में रिक्त-स्थान के लिए काले छपे शब्द का उपयुक्त विलोम (शब्द) होगा–
   (A) दुर्बल (B) प्रबल
   (C) निर्बल (D) अबल

3. 'बादल' का पर्यायवाची शब्द है–
   (A) जलद (B) जलज
   (C) जलधि (D) जलनिधि

4. मार्ग में आने वाली कठिनाइयों का सामना करो.
   उपर्युक्त वाक्य में 'कठिनाइयों' की व्याकरणिक कोटि (पद-भेद) क्या है ?
   (A) विशेषण (B) क्रिया-विशेषण
   (C) सर्वनाम (D) संज्ञा

5. कौनसा शब्द 'मधुर' से बनी उपयुक्त भाववाचक संज्ञा नहीं है ?
   (A) मधुरता (B) माधुर्य
   (C) मधुराई (D) माधुर्यता

6. 'वीर योद्धा रणभूमि में प्राण दे देते हैं, पर हार कर भागते नहीं.'
   उपर्युक्त वाक्य में काले छपे अंश के लिए उपयुक्त मुहावरा होगा–
   (A) पीठ नहीं दिखाते
   (B) मुँह की नहीं खाते
   (C) हवा नहीं हो जाते
   (D) बाल भी बाँका नहीं होने देते

7. हमारे देश में अब भी 'जयचन्द' हैं, जो दुश्मनों की सहायता करते हैं, तभी तो कहा जाता है ····· .
   उपर्युक्त वाक्य के रिक्त-स्थान के लिए उपयुक्त लोकोक्ति होगी–
   (A) घर का भेदी लंका ढाए.
   (B) चोर-चोर मौसेरे भाई.
   (C) जिसकी लाठी उसकी भैंस.
   (D) डूबते को तिनका सहारा.

8. निम्नलिखित में से किसी एक विषय पर अनुच्छेद लिखिए–
   (1) मेरी प्रिय शिक्षिका
   (2) मैं छिपकर फिल्म देखने गया
   (3) जब मैं बारिश में भीगी
   .....
   .....

निर्देश–निम्नलिखित गद्यांश को पढ़कर अन्त में पूछे गए प्रश्नों के वैकल्पिक उत्तरों में से उचित का चुनाव करके उन पर सही का निशान (√) लगाइए–

स्वास्थ्य सबसे अनमोल सम्पत्ति है, जिनको परमात्मा ने यह अनमोल सम्पत्ति दी है, उन्हें इस सम्पत्ति की विशेष रक्षा करनी चाहिए, क्योंकि अच्छा स्वास्थ्य अच्छे जीवन का आधार होता है. उन पर ईश्वर की विशेष कृपा है, जो उसने उन्हें यह विशिष्ट दौलत प्रदान की. जरूरी नहीं कि उस विधाता ने जिसे शरीर-बल और स्वास्थ्य दिया हो, उसे मानसिक स्वास्थ्य देकर भी निहाल कर दिया हो. हजारों चोर-डाकुओं और लुटेरों को उसने शरीर-बल और स्वास्थ्य दिया, किन्तु उन्हें मानसिक रूप से रोगी बना दिया; उन्हें दूसरों को सताने में ही आनन्द आता है. अनेक शक्तिशाली पहलवान शिक्षा के नाम पर कोरे कागज ही बने रहते हैं; जबकि कुछ लोग शारीरिक स्वास्थ्य से दीन-हीन बने रहकर भी बड़े मेधावी और उच्च

शिक्षित हो जाते हैं. अच्छा स्वास्थ्य बहुत कुछ हमारी दिनचर्या और अच्छे खान-पान पर भी निर्भर है, जो लोग सूर्योदय से पूर्व जागते हैं, नियमित टहलने जाते हैं, व्यायाम करते हैं और स्वच्छ जल से स्नान करते हैं, वे अधिकतर लम्बा और स्वस्थ जीवन प्राप्त करते हैं.

9. स्वास्थ्य को अनमोल सम्पत्ति क्यों कहा है ?
   (A) वह अमूल्य होता है
   (B) वह अच्छे जीवन का आधार होता है
   (C) वह ईश्वर की देन है
   (D) वह हमें सुखी बनाता है

10. अनुच्छेद में 'कोरे कागज' से तात्पर्य है–
   (A) दीन-हीन (B) दुर्बल
   (C) पहलवान (D) अनपढ़

11. कैसे लोग स्वस्थ और दीर्घजीवी रहते हैं ?
   (A) नियमित दवा लेने वाले
   (B) नियमित व्यायाम करने वाले
   (C) ठण्डे जल से स्नान करने वाले
   (D) पहलवानी करने वाले

12. दिन-भर के क्रियाकलापों को कहा जाता है–
   (A) दिनचर्या (B) दिन-प्रतिदिन
   (C) समय-नियोजन (D) टाइम-टेबल

ENGLISH

13. **Read the passage given below and answer the questions that follow—**

It is no easy matter to decide what is right and what is not ? One little test I shall ask you to apply whenever you are in doubt. Never do anything in secret or anything that you would wish to hide. For the desire to hide anything means that you are afraid. Fear is a bad thing and unworthy of you. Be brave. If you are brave, you will not fear and will not do anything of which you are ashamed. You know that in our great Freedom Movement, under Bapuji's leadership, there is no room for secrecy. We have nothing to hide. So in our private lives let us do nothing secretly. And if you do so, my dear, you will grow up a child

of light, unafraid and undisturbed, whatever may happen ..... .

(Taken from Nehru's 'A Birthday Letter' to his daughter Indira on 26th October, 1930.)

(A) Which test does Nehru want Indira to apply when she does not know what is right and what is not ?

(B) Who was our leader during the great Freedom Movement ?

(C) Nehru advises Indira to be brave. What advantage will it give to her ?

(D) How, according to Nehru, will Indira grow up if she does not do anything secretly even in her private life ?

(E) Find the word from the passage which means 'to keep secret'

14. Last Sunday you enjoyed a family picnic on the banks of a lake. Describe the scene around the lake in about 50 words in the form of a paragraph. Use the following clues—

- crowd-men, women and children
- beautiful lawns
- games children played
- boats on the lake
- some people swimming

15. Rearrange the following words / phrases to form a meaningful sentence—

class / the boys / not/ were / in the.

16. Join the two sentences below as one using an appropriate clause—

Those days are gone.

You could leave your doors unlocked.

17. I gave her a beautiful flower.

Rewrite the above sentence beginning with 'A beautiful flower—

18. Fill in the blank in the following sentence with the correct form of the verb given in the bracket—

I ..... (reach) the station before the train left.

19. Fill in the blank with an appropriate determiner—

Have you seen ..... one-rupee note ?

MATHEMATICS

Directions—(Q. 20–54) For each question, four possible answer choices have been given, out of which only one is correct. You are to select the correct answer and encircle the letter by its side.

20. $\sqrt{0{\cdot}0625} + \sqrt{0{\cdot}09}$ is equal to—
(A) 0·28 (B) 0·55
(C) 2·8 (D) 0·028

21. The value of $\frac{\sqrt{729}+\sqrt{625}}{\sqrt{729}-\sqrt{625}}$ is—
(A) $\frac{1}{26}$ (B) $\frac{1}{27}$
(C) 26 (D) 24

22. Simplify—
$$\sqrt[3]{\frac{17576}{15625}} \times \sqrt{\frac{625}{676}}$$
(A) 1 (B) $\frac{25}{26}$
(C) $\frac{26}{25}$ (D) $\frac{676}{625}$

23. With what smallest number 77175 should be multiplied, so that the resulting number is a perfect cube ?
(A) 5 (B) 15
(C) 9 (D) 45

24. $\left[\left(1\frac{127}{216}\right)^{\frac{-1}{3}}\right]^2$ equals—
(A) $\frac{7}{6}$ (B) $\frac{36}{49}$
(C) $\frac{49}{36}$ (D) $\frac{13}{12}$

25. The simplification of
$$(243)^{-\frac{1}{5}} + \left[(64)^{\frac{-1}{3}}\right]^{\frac{1}{2}}$$ gives—
(A) $\frac{7}{8}$ (B) $\frac{4}{3}$
(C) $\frac{6}{5}$ (D) $\frac{5}{6}$

26. The value of $3x^3 + 2y^2 + 4xy^2$, when $x = -2$ and $y = 2$ is—
(A) 16 (B) 44
(C) 52 (D) – 48

27. If $(1 - x^{-2})$ is divided by $(x^{-1} + 1)$, the result is—
(A) $\frac{x+1}{x}$ (B) $\frac{x-1}{x}$
(C) $\frac{x}{x-1}$ (D) $\frac{x}{x+1}$

28. If $a^2 + \frac{1}{a^2} = 62$, then the positive value of $3\left(a + \frac{1}{a}\right)$ is—
(A) 8 (B) 16
(C) 24 (D) – 8

29. One of the factors of
$4x^2 + y^2 - z^2 - 4xy$ is—
(A) $x + y - z$ (B) $2x + y - z$
(C) $2x - y - z$ (D) $x + 2y - z$

30. The factors of $7x^2 - 11x - 6$ are—
(A) $(7x - 3), (x + 2)$
(B) $(7x - 3), (x - 2)$
(C) $(7x + 3), (x - 2)$
(D) $(7x + 3), (x + 2)$

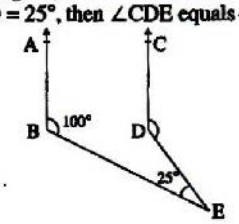
31. The factorisation of $8x^3 - 27y^3$ gives—
(A) $(2x - 3y)(4x^2 + 9y^2 + 6xy)$
(B) $(2x - 3y)(4x^2 + 9y^2 - 6xy)$
(C) $(2x - 3y)(4x^2 + 9y^2 + 12xy)$
(D) $(2x + 3y)(4x^2 + 9y^2 + 6xy)$

32. The smallest of the five consecutive odd numbers whose sum is 75, is—
(A) 15 (B) 19
(C) 13 (D) 11

33. If $\frac{x-a}{b} = \frac{x-b}{a}$, $a \neq b$, then x equals—
(A) $a - b$ (B) $a + b$
(C) $b - a$ (D) $a^2 - b^2$

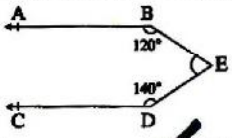
34. An angle is equal to five times its complement. The measure of the angle is—
(A) 30° (B) 45°
(C) 60° (D) 75°

35. In the figure, if AB ∥ CD, ∠ABE = 100° and ∠BED = 25°, then ∠CDE equals—



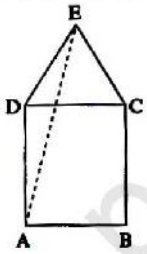
(A) 75° (B) 100°
(C) 125° (D) 135°

36. In the figure, AB ∥ CD. If ∠ABE = 120°, ∠CDE = 140°, then ∠BED equals—



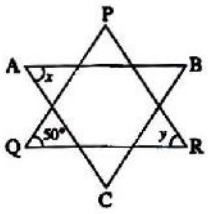
(A) 90° (B) 100°
(C) 120° (D) 140°

37. In the figure, ABCD is a square and on the side DC, an equilateral triangle DCE is constructed. The value of ∠DAE is equal to—



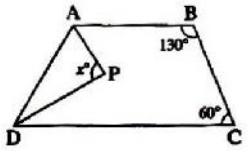
(A) 60° (B) 45°
(C) 30° (D) 15°

38. In the figure, ABC is an equilateral triangle and PQR is an isosceles triangle in which PQ = QR. If ∠PQR = 50°, then value of ∠x + ∠y is—



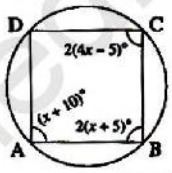
(A) 115° (B) 120°
(C) 125° (D) 135°

39. In figure, ABCD is a quadrilateral and AP and DP are bisectors of ∠A and ∠D respectively. The value of x is—



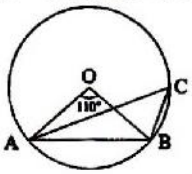
(A) 60° (B) 75°
(C) 95° (D) 105°

40. In a cyclic quadrilateral, if ∠A = (x + 10)°, ∠B = 2(x + 5)° and ∠C = 2(4x − 5)°, then measure of ∠ADC equals—



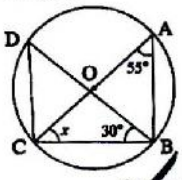
(A) 80° (B) 100°
(C) 130° (D) 150°

41. In the given figure, O is the centre of circle with ∠AOB = 110°, then ∠ACB equals—



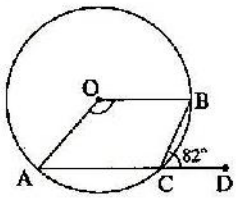
(A) 90° (B) 75°
(C) 55° (D) 35°

42. In the figure, O is the centre of the circle and CA is a diameter. If ∠CAB = 55° and ∠DBC = 30°, then x equals—



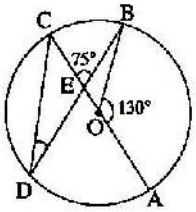
(A) 30° (B) 35°
(C) 40° (D) 60°

43. In the figure, O is the centre of the circle, AC is extended to D such that ∠BCD = 82°. The measure of ∠AOB is—



(A) 164° (B) 98°
(C) 92° (D) 82°

44. In the figure, O is the centre of the circle. The measure of ∠CDB equals—



(A) 25° (B) 30°
(C) 35° (D) 45°

45. A wire is bent in the form of a circle of radius 35 cm. It is cut and bent in the form of a rectangle whose sides are in the ratio of 7 : 4. The dimensions of the rectangle (in cm)— are $\left[\text{Use } \pi = \frac{22}{7}\right]$

(A) 77, 44 (B) 70, 40
(C) 35, 20 (D) 105, 60

46. The sides of a right angled triangle are in the ratio of 3 : 4 : 5. If its perimeter is 60 cm, the area of the triangle (in sq. cm) is—

(A) 300 (B) 150
(C) 125 (D) 250

47. The parallel sides of a trapezium are 12 m and 8 m and the distance between them is 6 m. The area of the trapezium is—

(A) 48 m^2 (B) 60 m^2
(C) 72 m^2 (D) 120 m^2

48. The side and a diagonal of a rhombus are of lengths 10 cm and 16 cm respectively. Its area (in cm^2) is—

(A) 48 (B) 64
(C) 96 (D) 192

49. A square of side 7 cm is inscribed in a circle. The area of the circle (in cm^2) is : $\left[\text{Use } \pi = \frac{22}{7}\right]$

(A) 77 (B) 154
(C) 308 (D) 38·5

50. The areas of three adjacent faces of a cuboid are 12 cm^2, 15 cm^2 and 20 cm^2. The volume of the cuboid (in cm^3) is—

(A) 3600 (B) 1800
(C) 600 (D) 60

51. The curved surface area of a cylinder is 220 sq. cm. If the height of the cylinder is $\frac{5}{7}$ of the radius, the volume of the cylinder (in cm^3) is— $\left[\text{Use } \pi = \frac{22}{7}\right]$

(A) 350 (B) 770
(C) 385 (D) 1540

52. The radius of a cylinder whose height is 15 cm and curved surface area is 660 cm^2, is— $\left[\text{Use } \pi = \frac{22}{7}\right]$

(A) 14 cm (B) 12 cm
(C) 8 cm (D) 7 cm

53. The radius of the base and the height of a right circular cylinder are each increased by 10%. The volume of the cylinder is increased by—

(A) 30% (B) 33·1%
(C) 44·1% (D) 45%

54. The ratio of the respective volume of a cone, cylinder and sphere, with radii equal and height equal to radius (in case of cone and cylinder) is—

(A) 1 : 3 : 4 (B) 3 : 1 : 4
(C) 4 : 3 : 1 (D) 1 : 4 : 3

GENERAL SCIENCE

Directions—(Q. 55–89) For each question, four possible answer choices have been given, out of which only one is correct. You are to select the correct answer and encircle the letter by its side.

55. Which of the following are elements ?
1. Gold 2. Methane
3. Bauxite 4. Oxygen
(A) 1 and 2 (B) 2 and 4
(C) 1, 2 and 4 (D) 1 and 4

56. Two substance P and Q were made to react to form a third substance P_2Q according to the following reaction—

$$2P + Q \rightarrow P_2Q$$

Select the correct statement about the product P_2Q.
(A) The product so form is an element
(B) The product P_2Q cannot be classified as a compound
(C) The product P_2Q will show the properties of both P and Q
(D) The product so formed will always have a fixed composition

57. Select from the following a set which comprises of one element, one compound and one mixture—
(A) Hydrogen, carbon dioxide, water
(B) Soil, water, oxygen
(C) Silver, gold, methane
(D) Air, water, sulphuric acid

58. Consider the following pairs—
1. Carbon and sulphur
2. Diamond and graphite
3. Graphite and Buckminster fullerene
4. Graphite and sulphur
The pairs having similar chemical properties are—
(A) 1 and 2 (B) 2 and 3
(C) 3 and 4 (D) 1 and 4

59. Carbon exists in the atmosphere of earth in the form of its—
(A) allotropes
(B) oxides only
(C) oxides and carbonates
(D) oxides and hydrogen carbonates

60. Study the following statements—
1. CNG is an ideal fuel which does not contain carbon.
2. Most carbon compounds have high melting and boiling points.
3. Except graphite all other allotropes of carbon are bad conductors of electricity.
4. Most carbon compounds are poor conductors of electricity.
Correct statements about carbon are—
(A) 1 and 2 (B) 2 and 3
(C) 3 and 4 (D) 1 and 4

61. Study the following statements—
1. Graphite is used in making electrodes.
2. Many cutting tools are made from graphite.
3. Graphite is used as lubricant.
4. Graphite cannot be burnt easily.
The correct statements are—
(A) 1 and 3 (B) 2 and 3
(C) 3 and 4 (D) 1 and 4

62. Which one of the following is the most abundant metal in the earth's crust ?
(A) Iron (B) Zinc
(C) Sodium (D) Aluminium

63. Which one of the following is a group of ores from which iron can be conveniently and profitably extracted ?
(A) Galena and Magnetite
(B) Cinnabar and Haematite
(C) Bauxite and Galena
(D) Magnetite and Haematite

64. Metallurgical processes (process of obtaining pure metal from its ore) involves following steps—
1. Extracting
2. Refining
3. Crushing and Grinding
4. Concentration
The exact order of these steps is—
(A) 3, 1, 2, 4 (B) 3, 4, 1, 2
(C) 3, 1, 4, 2 (D) 1, 4, 2, 3

65. Metals generally react with dilute acids to produce hydrogen gas. Which one of the following metals does react with dilute hydrochloric acid ?
(A) Aluminium (B) Copper
(C) Iron (D) Magnesium

66. Metallic oxides are basic while non-metallic oxides are acidic in nature. Aqueous solution of which of the following oxide will turn blue litmus to red ?
(A) Copper oxide
(B) Iron oxide
(C) Magnesium oxide
(D) Sulphur dioxide

67. Which one of the following groups contain basic ingredients for making cement ?
(A) Alumina, iron oxide, gypsum, sand
(B) Calcium carbonate, alumina, gypsum
(C) Sand, clay, iron oxide, calcium carbonate
(D) Iron oxide, alumina, calcium carbonate

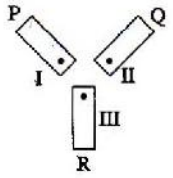
68. Select from the following a group of biodegradable substances—
(A) Cotton, silk, nylon
(B) Cotton, rayon, soap
(C) Silk, cotton, detergent
(D) Polyester, rayon, soap

69. Consider the following statements about the use of large amount of fertilizers and pesticides—
1. They are useful and ecofriendly.
2. They destroy the soil fertility.
3. They adversely effect the useful components from the soil.
4. They turn the fields barren after some time.

The correct statements are—
(A) 1 and 2 only (B) 3 and 4 only
(C) 1 and 4 only (D) 2, 3 and 4

70. Plastics are man-made materials. The most common properties shown by plastics are—
(A) Non-reactiveness; durability; light in weight
(B) Good conductors of heat, durability, ductility
(C) Malleability, electrical conductivity, light in weight
(D) Non-reactiveness, lustrous, good conductors of heat and electricity

71. We have three identical bars P, Q and R placed on a table as shown. The bar P is a magnet with its North pole at I, the other two bars may or may not be magnet, but it is found that the three ends. I, II and III attract each other. Select the correct conclusion about ends II and III (or about Q and R)—

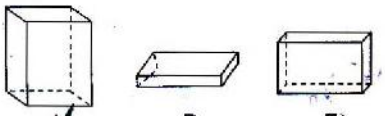


(A) Q and R are iron bars
(B) II and III are South poles
(C) Out of R and Q only one is a magnet with II or III as South pole
(D) End II is a North pole and III is a South pole or vice versa

72. A child has a 6 cm long bar magnet AB. He rolls it in a mixture containing sand and copper filings. He observes that the copper filings—
(A) get attracted equally to both ends of the magnet
(B) do not move at all towards the magnet
(C) get attracted to the end 'A' only
(D) get attracted to the end 'B' only

73. A student has a 15 cm long magnetized iron strip. He cuts it into three parts of 4 cm, 5 cm and 6 cm length. He tests each part and observes that—
(A) all parts behave as a complete magnet
(B) 4 cm long part lose its magnetization and 6 cm long part behaves like a complete magnet
(C) only 5 cm long part behaves like a magnet
(D) 4 cm long part behaves as South pole while 6 cm long part behaves as North pole.

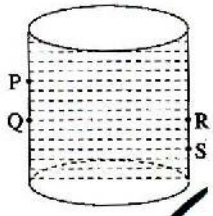
74. A rectangular box is kept in three different ways on a flat surface as shown. The pressure exerted by the box on the flat surface will be—



(A) maximum in position A

(B) maximum in position B
(C) maximum in position C
(D) same in all cases

75. A tank filled with a liquid has four taps fixed at points P, Q, R and S as shown. If these taps are opened simultaneously, the liquid will flow with the same pressure from the taps at—

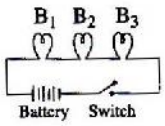


(A) P and Q (B) Q and R
(C) R and S (D) P and R

76. The dimensions of a classroom are 7·5 m × 6 m × 4 m. If the density of air at normal atmospheric pressure is 1·293 kg/m^3, the mass of air present in the room is nearly—
(A) 65 kg (B) 135 kg
(C) 180 kg (D) 230 kg

77. In big buildings which of the following is used as a safety device in place of an electric fuse ?
(A) An ISI marked electric switch of proper power rating
(B) A piece of insulating material enclosed in sealed box
(C) A miniature circuit breaker of proper power rating
(D) A thick piece of metallic wire having high melting point

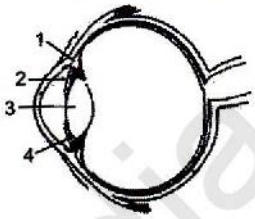
78. A student has designed an electric circuit as shown. In this circuit when the switch in 'ON'—



(A) bulb B_3 glows first
(B) bulbs B_2 and B_3 glow simultaneously, while bulb B_1 glow a little later
(C) all the bulbs glow at the same time
(D) the bulbs glow in the order B_1, B_2 and B_3

79. The actual meaning of the term 'Unit' used in connection with consumption of electricity is—
(A) watt hour (B) kilowatt hour
(C) joule hour (D) kilojoule hour

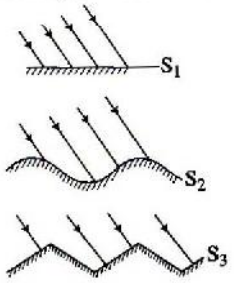
80. In the given figure of human eye the correct labelling of the parts 1, 2, 3 and 4 is—



(A) 1-Ciliary muscle, 2-Lens, 3-Cornea, 4-Iris
(B) 1-Iris, 2-Cornea, 3-Lens, 4-Retina
(C) 1-Ciliary muscles, 2-Iris, 3-Lens, 4-Cornea
(D) 1-Optic nerves, 2-Iris, 3-Lens, 4-Ciliary muscles

81. No matter how far you stand from a mirror, your image appears erect. The mirror is likely to be—
(A) Plane only
(B) Convex only
(C) Either plane or convex
(D) Either plane or concave

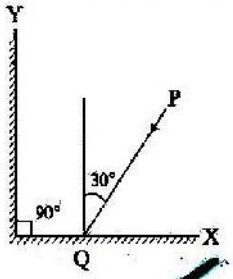
82. Light is falling on surface S_1, S_2, S_3 as shown. Surface(s) on which the angle of incidence is equal to the angle of reflection is/are—



(A) only S_1 (B) S_1 and S_2
(C) S_1 and S_3 (D) S_1, S_2, S_3

83. Two mirrors X and Y are placed at right angles to each other as shown. A ray of light PQ incident on mirror X at an angle of 30° falls on the mirror Y after reflection from the

mirror X. The angle of reflection for the ray reflected from the mirror Y would be—



(A) 30° (B) 60°
(C) 120° (D) 150°

84. Which of the following are recently originated problems of environment ?
1. Ozone layer depletion
2. Global warming
3. Green house effect
4. Cloud burst
5. Earthquakes
6. Floods
(A) 1, 2, 3 (B) 2, 3, 4
(C) 1, 3, 5 (D) 2, 4, 6

85. Select the statement which does not correctly defines the term 'water pollution'—
(A) A change in temperature of the water bodies
(B) A change of pressure of the water bodies
(C) The addition of undesirable substances to water bodies
(D) The removal of desirable substances from water bodies

86. Read the following statements—
I. Irrigation improves the soil texture.
II. Plants can absorb nutrients mostly in dissolved form.
III. Seeds require moisture for germination.
IV. Irrigation protects crops from both frost and hot air currents.
Choose the combination of statements which justify the need to irrigate crops.
(A) I and II (B) II and III
(C) III and IV (D) I and IV

87. Read the following statements about organic manure—
I. It improves texture of soil.
II. It provides humus to soil.
III. It has a balance of all plant nutrients.
IV. It enhances water holding capacity of soil.
Select the combination of correct statements—
(A) I, II, IV (B) II, III, IV
(C) I, III, IV (D) I, II, III

88. Select the correct statement from the following—
(A) Waste from a nuclear power plant can be disposed off easily
(B) There is unlimited storage of fossil fuel inside the earth
(C) Hydro energy and wind energy power plants are non-polluting sources of energy
(D) Sun can be taken as an inexhaustible source of energy

89. Study the following statements—
I. Biomass is a renewable source of energy.
II. The main ingredient of biogas is ethane.
III. Gobar-gas is produced when crops, vegetable waste etc. decompose in the absence of oxygen.
IV. We should encourage to plant more trees so as to ensure clean environment and also provide biomass fuel.
The set of correct statements is—
(A) I, II, III (B) II, III, IV
(C) I, III, IV (D) I, II, IV

FINITE AND SOLUTIONS

HINDI

1. (C) 2. (A) 3. (A) 4. (D) 5. (C)
6. (A) 7. (A)
8. **मैं छिपकर फिल्म देखने गया**—मुझे हिन्दी फिल्म देखने का बड़ा शौक है. मेरे घर से करीब 500 मीटर की दूरी पर 'जागृति' सिनेमाघर है. सिनेमाघर से थोड़ी दूरी पर नगरपालिका का खेल का मैदान है. इस मैदान पर मैं शाम को क्रिकेट खेलने जाया करता हूँ. खेल के बहाने मैं कभी-कभी सिनेमाघर में फिल्म भी देख लिया करता था. फिल्म देखने के लिए कोई-न-कोई बहाना बनाकर मैं अपनी दादी से ₹ 40-50 ले लिया करता था. पिछले वर्ष का 25 अगस्त को [illegible] सिनेमा घर से आमिर खान की फिल्म 'लगान' चल रही

थी. मेरे मित्रों ने इस फिल्म की बड़ी प्रशंसा की थी. मैंने इस फिल्म को देखने का निश्चय किया. मैंने अपनी दादीजी से क्रिकेट बाल खरीदने का बहाना बनाकर ₹ 75 ले लिए. शाम को 3 बजे मैं क्रिकेट बल्ला लेकर क्रिकेट खेलने का बहाना बनाकर घर से निकला. मैं बल्ला अपने साथी के घर पर रखकर सिनेमाघर पहुँच गया. टिकट लेकर बालकनी में बैठ गया.

फिल्म शुरू होने वाली थी. मैं पर्दे की ओर टकटकी लगाए हुए देख रहा था. मुझे नहीं मालूम पड़ा कि कब मेरे चाचाजी और चाचीजी आकर मेरी सीट की बगल की सीटों पर बैठ गए. चाचीजी मेरी सीट के पास की सीट पर बैठी थीं. मैं बहुत डर गया था, लेकिन मेरी चाचीजी ने प्यार से मेरे ऊपर हाथ फेरा और हँसते हुए फिल्म देखने को कहा. मध्याह्न में चाचीजी ने मुझे चॉकलेट भी लेकर दी. फिल्म समाप्त होने पर मैं चाचा जी के साथ ही उनकी कार में घर आया. रात को डिनर करने के बाद मैं चाचीजी के पास गया. उन्होंने मुझसे कहा कि बिना माँ-बाप को बताए कभी फिल्म देखने न जाना. मैंने भी प्रण किया कि बिना अनुमति के मैं फिल्म देखने नहीं जाऊँगा. मैंने रात को पूरी घटना की जानकारी अपनी माँ को दी. उन्होंने मुझे माफ कर दिया. दादीजी के सामने मैंने कान पकड़कर माफी माँगी. तब से अब तक मैं बिना माँ-बाप की अनुमति लिए फिल्म देखने नहीं गया हूँ.

9. (B) 10. (D) 11. (B) 12. (A)

ENGLISH

13. (A) Nehru wants that Indira should not hide anything when she is in doubt about what is wrong and what is not.
    (B) Bapuji was our leader during the great Freedom Movement.
    (C) Nehru advises Indira to be brave because brave persons have no fear and they never do any shameful deed.
    (D) According to Nehru Indira will grow up as a child of light, unafraid and undisturbed if she does not do any thing secretly even in her private life.
    (E) To keep secret means to hide.

14. Last Sunday I with my parents and with my little sister went to Naini lake for a picnic. We hired a taxi from Kathgodam to Nainital. Situated in the Kumaon hills, Naini lake is a beautiful lake. Nainital, a beautiful city is situated around the lake. All the four sides of the lake looked very charming. Many men, women and children were roaming around the lake, enjoying the beauty of the lake. These was a big playground on one side of the lake. A football match was being played on the ground. There were about 30 boats in the lake. People were enjoying boating. Some young boys were swimming near the banks of the lake. We also enjoyed boating. Visit of Naini lake was a good experience.

15. The boys were not in the class.

16. Gone the days when you could have left your doors unlocked.

17. A beautiful flower was given to her by me.

18. I had reached the station before the train left.

19. Have you seen a one rupee note ?

MATHEMATICS

20. (B) $\sqrt{0{\cdot}0625} + \sqrt{0{\cdot}09} = 0{\cdot}25 + 0{\cdot}30$
$= 0{\cdot}55$

21. (C) $\dfrac{\sqrt{729}+\sqrt{625}}{\sqrt{729}-\sqrt{625}} = \dfrac{27+25}{27-25}$
$= \dfrac{52}{2} = 26$

22. (A) Cube roots of 17576 and 15625

2	17576
2	8788
2	4394
13	2197
13	169
	13

5	15625
5	3125
5	625
5	125
5	25
	5

$\therefore \sqrt[3]{17576} = 26 \quad \sqrt[3]{15625} = 25$

Also $\sqrt{625} = 25 \quad \sqrt{676} = 26$

$\sqrt[3]{\dfrac{17576}{15625}} \times \sqrt{\dfrac{625}{676}} = \dfrac{26}{25} \times \dfrac{25}{26}$
$= 1$

23. (B) We will try to find out the cube root of 77175. Factors of 77175 are

3	77175
3	25725
5	8575
5	1715
7	343
7	49
	7

$77175 = 3 \times 3 \times 5 \times 5 \times 7 \times 7 \times 7$

It is clear that if we multiply 77175 by 3×5 *i.e.*, 15 the resulting number will be a perfect cube.

24. (B) $\left[\left(1\frac{127}{216}\right)^{-\frac{1}{3}}\right]^2 = \left[\left(\frac{343}{216}\right)^{-\frac{1}{3}}\right]^2$

$= \left[\left(\frac{216}{343}\right)^{\frac{1}{3}}\right]^2$

$= \left[\left(\frac{6}{7}\right)^{3\times\frac{1}{3}}\right]^2$

$= \left(\frac{6}{7}\right)^2 = \frac{36}{49}$

25. (D) $(243)^{-\frac{1}{5}} + \left[(64)^{-\frac{1}{3}}\right]^{\frac{1}{2}}$

$= (3^5)^{-\frac{1}{5}} + [4^{-1}]^{\frac{1}{2}}$

$= 3^{-1} + 4^{-\frac{1}{2}}$

$= \frac{1}{3} + \frac{1}{2}$

$= \frac{2+3}{6}$

$= \frac{5}{6}$

26. (D) When $x = -2$ and $y = 2$ the value of $3x^3 + 2y^2 + 4xy^2$

$= 3(-2)^3 + 2(2)^2 + 4(-2)(2)^2$

$= 3 \times (-8) + 2 \times 4 - 8 \times (2)^2$

$= -24 + 8 - 32$

$= -56 + 8$

$= -48$

27. (B) $(1 - x^{-2}) \div (x^{-1} + 1) = \frac{1 - x^{-2}}{x^{-1} + 1}$

$= \frac{1 - \frac{1}{x^2}}{\frac{1}{x} + 1}$

$= \frac{\frac{x^2 - 1}{x^2}}{\frac{x+1}{x}}$

$= \frac{x^2 - 1}{x(x+1)}$

$= \frac{(x+1)(x-1)}{x(x+1)}$

$= \frac{x-1}{x}$

28. (C) We know that

$\left(a + \frac{1}{a}\right)^2 = a^2 + \frac{1}{a^2} + 2$

$\therefore \left(a + \frac{1}{a}\right)^2 = 62 + 2$

$\therefore \left(a + \frac{1}{a}\right)^2 = 64$

$\therefore a + \frac{1}{a} = 8$

(Considering only + *ve* value)

$\therefore 3\left(a + \frac{1}{a}\right) = 3 \times 8$

$= 24$

29. (C) $4x^2 + y^2 - z^2 - 4xy$

$= 4x^2 - 4xy + y^2 - z^2$

$= (2x - y)^2 - z^2$

$= (2x - y + z)(2x - y - z)$

Therefore one of the factors is $(2x - y - z)$.

30. (C) $7x^2 - 11x - 6 = 7x^2 - 14x + 3x - 6$

$= 7x(x-2) + 3(x-2)$

$= (x-2)(7x+3)$

31. (A) $8x^3 - 27y^3 = (2x)^3 - (3y)^3$

$= (2x - 3y)(4x^2 + 9y^2 + 6xy)$

32. (D) Let the five consecutive odd numbers be $x, x+2, x+4, x+6$ and $x+8$.

$x + x + 2 + x + 4 + x + 6 + x + 8 = 75$

$\Rightarrow 5x + 20 = 75$

$\Rightarrow 5x = 75 - 20$

$\Rightarrow 5x = 55$

$\Rightarrow x = 11$

Therefore smallest odd number is 11.

33. (B) $\frac{x-a}{b} = \frac{x-b}{a}$

$\Rightarrow a(x-a) = b(x-b)$

$\Rightarrow ax - a^2 = bx - b^2$

$\Rightarrow ax - bx = a^2 - b^2$

$\Rightarrow x(a-b) = (a+b)(a-b)$

$\Rightarrow x = a+b$

34. (D) Let the number be x. Its complement will be $(90° - x)$.

$x = 5(90° - x)$

$\Rightarrow x = 5 \times 90° - 5x$

$\Rightarrow 6x = 5 \times 90°$

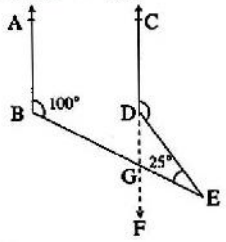
$\Rightarrow x = \frac{5 \times 90°}{6}$

$\Rightarrow x = 75°$

35. (C) Produce CD. CD meets BE at G.

$\angle ABE = \angle DGE$

$\therefore \angle DGE = 100°$



In Δ DGE

$\angle DGE + \angle DEG + \angle EDG = 180°$

$\therefore 100 + 25° + \angle EDG = 180°$

$\Rightarrow 125° + \angle EDG = 180°$

$\Rightarrow \angle EDG = 180° - 125°$

$\Rightarrow \angle EDG = 55°$

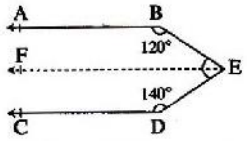
$\angle CDE + \angle EDG = 180°$

$\therefore \angle CDE + 55° = 180°$

$\therefore \angle CDE = 125°$

36. (B) Draw EF ∥ AB ∥ CD

when EF ∥ CD



$\angle CDE + \angle DEF = 180°$

$\therefore \angle DEF + 140° = 180°$

$\Rightarrow \angle DEF = 180° - 140°$

$\Rightarrow \angle DEF = 40°$

when EF ∥ AB

$\angle ABE + \angle BEF = 180°$

$\therefore \angle BEF + 120° = 180°$

$\therefore \angle BEF = 180° - 120°$

$\angle BEF = 60°$

$\angle BED = \angle BEF + \angle DEF$

$= 40° + 60°$

$= 100°$

37. (D) In the given figure ABCD is a square and DEC is an equilateral triangle.

$\angle ADE = \angle ADC + \angle EDC$

$\therefore \angle ADE = 90° + 60°$

$\therefore \angle ADE = 150°$

Also AD = DE

$\therefore$ Δ ADE is an isosceles triangle

Let $\angle DEA = x$

$\therefore \angle DAE + \angle DEA + \angle ADE = 180°$

$\Rightarrow x + x + 150° = 180°$

$\Rightarrow 2x + 150° = 180°$

$\Rightarrow 2x = 180° - 150°$

$\Rightarrow 2x = 30°$

$\Rightarrow x = 15°$

38. (C) Δ ABC is an equilateral triangle.

$\therefore \angle A = \angle B = \angle C = 60°$ *i.e.*, $x = 60°$

Δ PQR is an isosceles triangle PQ = QR

$\angle P = \angle R = \angle y$

$y + y + 50° = 180°$

$2y + 50 = 180°$

$2y = 180° - 50°$

$2y = 130°$

$y = 65°$

$x + y = 60° + 65°$

$\therefore x + y = 125°$

39. (C) ABCD is a quadrilateral

$\angle A + \angle B + \angle C + \angle D = 360°$

$\angle A + 130° + 60° + \angle D = 360°$

$\angle A + \angle D = 360° - 190°$

$\angle A + \angle D = 170°$

$\Rightarrow \frac{1}{2}\angle A + \frac{1}{2}\angle D = 85°$

In Δ APD

AP and DP are bisectors of ∠A and ∠D respectively.

$$\frac{1}{2}\angle A + \frac{1}{2}\angle D + x = 180^\circ$$
$$\Rightarrow \quad 85^\circ + x = 180^\circ$$
$$\Rightarrow \quad x = 180^\circ - 85^\circ$$
$$\Rightarrow \quad x = 95^\circ$$

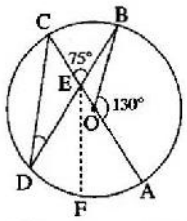
40. (C) Given that ABCD is a cyclic quadrilateral
$$\angle A + \angle C = 180^\circ$$
(opposite angles are supplementary)
$$x + 10^\circ + 2(4x - 5^\circ) = 180^\circ$$
$$\Rightarrow \quad x + 10^\circ + 8x - 10^\circ = 180^\circ$$
$$\Rightarrow \quad 9x = 180^\circ$$
$$\Rightarrow \quad x = 20^\circ$$
$$\angle B = 2(x + 5^\circ)$$
$$\Rightarrow \quad \angle B = 2(20^\circ + 5^\circ)$$
$$\Rightarrow \quad \angle B = 50^\circ$$
$$\angle B + \angle D = 180^\circ$$
$$50^\circ + \angle D = 180^\circ$$
$$\angle D = 180^\circ - 50^\circ$$
$$\angle D = 130^\circ$$
$$\therefore \quad \angle ADC = 130^\circ$$

41. (C) We know that the angle formed by a chord at the centre is double the angle formed by the chord at any point on the circumference of the circle.
$$\therefore \quad \angle ACB = \frac{1}{2} \times 110^\circ$$
$$= 55^\circ$$

42. (B) Given that CA is the diameter of the circle.
$$\therefore \quad \angle ABC = 90^\circ$$
In Δ ABC
$$\angle ACB + \angle ABC + \angle BAC = 180^\circ$$
$$\Rightarrow \quad x + 90^\circ + 55^\circ = 180^\circ$$
$$\Rightarrow \quad x = 180^\circ - 145^\circ$$
$$\Rightarrow \quad x = 35^\circ$$

43. (A) AOBC is a quadrilateral
$$\angle ACB = 180^\circ - 82^\circ$$
$$\angle ACB = 98^\circ$$
Chord AB(large) forms $\angle AOB$, at the centre
$$\angle AOB = 2\angle ACB$$
$$\angle AOB = 2 \times 98^\circ$$
$$= 196^\circ$$
$$\text{Inside } \angle AOB = 360^\circ - 196^\circ$$
$$= 164^\circ$$

44. (A)
$$\angle BOE = 180^\circ - 130^\circ$$
$$= 50^\circ = \angle OEF$$



$$\angle OED = \angle BEC = 75^\circ$$
$$\angle EDC = \angle OED - \angle OEF$$
Let $\angle EDC = y^\circ, y^\circ = 75^\circ - 50^\circ$
$$= 25^\circ$$

45. (B) Circumference of the circle
$$= 2\pi r$$
$$= 2 \times \frac{22}{7} \times 35$$
$$= 220 \text{ cm}$$
Sides of the rectangle are in the ratio 7 : 4.
$$2(7x + 4x) = 220$$
$$\therefore \quad 22x = 220$$
$$\therefore \quad x = 10$$
Sides are 70 cm and 40 cm

46. (B) Perimeter of the right angled triangle is 60 cm.
$$3x + 4x + 5x = 60$$
$$\Rightarrow \quad 12x = 60$$
$$\Rightarrow \quad x = 5 \text{ cm}$$
Sides of the right angled triangle are 15 cm, 20 cm and 25 cm.
$$\text{Area of the triangle} = \frac{1}{2} \times 15 \times 20$$
$$= 150 \text{ cm}^2$$

47. (B) Area of trapezium
$$= \frac{1}{2}(\text{sum of the parallel sides}) \times \text{height}$$
$$= \frac{1}{2}(12 + 8) \times 6$$
$$= 60 \text{ cm}^2$$

48. (C) We know that a diagonal of a rhombus divides it into two equal triangles.
Sides of the triangle are 10, 10 and 16 cm.
$$s = \frac{10 + 10 + 16}{2}$$
$$\therefore \quad s = 18$$
Now $s = 18$
$$s - a = 8$$

$s - b = 8$

and $s - c = 2$

Area of the triangle

$= \sqrt{s(s-a)(s-b)(s-c)}$

$= \sqrt{18 \times 8 \times 8 \times 2}$

$= 48 \text{ cm}^2$

$\therefore$ Area of the Rhombus

$= 2 \times 48$

$= 96 \text{ cm}^2$

49. (A) Diagonal of square = Diameter of circle

$= 7 \cdot \sqrt{2}$ cm

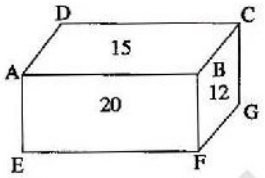
$\therefore$ Radius of circle $= \frac{7}{\sqrt{2}}$ cm

$\therefore$ Area of circle $= \pi r^2$

$= \frac{22}{7} \times \frac{7 \times 7}{2} \text{ cm}^2$

$= 77 \text{ cm}^2$

50. (D)



As per question,

BC = 3 cm

AB = 5 cm

BF = 4 cm

$\therefore$ Volume of cuboid $= 3 \times 5 \times 4 \text{ cm}^3$

$= 60 \text{ cm}^3$

51. (B) Let radius of cylinder r and height is h then,

Curved surface $= 2\pi rh = 220$

$\therefore \quad h = r \times \frac{5}{7}$

$\therefore \quad rh = \frac{220 \times 7}{2 \times 22} = 35$

$\Rightarrow \quad r^2 = \frac{35 \times 7}{5} = 49$

$\therefore \quad r = 7$ cm

$\therefore \quad h = 5$ cm

$\therefore$ Required volume $= \frac{22}{7} \times 49 \times 5 \text{ cm}^3$

$= 770 \text{ cm}^3$

52. (D) Curved surface of a cylinder

$= 2\pi rh$

$\therefore \quad 2\pi \times r \times 15 = 660$

$r = \frac{660 \times 7}{2 \times 22 \times 15}$

$r = 7$ cm

53. (B) Let r be the radius of the base and h be the height of the cylinder

Volume of the cylinder $= \pi r^2 h$

New radius $= \frac{110}{100} r = 1 \cdot 1\, r$

New height $= \frac{110}{100} h = 1 \cdot 1\, h$

New volume $= \pi(1 \cdot 1)^2 r^2 (1 \cdot 1)h$

$= \pi(1 \cdot 1)^3 \times r^2 h$

Increase in volume $= \pi(1 \cdot 1)^3 r^2 h - \pi r^2 h$

$= \pi r^2 h\, [(1 \cdot 1)^3 - 1]$

$= \pi r^2 h\, [1 \cdot 331 - 1]$

$= \pi r^2 h\, [0 \cdot 331]$

Percentage increase in volume

$= \frac{\pi r^2 h \times \cdot 331}{\pi r^2 h} \times 100$

$= 33 \cdot 1\%$

54. (A) Radii of a cone, cylinder and sphere are equal. Height of the cone is equal to the height of the cylinder. Height is equal to radius *i.e.*, $h = r$.

Volume of the cone $= \frac{1}{3} \pi r^2 h$

$= \frac{1}{3} \pi r^3$

Volume of the cylinder $= \pi r^2 h$

$= \pi r^3$

Volume of the sphere $= \frac{4}{3} \pi r^3$

Ratio of volumes of the cone, cylinder and the sphere $= \frac{1}{3} \pi r^3 : \pi r^3 : \frac{4}{3} \pi r^3$

$= \frac{1}{3} : 1 : \frac{4}{3}$

$= 1 : 3 : 4$

GENERAL SCIENCE

55. (D)	56. (D)	57. (A)	58. (B)	59. (A)
60. (C)	61. (A)	62. (D)	63. (D)	64. (B)
65. (B)	66. (D)	67. (D)	68. (C)	69. (D)
70. (A)	71. (A)	72. (B)	73. (A)	74. (A)
75. (B)	76. (D)	77. (C)	78. (C)	79. (B)
80. (C)	81. (C)	82. (A)	83. (B)	84. (A)
85. (B)	86. (C)	87. (D)	88. (C)	89. (C)