



Class 11th (PCM)

Total Questions : 90

Maximum Marks : 360

Time : 3 Hrs.

PAPER PATTERN & MARKING SCHEME

Subject	Physics		Chemistry		Maths	
Ques. type	SCQ	INT	SCQ	INT	SCQ	INT
No. of ques.	20	10	20	10	20	10
Marks per ques.	4	4	4	4	4	4
Negative marks per ques.	1	0	1	0	1	0

SCQ - Single correct answer type questions & INT - Integer answer type questions

INSTRUCTIONS – 1:

- A. The question paper consists of **3 parts (1. Physics 2. Chemistry 3. Maths)**. Please fill the **OMR** answer Sheet accordingly and carefully.
- B. This questions paper contains **60 single correct type questions** and **30 Integer answer type questions**.
- C. Please ensure that the Question Paper you have received contains All the questions in each Section and Pages. If you found some mistake like missing questions or pages then contact immediately to the Invigilator.

INSTRUCTIONS – 2:

- 1. Part – 1, 2 & 3 contains 20 **Single correct type questions** and 10 **Integer type questions**.
- 2. Indicate the correct answer for each question by filling appropriate bubble in your answer sheet.
- 3. Use of Calculator, Log Table, Slide Rule and Mobile is not allowed.

OMR filling instructions for SCQ.

OMR filling instructions for INT.

INSTRUCTIONS

- "Think before your ink".
- Marking should be done with Blue/Black Ball Point Pen only.
- Darken only one circle for each question as shown in Example Below.

WRONG METHODS	CORRECT METHOD

- If more than one circle is darkened or if the response is marked in any other way as shown "WRONG" above, it shall be treated as wrong way of marking.
- Make the marks only in the spaces provided.
- Carefully tear off the duplicate copy of the OMR without tampering the Original.
- Please do not make any stray marks on the answer sheet.

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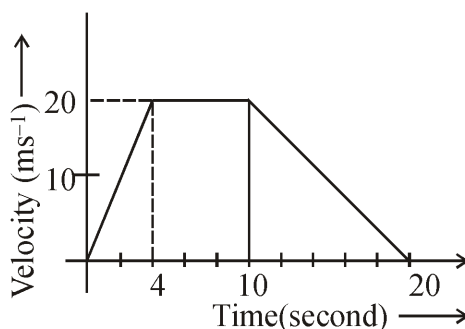


Part – 1 contains 20 Single correct type questions and 10 Integer type questions.

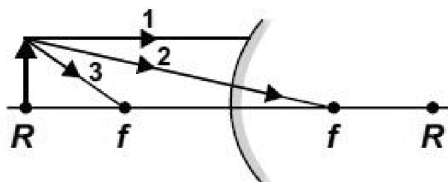
Question No. 1 – 20 are of Single Correct Answer Type Question.

Four options are given in each question out of which only one option is correct.

1. The figure represents the velocity-time graph of body moving in a straight line. How much distance does it travel during the last 10 seconds ?



- (A) 40 m (B) 80 m (C) 100 m (D) 220 m
2. Which pairs of rays from the object in the drawing are used to construct the image location produced by the convex spherical mirror of focal length f and radius R ?



- (A) 1 and 3
(B) 1 and 2
(C) 2 and 3
(D) Any pair of rays can be taken among shown

Space for Rough Work



3. Match the Column I with Column II.

Column I

(a) Geothermal energy

(b) Nuclear energy

(c) Biomass energy

(A) (a)-(i), (b)-(iii), (c)-(ii)

(C) (a)-(iii), (b)-(ii), (c)-(i)

Column II

(i) Obtained from the splitting of atom

(ii) Obtained from the interior of earth

(iii) Obtained from the decay of organic matter

(B) (a)-(ii), (b)-(i), (c)-(iii)

(D) (a)-(i), (b)-(ii), (c)-(iii)

4. Two bodies of masses m_1 and m_2 are dropped from heights h_1 and h_2 respectively. On reaching the ground they acquire equal momenta. If $h_1 > h_2$, the ratio of kinetic energy of m_1 to that of m_2 on reaching the ground will be:

(A) Equal to 1

(B) Greater than 1

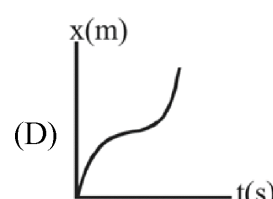
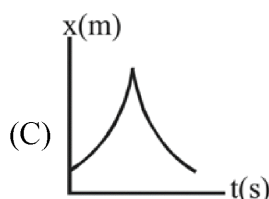
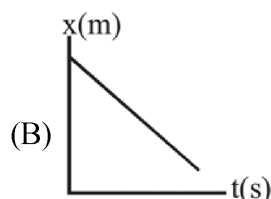
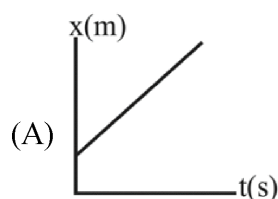
(C) Less than 1

(D) Data is insufficient

5. The position of an object in equal time intervals is shown in figure.



Which graph below correctly represents position versus time for this object ?



6. As the frequency of a source decreases in a given medium, the wavelength of a periodic longitudinal wave

(A) increases, but the speed of the wave remains constant.

(B) increases, and the speed of the wave increases.

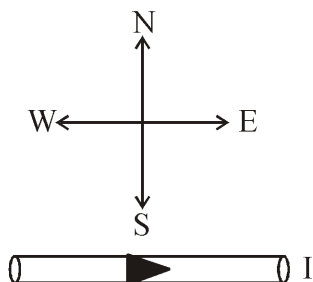
(C) decreases, but the speed of the wave remains constant.

(D) decreases, and the speed of the wave decreases.

Space for Rough Work




7. A constant current I flows in a horizontal wire in the plane of the paper from west to East as shown in the figure. The direction of magnetic field at a point will be South to North :



- (A) Directly above the wire
 - (B) Directly below the wire
 - (C) At a point located in the plane of the paper on the north side of the wire
 - (D) At a point located in the plane of the paper, on the south side of the wire
8. Neglecting the rotation of the earth, if suddenly the attractive power of the earth drops to Zero, a man standing on the earth will
- (A) Fly up
 - (B) Slide along the surface
 - (C) Move out tangentially
 - (D) Stand unaffected

Space for Rough Work



9. According to law of floatation weight of a floating body is –
(A) Equal to the weight of liquid displaced
(B) Equal to the volume of liquid displaced
(C) Is greater than the weight of liquid displaced
(D) Is less than the weight of liquid displaced
10.  this symbol represents :
(A) Galvanometer (B) Fixed resistance (C) Rheostat (D) Filament bulb
11. Two heater wires of equal length are first connected in series and then in parallel with a battery. The ratio of heat produced in the two cases is :
(A) 2 : 1 (B) 1 : 2 (C) 4 : 1 (D) 1 : 4
12. A current carrying power line carries current from west to east. What will be the direction of magnetic field 1m above it ?
(A) North to south (B) South to west (C) East to west (D) West to east
13. A wire of length 0.04m is placed perpendicular to a uniform magnetic field of magnitude 0.30 T. Calculate the force on the wire when the current flowing through it is 5.0 A.
(A) 10 N (B) 0.06 N (C) 0.01 N (D) 0.02 N

Space for Rough Work



14. A convex lens forms a virtual image when an object is placed at a distance of 18 cm from it. The focal length must be :
(A) greater than 36 cm (B) greater than 18 cm (C) less than 36 cm (D) less than 18 cm
15. An object is placed before a concave lens. The image formed :
(A) is always erect (B) may be real or virtual
(C) is always virtual (D) is always erect
16. When white light passes through a prism, it splits into its component colours. This phenomenon is called-
(A) spectrum (B) reflection (C) refraction (D) dispersion
17. The number of surfaces bounding a prism is :
(A) 3 (B) 4 (C) 5 (D) 6
18. A deviation in the path of a ray of light can be produced :
(A) by a glass prism but not by a rectangular glass slab
(B) by a rectangular glass slab but not by a glass prism
(C) by a glass prism as well as a rectangular glass slab
(D) neither by a glass prism nor by a rectangular glass slab
19. A solar cell convert heat and light energy into :
(A) heat energy (B) sound energy (C) electrical energy (D) nuclear energy
20. Choose the source of energy which is different from others :
(A) Wood (B) Falling water (C) Wind (D) Petroleum

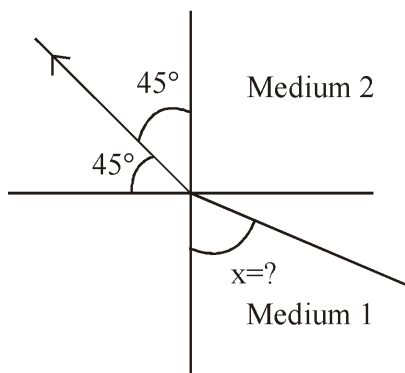
Space for Rough Work



Question No. 21 – 30 are of Integer Answer Type Question.

Answer of these question will come from **00 to 99**.

21. Two metallic wires A and B are connected in series. Wire A has length l and radius r , while wire B has length $2l$ and radius $2r$. If both the wires are of same material then find the ratio of the total resistance of series combination to the resistance of the wire A.
22. Figure shows a ray of light as it travels from medium 1 to medium 2. If refractive index of medium 1 with respect to medium 2 is $\frac{\sqrt{2}}{\sqrt{3}}$ then the value of angle x is :

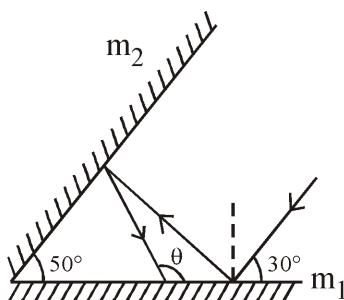


23. If the current through a resistor is increased by 50% the increase in power dissipated will be (assume the temperature remains constant)
24. A boy is rotating in a circular motion, a stone of mass 500 gm by using a string of length 50 cm with a speed 10 cm/s. What will be the work done by the force applied by the boy.

Space for Rough Work



25. To convert temperature in $^{\circ}\text{F}$ into $^{\circ}\text{C}$ we use the formula –
26. What is heterogeneous medium, explain.
27. According to given figure what angle does the reflected ray from mirror m_2 , make with mirror m_1 ?



28. Calculate the work done in taking a charge of 0.02C from A to B. if the potential at A is 20V , and that at B is 30V .
29. A 6V battery is connected across a 5Ω resistor. Calculate the current passing through the resistor.
30. In an experiment, the current flowing through a resistor and the potential difference across it are measured. The values are given below. Show that these values confirm Ohm's law, and find the resistance of the resistor.

i (ampere)	1.0	1.5	2.0	2.5	3.0
V (volt)	4.0	6.0	8.0	10.0	12

Space for Rough Work



Part – 2 contains 20 Single correct type questions and 10 Integer type questions.

Question No. 31 – 50 are of Single Correct Answer Type Question.

Four options are given in each question out of which only one option is correct.

31. Which of the following is responsible for the blackening of silver jewellery on prolonged exposure to air ?
(A) Ag₃N (B) Ag₂O (C) Ag₂S and Ag₃N (D) Ag₂S
32. The value of x and y in the following reaction is
 $x \text{CaCO}_3 + y \text{H}_3\text{PO}_4 \rightarrow \text{Ca}_3(\text{PO}_4)_2 + x\text{H}_2\text{O} + x \text{CO}_2$
(A) 2, 3 (B) 3, 3 (C) 3, 2 (D) 1, 3
33. Identify x in the following reaction
 $\text{CH}_3 - \text{CH}_2 - \text{OH} \xrightarrow[\text{H}_2\text{SO}_4]{\text{Hot, Conc.}} (\text{X}) + \text{H}_2\text{O}$
(A) Ethane (B) Methane (C) Ethene (D) Ethanol
34. Which of the following is a straight chain hydrocarbon ?
(A) $\begin{array}{c} \text{CH}_3 - \text{CH}_2 \\ | \\ \text{CH}_3 - \text{CH} - \text{CH}_3 \end{array}$ (B) $\begin{array}{c} \text{CH}_3 - \text{CH} - \text{CH}_2 - \text{CH}_2 - \text{CH}_3 \\ | \\ \text{CH}_3 \end{array}$
(C) $\begin{array}{c} \text{CH}_3 \qquad \qquad \text{CH}_3 \\ | \qquad \qquad \qquad | \\ \text{CH}_2 - \text{CH}_2 - \text{CH} - \text{CH}_2 \\ | \\ \text{CH}_3 \end{array}$ (D) $\begin{array}{c} \text{CH}_3 \\ | \\ \text{CH}_2 - \text{CH}_2 - \text{CH}_2 - \text{CH}_2 \\ | \\ \text{CH}_3 \end{array}$
35. The correct order increasing acidic nature of SO₂, SiO₂, P₂O₃ and Al₂O₃ is -
(A) Al₂O₃ < SiO₂ < P₂O₃ < SO₂ (B) SO₂ < P₂O₃ < SiO₂ < Al₂O₃
(C) Al₂O₃ < SiO₂ < P₂O₃ < SO₂ (D) SiO₂ < SO₂ < Al₂O₃ < P₂O₃

Space for Rough Work



36. Cl, Br, I, If this is a Dobereiner's triad and the atomic masses of Cl and I are 35.5 and 127 respectively. Then the atomic mass of Br is :
- (A) 162.5 (B) 91.5 (C) 81.25 (D) 45.625
37. Corrosion of silver occurs due to the formation of -
- (A) Ag₂O (B) AgCl (C) Ag₂CO₃ (D) Ag₂S
38. Identify the correct oxidant and reductant in the following reaction ?
- $$\text{PbS} + 4\text{H}_2\text{O}_2 \rightarrow \text{PbSO}_4 + 4\text{H}_2\text{O}$$
- (A) PbS - oxidant, H₂O₂ - Reductant (B) PbS - Reductant PbSO₄ - Oxidant
(C) PbS - Reductant, H₂O₂ - Oxidant (D) H₂O₂ - Oxidant, H₂O - Reductant
39. In the balanced chemical equation :
- a lead nitrate + b aluminium chloride → c aluminium nitrate + d lead chloride
- Which of the following alternative is correct ?
- (A) a = 1, b = 2, c = 2, d = 1 (B) a = 4, b = 3, c = 3, d = 4
(C) a = 2, b = 3, c = 2, d = 3 (D) a = 3, b = 2, c = 2, d = 3
40. On reacting a compound of calcium X with water compound Y is obtained boiling with NH₄Cl gas Z is obtained. X, Y and Z respectively are :
- (A) CaCO₃, CaO, NH₃ (B) CaCO₃, CaO, Cl₂
(C) CaO, CaCl₂, Cl₂ (D) CaO, Ca(OH)₂, NH₃
41. Which on of the following reaction is not possible :
- (A) Ca + H₂SO₄ → CaSO₄ + H₂ (B) Cu + H₂SO₄ → CuSO₄ + H₂
(C) Zn + H₂SO₄ → ZnSO₄ + H₂ (D) Mg + H₂SO₄ → MgSO₄ + H₂

Space for Rough Work



42. Sodium Bicarbonate on decomposition forms :
(A) NaHCO_3 (B) Na_2CO_3 (C) $\text{Na}_2\text{CO}_3 \cdot \text{H}_2\text{O}$ (D) $\text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}$
43. The pH value of the three solution X, Y and Z are 6, 4 and 8 respectively. Which of the following is the correct order of decreasing acidic strength ?
(A) $X > Y > Z$ (B) $Z > Y > X$ (C) $Z > X > Y$ (D) $Y > X > Z$
44. Arrange the following metals in the order of their decreasing reactivity ?
Fe, Cu, Mg, Ca, Zn, Ag
(A) $\text{Ca} > \text{Zn} > \text{Mg} > \text{Cu} > \text{Ag} > \text{Fe}$ (B) $\text{Ca} > \text{Zn} > \text{Cu} > \text{Mg} > \text{Ag} > \text{Fe}$
(C) $\text{Ca} > \text{Mg} > \text{Zn} > \text{Fe} > \text{Cu} > \text{Ag}$ (D) $\text{Ca} > \text{Mg} > \text{Fe} > \text{Zn} > \text{Cu} > \text{Ag}$
45. A metal X is placed below Al and above Pb. The extraction of metal is done by reacting carbon with its oxide. Metal oxide is used to join cracks of Machine parts and rail line by reacting it with Al. The metal is :
(A) Zn (B) Cu (C) Fe (D) Mg
46. Which of the following series represent only unsaturated hydrocarbons ?
(A) $\text{C}_2\text{H}_6, \text{C}_3\text{H}_8, \text{C}_4\text{H}_{10}$ (B) $\text{C}_2\text{H}_6, \text{C}_3\text{H}_6, \text{C}_4\text{H}_{10}$
(C) $\text{C}_2\text{H}_4, \text{C}_3\text{H}_6, \text{C}_4\text{H}_6$ (D) $\text{C}_2\text{H}_4, \text{C}_3\text{H}_8, \text{C}_4\text{H}_6$

Space for Rough Work



47. What is IUPAC name of the following compound ?



- (A) 2-amino pent-3-enoic acid (B) 4-amino pent - 2- enoic acid
(C) 3-ene -2 - amino pentanoic acid (D) 2-ene -4- amino pentanoic acid
48. A hydrocarbon having one double bonds has 100 carbon atoms in its molecule. The number of hydrogen atom in its molecule will be :
(A) 196 (B) 198 (C) 200 (D) 202
49. An elements 'X' has six electrons in the 'M' shell. It belongs to :
(A) 3rd period, 16th group (B) 2nd period, 14th group
(C) 3rd period, 13th group (D) 2nd period, 15th group
50. Soaps are sodium salt of fatty acids. RCOONa , e.g. $\text{C}_{17}\text{H}_{35}\text{COO}^-\text{Na}^+$. It given an insoluble precipitate / layer with
(A) $\text{Ca}^{2+}(\text{aq})$ (B) $\text{Mg}^{2+}(\text{aq})$
(C) Both (A) & (B) (D) None of these

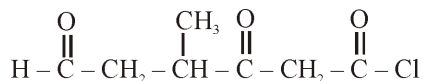
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Question No. 51 – 60 are of Integer Answer Type Question.

Answer of these question will come from **00 to 99**.

51. The equation $\text{Cu} + x \text{HNO}_3 \rightarrow \text{Cu}(\text{NO}_3)_2 + y \text{NO}_2 + 2\text{H}_2\text{O}$. The value of $x + y$ is ?
52. 10^{-3} mole of KOH is added to 10 litres of pure water at 25°C . The pH will change by (assume no change in volume occurs)
53. No. of valence electrons in an element $_{17}\text{X}$ is ?
54. How many isomers are possible for an alkane having molecular formula C_6H_{14} ?
55. Total No. of C – H bonds in propane (C_3H_8) molecule is ?
56. How many organic acid in given acids ?
(i) HCl (ii) H_2SO_4 (iii) HNO_3 (iv) H_2CO_3 (v) H_3PO_4
57. In balanced chemical equation $a \text{Cu} + b \text{HNO}_3 (\text{dil}) \rightarrow c \text{Cu}(\text{NO}_3)_2 + d \text{H}_2\text{O} + e \text{NO}$. Find the value of $a + c + e$ is ?
58. Calculate the number of moles in 72g of water ?
59. How many dibasic acid are present in given acids ?
(i) $(\text{COOH})_2$ (ii) HCOOH (iii) CH_3COOH (iv) HBr (v) HCl
(vi) HNO_3 (vii) H_2CO_3 (viii) Hf (ix) H_2SO_3 (x) H_3PO_4 (xi) H_2SO_4
60. How many functional group present in given compound.



Space for Rough Work



Part – 3 contains 20 Single correct type questions and 10 Integer type questions.

Question No. 61 – 80 are of Single Correct Answer Type Question.

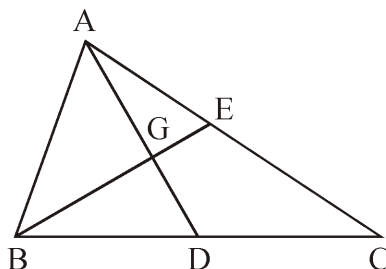
Four options are given in each question out of which only one option is correct.

61. If both the roots of the equation $(x - a)(x - b) + (x - b)(x - c) + (x - c)(x - a) = 0$ are real and equal then.
(A) $a + b + c = 0$ (B) $a = b = c$ (C) $a + b = 2c$ (D) $b^2 = ac$
62. If $x + \frac{1}{x} = \frac{50}{7}$, then which is always true?
(A) $x^{700} > 700$ (B) $x^{700} < 700$
(C) $x^{700} > 700$ or $x^{700} < 700$ (D) $x^{700} > 700$ and $x^{700} < 700$
63. If a, b, c are in A.P. and $\frac{1}{a^2}, \frac{1}{b^2}, \frac{1}{c^2}$ are also in A.P., then.
(A) $a = b = c$ (B) $2b = 3a + c$ (C) $b^2 = \sqrt{\frac{ac}{8}}$ (D) None of these
64. The sum of n terms of 2 arithmetic progression are in the ratio of $(7n + 1) : (4n + 27)$. The ratio of their 11th terms is.
(A) $162 : 119$ (B) $111 : 148$ (C) $121 : 148$ (D) $148 : 111$

Space for Rough Work



65. In given $\triangle ABC$, AD and BE are medians of triangle which intersect each other at point G. If area of $\triangle BDG$ is 1 cm^2 , then area of DCEG will be

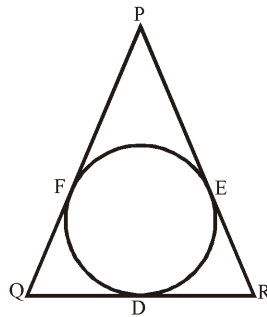


- (A) 2 cm^2 (B) 3 cm^2 (C) 4 cm^2 (D) 1 cm^2
66. The centre of a circle passing through the points $(7, -5)$, $(3, -7)$ and $(3, 3)$ is
- (A) $(5, -6)$ (B) $(5, -1)$ (C) $(3, 2)$ (D) $(3, -2)$
67. If the line segment joining $(2, 3)$ and $(-1, 2)$ is divided internally in the ratio $3 : 4$ by the graph of the equation $x + 2y = k$, the value of k is :
- (A) $\frac{5}{7}$ (B) $\frac{31}{7}$ (C) $\frac{36}{7}$ (D) $\frac{41}{7}$

Space for Rough Work



68. The coordinates of the midpoint of the line joining points $(2p + 1, 4)$ and $(5, q - 1)$ are $(2p, q)$. Find the value of $p + q$.
- (A) 6 (B) 9 (C) 0 (D) 11
69. The points $(4, -1)$, $(6, 0)$, $(7, 2)$ and $(5, 1)$ are the vertices of a
- (A) quadrilateral (B) rhombus (C) square (D) none of these
70. If $\tan \theta = \frac{a}{b}$, then $\frac{a \sin \theta + b \cos \theta}{a \sin \theta - b \cos \theta}$ is equal to
- (A) $\frac{a^2 + b^2}{a^2 - b^2}$ (B) $\frac{a^2 - b^2}{a^2 + b^2}$ (C) $\frac{a + b}{a - b}$ (D) $\frac{a - b}{a + b}$
71. In the given figure, $PQ = x$, $PR = y$, $QR = z$ and semi-perimeter of $\Delta PQR = S$, then QD is

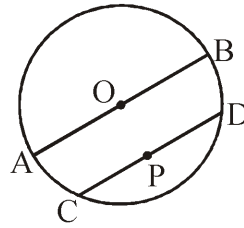


- (A) $S - x$ (B) $S - y$ (C) $S - z$ (D) $S - x - y$

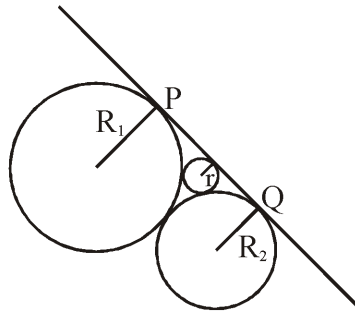
Space for Rough Work



72. The centre of a circle is at O. AB and CD are two chords of length d and ℓ respectively. If P is the mid point of CD, then the length OP is :



- (A) $\sqrt{d^2 + \ell^2}$ (B) $\sqrt{d^2 - \ell^2}$ (C) $\frac{1}{2}\sqrt{d^2 + \ell^2}$ (D) $\frac{1}{2}\sqrt{d^2 - \ell^2}$
73. Three circles with radii R_1 , R_2 and r touch each other externally as shown in the adjoining figure. If PQ is their common tangent and $R_1 > R_2$, then which of the following relations is correct ?

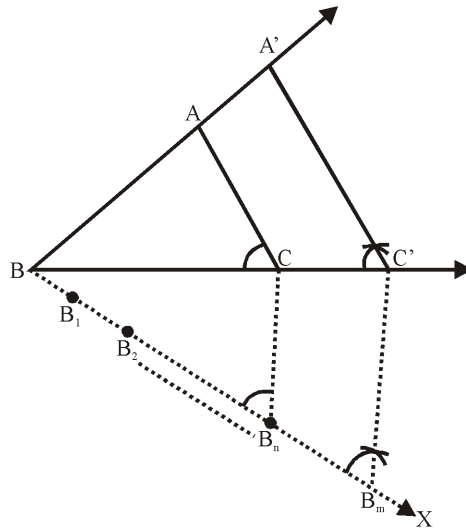


- (A) $R_1 - R_2 = r$ (B) $R_1 + R_2 = 2r$ (C) $\frac{1}{R_1} + \frac{1}{R_2} = \frac{1}{r}$ (D) $\frac{1}{\sqrt{R_1}} + \frac{1}{\sqrt{R_2}} = \frac{1}{\sqrt{r}}$

Space for Rough Work



74. In the given figure, the ratio of the area of ΔBAC to area of $\Delta BA'C'$ is



- (A) $\frac{n}{m}$ (B) $\frac{m}{n}$ (C) $\frac{n^2}{m^2}$ (D) $\frac{m^2}{n^2}$

75. If the volume of a sphere is equal to its surface area, then the circumference of a cross sectional circle whose centre coincides with the sphere is

- (A) 2π (B) 4π (C) 6π (D) 8π

76. The sum of the radii of inscribed and circumscribed circles for an n sided regular polygon of side a , is -

- (A) $\frac{a}{4} \cot\left(\frac{\pi}{2n}\right)$ (B) $a \cot\left(\frac{\pi}{n}\right)$ (C) $\frac{a}{2} \cot\left(\frac{\pi}{2n}\right)$ (D) $a \cot\left(\frac{\pi}{2n}\right)$

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77. In the expansion of $\left(3^{\frac{x}{4}} + 3^{\frac{5x}{4}}\right)^n$ the sum of the binomial combinatorial coefficients is 64 and the term with the greatest binomial coefficient exceeds the third term by $(n-1)$, then the value of x must be
(A) 1 (B) 2 (C) 0 (D) -1
78. Two sides of a rhombus are along the lines, $x - y + 1 = 0$ and $7x - y - 5 = 0$. If its diagonals intersect at $(-1, -2)$, then which one of the following is a vertex of this rhombus ?
(A) $\left(\frac{1}{3}, -\frac{8}{3}\right)$ (B) $\left(-\frac{10}{3}, -\frac{7}{3}\right)$ (C) $(-3, -9)$ (D) $(-3, -8)$
79. From 6 different novels and 3 different dictionaries, 4 novels and 1 dictionary are to be selected and arranged in a row on a shelf so that the dictionary is always in the middle. The number of such arrangements is
(A) at least 500 but less than 750 (B) at least 750 but less than 1000
(C) at least 1000 (D) less than 500
80. Let $S = \frac{a}{|a|} + \frac{b}{|b|} + \frac{c}{|c|} + \frac{abc}{|abc|}$ & $T = \frac{a}{|a|} + \frac{b}{|b|} + \frac{c}{|c|} + \frac{d}{|d|} + \frac{abcd}{|abcd|}$, where a, b, c, d are not equal to zero. Then the set of intersection of all value of S & T is :
(A) $\{0\}$ (B) $\{\phi\}$ (C) $\{1\}$ (D) $\{4\}$

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Question No. 81 – 90 are of Integer Answer Type Question.

Answer of these question will come from **00 to 99**.

81. Three cubes of side 4 cm each are joined end to end to form a cuboid. The surface area of the resulting cuboid and total surface area of the three cubes are in the ratio 7 : k. Find k.
82. The mean of the squares of the first n natural numbers is $\frac{1}{r}(n+1)(2n+1)$, find 2r.
83. The average score of boys in an examination of a school is 71 and that of girls is 73. The average score of the school examination is 71.8. The ratio of the number boys to the number of girls that appeared in the examination is 3 : s, find the value of s.
84. If $0 < x \leq \frac{\pi}{2}$, then $\sin x + \operatorname{cosec} x \geq$ _____.
85. If three points $(x_1, y_1), (x_2, y_2), (x_3, y_3)$ lie on the same line, then $\frac{y_2 - y_3}{x_2 x_3} + \frac{y_3 - y_1}{x_3 x_1} + \frac{y_1 - y_2}{x_1 x_2}$ is equal to.
86. If corresponding sides of two similar triangles are in the ratio 4 : 5, then corresponding medians of the triangles are in the ratio 4 : k. Find k.
87. Non-negative root of $\left(\frac{3x-1}{2x+3}\right)^2 - 5\left(\frac{3x-1}{2x+3}\right) + 4 = 0$ is :
88. If $kx + 4y + 2 = 0, x - 3y + 5 = 0$ and $2x + 7y - 3 = 0$ are concurrent lines then $k =$ _____.
89. If α, β, γ are zeroes of cubic polynomial $x^3 + 5x - 2$, then find the value of $\alpha^3 + \beta^3 + \gamma^3$.
90. The unit place digit of H.C.F. of $2^2 \times 3^2 \times 5^3 \times 7, 2^3 \times 3^3 \times 5^2 \times 7^2$ and $3 \times 5 \times 7 \times 11$ is.

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