YSAT 2027
YUVODAYA SCHOLARSHIPS AND ADMISSION TEST

YUVODAYA SCHOLARSHIPS & ADMISSION TEST (YSAT- 2027)

YUVODAYA NON-NEGOTIABLE ACADEMICS

CBSE MOCK

GENERAL INSTRUCTIONS

1. *Examination Timing* ***11.00 A.M. TO 01.00 P.M.***
2. *The test booklet consists of 80 questions [Physics–30 Qns., Chemistry -20, Biology - 10 Qns. & Mathematics–20 Qns.].*
3. *The maximum marks are (320).*
4. *Each question carries 4 marks. For each correct response , the candidate will get 4 marks . For each incorrect response, one mark will be deducted from the total scores.*
5. *After completion of examination submit the OMR sheet and question paper to the invigilator.*
6. ***DON'T OPEN THE QUESTION BOOKLET BEFORE 11.00 A.M.***
7. *Electronic devices (including mobile phones and smart watches) and calculators are not allowed in the examination hall.*

INSTRUCTIONS FOR FILLING THE OMR SHEET

1. *This sheet should not be folded or crushed.*
2. *Use only blue/black ball point pen to fill the circles.*
3. *Circles should be darkened completely and properly.*
4. *Over writing and erasing on this sheet is not allowed.*
5. *Do not use any stray marks on the OMR sheet.*
6. *Do not use marker or white fluid to hide the mark.*

WRONG METHOD ***CORRECT METHOD***



NAME OF THE STUDENT : _____

FATHER'S NAME : _____

NAME OF THE SCHOOL : _____

MOBILE NUMBER : _____

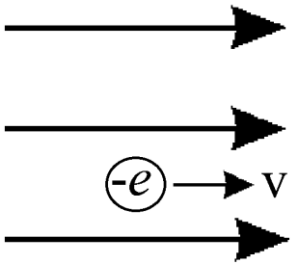
WHATSAPP NUMBER : _____

ROLL NUMBER : _____

Exam Place: Bhubaneswar

PHYSICS : (Q. No. 01 to 30)

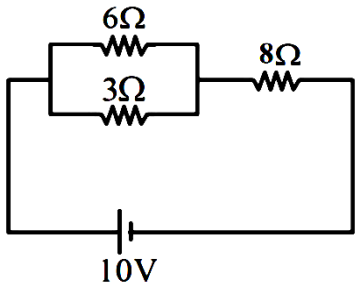
1. An electron enters a magnetic field, as shown in Fig. The direction of force acting on the electron will be



(1) to the right (2) to the left

(3) out of the page (4) zero

2. In the given circuit find power loss in 8Ω resistor in 2 second ?



(1) 24 watt (2) 64 watt

(3) 8 watt (4) 16 watt

3. The image formed by a convex mirror of focal length 20 cm is half the size of the object. The distance of the object from the mirror is

(1) 10 cm (2) 20 cm

(3) 30 cm (4) 40 cm

4. An electric bulb is rated 220 volt and 100 watt. Power consumed by it when operated on 110 volt is

(1) 50 watt (2) 75 watt

(3) 90 watt (4) 25 watt

5. Four wires a, b, c and d are made of the same materials. If 'l' denotes length and 'r' denotes radius, then the wire which offers least resistance to the flow of electric current has length and radius respectively as :

(1) 2l and 4r (2) l and 2r

(3) 4l and $\frac{r}{4}$ (4) $\frac{l}{4}$ and $\frac{r}{2}$

6. Twinkling of stars is due to which phenomena ?

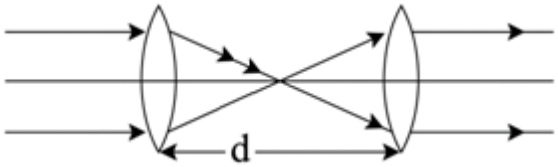
(1) Reflection of light

(2) Atmospheric refraction

(3) Scattering of light

(4) Tyndal effect

7. Find separation (d) between two convex lens if A parallel ray incident finally emerges as parallel.

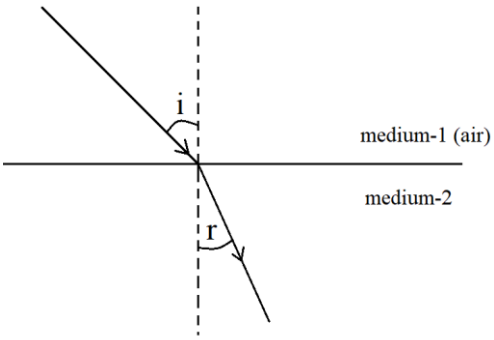


Focal length of two lens are $f_1 = 10$ cm , $f_2 = 15$ cm .

(1) 5 cm (2) 3 cm

(3) 25 cm (4) 150 cm

8. A ray of light enters a medium-1 (Air) having angle of incidence 45^o refracted at the boundary and enters to medium-2 (refractive index $\sqrt{2}$). Find the angle of refraction ?

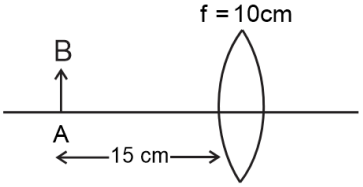


(1) 45^o (2) 60^o

(3) 30^o (4) Zero

9. Find position of image from lens?

AB is the object placed 15 cm from the lens.



(1) 20 cm (2) 15 cm

(3) 5 cm (4) 30 cm

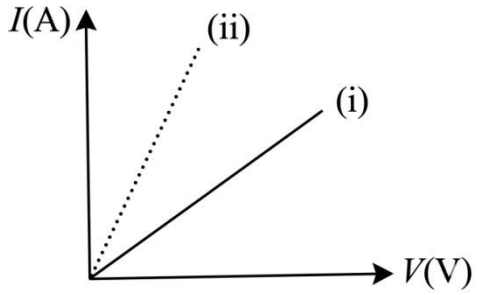
10. A concave lens of focal length forms an image which is n times the size of the object. The distance of the object from the lens is

(1) $(1 - n)f$ (2) $(1 + n)f$

(3) $\left(\frac{1+n}{n}\right)f$ (4) $\left(\frac{1-n}{n}\right)f$

11. The given figure shows the I-V curve (i) for a nichrome wire of given length and cross-section.

Which of the following will yield the curve (ii)?



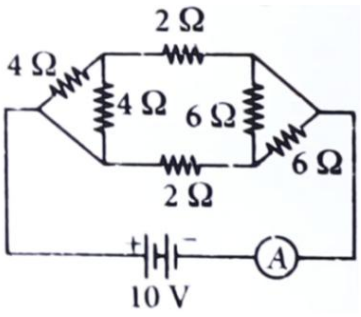
(1) Increase the length of nichrome wire

(2) Decrease the thickness of nichrome wire

(3) Replace the nichrome wire with a similar Copper wire

(4) None of these

12. In the circuit shown, the ammeter reading is



(1) 2/5 A (2) 5/3 A

(3) 3/7 A (4) 4/5 A

13. An electric motor converts

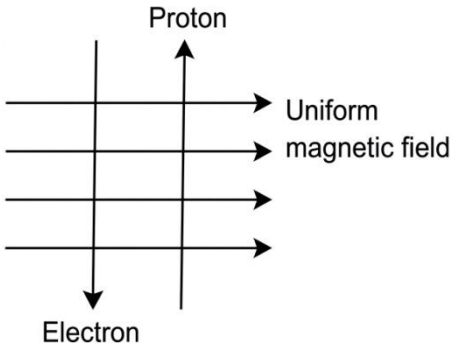
(1) Electrical energy into heat energy

(2) Electrical energy into mechanical energy

(3) Mechanical energy into electrical energy

(4) Mechanical energy into heat energy

14. A uniform magnetic field exists in the plane of paper point from left to right as shown in figure. In the field, an electron and a proton move as shown. The electron and the proton experience forces.



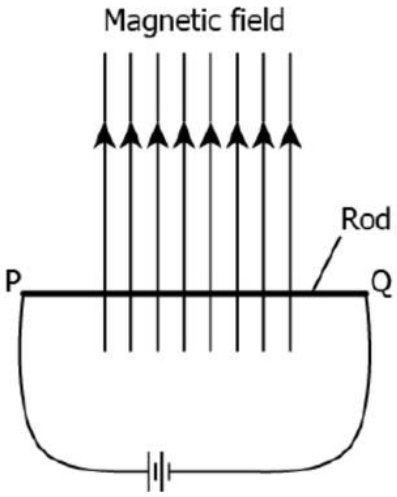
(1) Both pointing into the plane of paper

(2) Both pointing out of the plane of paper

(3) Pointing into the plane of paper and out of the plane of paper respectively

(4) Pointing opposite and along the direction of the uniform magnetic field respectively.

15. A metal rod PQ is placed in the magnetic field. The ends of the rod are connected to a battery using wires.



Where will the rod move?

(1) Upward (2) Downwards

(3) Into the field (4) Out of the field

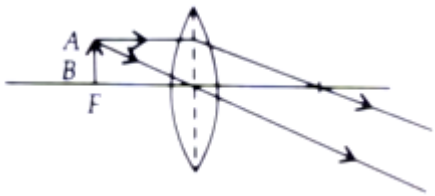
16. The amount of heat energy produced in 5 minutes by an electric heater rated at 1000 W is

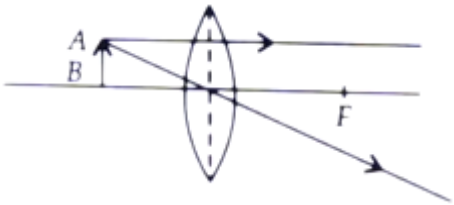
(1) 2×10^5 J (2) 3×10^5 J

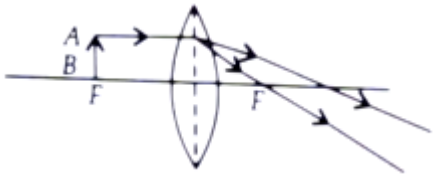
(3) 4×10^5 J (4) 300 J

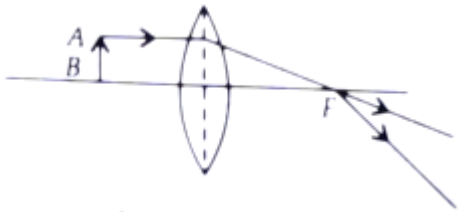
17. An object AB is placed in front of a convex lens at its principal focus as shown in figure.

Which of the ray diagram below correctly depicts the refraction through the lens L?

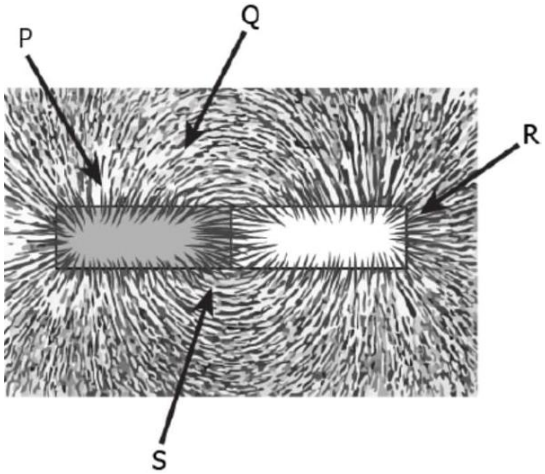
(1) 

(2) 

(3) 

(4) 

18. A student places some iron filings around a magnet. The iron fillings arrange themselves as shown in the image.

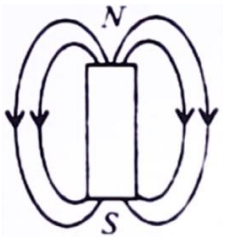


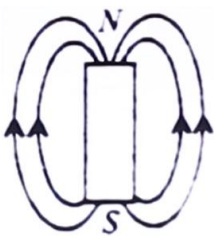
The student labelled four different regions around the magnet. Where would the magnetic field be the strongest?

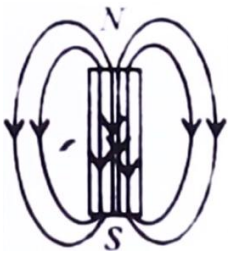
(1) P (2) Q

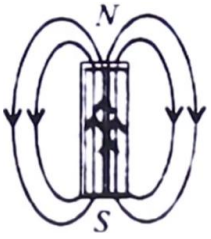
(3) R (4) S

19. The magnetic field lines due to a bar magnet are correctly shown in figure.

(1) 

(2) 

(3) 

(4) 

20. Power is transmitted from a power-house on high voltage AC

(1) Power cannot be generated at low voltage

(2) A precaution against theft of transmission lines

(3) The rate of transmission is faster at high voltage

(4) It is more economical due to the less power loss.

21. Two thin lenses of power. +3.5 D and –2.5 D are placed in contact, then the power and focal length of the lens combination is

(1) +1D, 100 cm (2) +2D, 150 cm

(3) +1D, 200 cm (4) +2D, 100 cm

22. Light takes t_1 sec to travel a distance x cm in vacuum and the same light takes t_2 sec to travel 10 x cm in a medium. Critical angle for corresponding medium will be

(1) $\sin^{-1}\left(\frac{10t_2}{t_1}\right)$ (2) $\sin^{-1}\left(\frac{t_2}{10t_1}\right)$

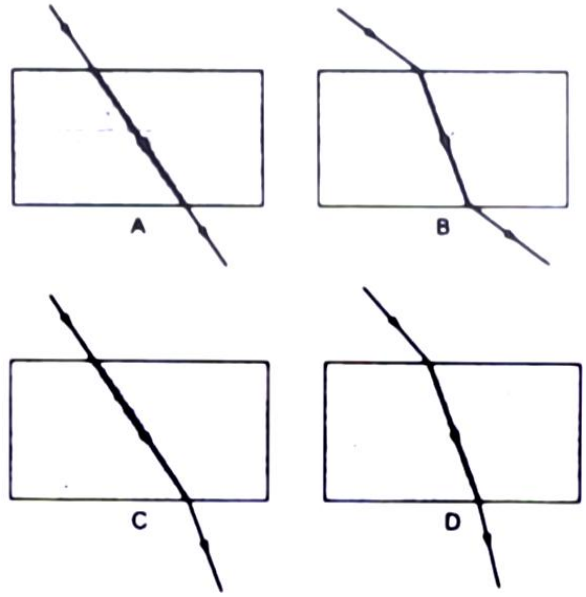
(3) $\sin^{-1}\left(\frac{10t_1}{t_2}\right)$ (4) $\sin^{-1}\left(\frac{t_1}{10t_2}\right)$

23. Two resistances 1Ω and 2Ω are connected in series and the parallel. The ratio of the effective resistance of series and parallel combination of resistances is

(1) 2 : 9 (2) 9 : 2

(3) 3 : 1 (4) 1 : 2

24. The path of a ray of light coming from air passing through a rectangular glass slab traced by four students are shown as A, B, C and D in figure. Which one of them is correct?



(1) A (2) B

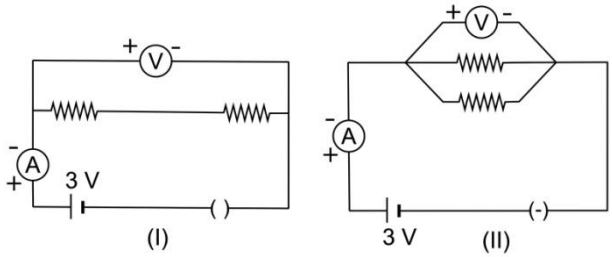
(3) C (4) D

25. Resistances of 2Ω and 3Ω are connected in series. If the potential difference across the 2Ω resistor is 3V the potential difference across 3Ω is

(1) 4.5 V (2) 9 V

(3) 3 V (4) 2 V

26. For the two circuit I and II shown below, the voltmeter readings would be



(1) 0 V in circuit I and 2 V in circuit II

(2) 3 V in both the circuit

(3) 0 V is circuit I and 3 V in circuit II

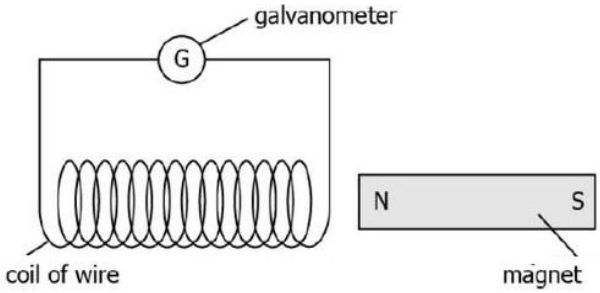
(4) 3 V in circuit I and 0 V in circuit II

27. Which of the given is the SI unit of electric current?

(1) Ohm (2) Ampere

(3) Volt (4) Faraday

28. A student makes an arrangement to study electromagnetic induction, as shown.



She changes the arrangement in four different ways.

Trail

(A) Moves the coil to the left, away from the magnet

(B) Moves the magnet to the right, away from the coil

(C) Moves both coil and magnet towards each other

(D) Moves both coil and magnet in the same direction at the same speed

In which trail would the galvanometer remain undeflected?

(1) Trial 1 (2) Trail 2

(3) Trail 3 (4) Trail 4

29. The magnetic field lines inside a current carrying solenoid are

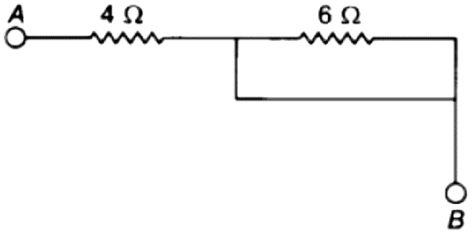
(1) Circular and they do not intersect each other

(2) Circular at the ends but they are parallel to the axis inside the solenoid

(3) Along the axis and parallel to each other

(4) Perpendicular to the axis and equidistant from each other

30. The effective resistance between A and B is



(1) 4 Ω (2) 6 Ω

(3) May be 10 Ω (4) Must be 10 Ω

CHEMISTRY : (Q. No. 31 to 50)

31. Copper (II) sulphate solution is placed in four vessels A, B, C, D made of iron, zinc, silver and aluminium. In which vessel the chemical reaction will not occur?

(1) A (2) B

(3) C (4) D

32. In the redox reaction

$MnO_2 + 4HCl \rightarrow MnCl_2 + 2H_2O + C1_2$

(1) MnO_2 is reduced to $MnC1_2$ & HCl is oxidized to H_2O

(2) MnO_2 is reduced to $MnC1_2$ & HCl is oxidized to $C1_2$

(3) MnO_2 is oxidized to $MnC1_2$ & HCl is reduced to $C1_2$

(4) MnO_2 is oxidized to $MnC1_2$ & HCl is reduced to H_2O

33. Identify 'p, 'q' and 'r' in the following balanced reaction

$$p\,Pb(NO_3)_{2(s)} \xrightarrow{Heat} q\,PbO_{(s)} + rNO_{2(g)} + O_{2(g)}$$

(1) 2, 2, 4 (2) 2 ,4 , 2

(3) 2, 4, 4 (4) 4, 2, 2

34. In thermite welding a mixture of _____ and _____ is ignited with a burning magnesium ribbon which produces molten iron metal as large amount of heat is evolved.

(1) iron(III) oxide, aluminium powder

(2) iron (II) oxide, aluminium powder

(3) iron (III) chloride, aluminium powder

(4) iron (III) sulphate, aluminium powder

35. $CH_3 - CH_2 - OH \xrightarrow{\text{Alkaline } KMnO_4 + Heat}$

$CH_3 - COOH$. In the above given reaction, alkaline $KMnO_4$ acts as

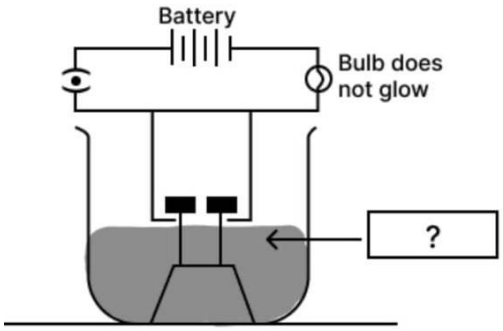
(1) reducing agent

(2) oxidizing agent

(3) catalyst

(4) dehydrating agent

36. The solution in the given figure is likely to be



(1) HNO_3 (2) C_2H_5OH

(3) H_2SO_4 (4) CO_2 in water

37. Which of the following represents saponification reaction?

(1) $CH_3COONa + NaOH \xrightarrow{CaO} CH_4 + Na_2CO_3$

(2) $CH_3COOH + C_2H_5OH \xrightarrow{H_2SO_4} CH_3COOC_2H_5 + H_2O$

(3) $2CH_3COOH + 2Na \rightarrow 2CH_3COONa + H_2$

(4) $CH_3COOC_2H_5 + NaOH \rightarrow CH_3COONa + C_2H_5OH$

38. Acetic acid was added to a solid X kept in a test tube. A colourless and odourless gas was evolved. The gas was passed through lime water which turned milky. It was concluded that

(1) solid X is sodium hydroxide and the gas evolved is CO_2

(2) solid X is sodium bicarbonate and the gas evolved is CO_2

(3) solid X is sodium acetate and the gas evolved is CO_2

(4) solid X is sodium chloride and the gas evolved is CO_2

39. Correct statement among the following.

(1) Homologous have same chemical & physical properties.

(2) Homologous have same general formula & physical properties.

(3) Homologous have different chemical properties with different general formula.

(4) Homologous have same chemical properties with same general formula.

40. Which of the following element is a member of third period?

(1) K (2) Ca

(3) Ar (4) Sc

41. Which of the following is a double displacement reaction-

(1) $Pb + CuCl_2 \rightarrow PbCl_2 + Cu$

(2) $C + O_2 \rightarrow CO_2$

(3) $CH_4 + O_2 \rightarrow CO_2 + 2H_2O$

(4) $Na_2SO_4 + BaCl_2 \rightarrow 2NaCl + BaSO_4$

42. Galvanisation is a method of protecting iron from rusting by coating with a thin layer of

(1) Gallium (2) Aluminium

(3) Zinc (4) Silver

43. In the reaction $H_2 + Cl_2 \longrightarrow 2HCl$

(l) Hydrogen undergoes oxidation

(2) Chlorine undergoes oxidation

(3) Hydrogen act as oxidising agent

(4) Chlorine act as reducing agent

44. The following reaction

$4NH_3(g) + 5O_2(g) \rightarrow 4NO(g) + 6H_2O(g)$

is an example of -

(l) Displacement reaction

(2) Neutralisation reaction

(3) Redox reaction

(4) Both (2) & (3)

45. An atom with 3 protons and 4 neutrons will have a valency of

(1) 3 (2) 7

(3) 1 (4) 4

46. An element "X" after reacting with acids liberate hydrogen gas and can displace Lead and Tin from their salt solution. The metal 'X' is:

(l) Copper (2) Gold

(3) Nickel (4) Mercury

47. Study the following equations and mark the correct option.

$2A + 2B \rightarrow 2AOH + H_2$

$S + O_2 \rightarrow C$

$C + B \rightarrow D$

	A	B	C	D
(1)	Na	H_2O	SO_2	H_2SO_3
(2)	Na	H_2O	SO_2	H_2SO_4
(3)	K	H_2O	SO_2	H_2SO_4
(4)	K	H_2O	SO_3	H_2SO_3

48. When the vapour pressure of a liquid is equal to its atmospheric pressure, then it

(l) freezes

(2) evaporates

(3) boils

(4) does not undergo any change

49. The compound added to baking soda form baking power is

(1) Hydro chlorine acid

(2) Tartaric acid

(3) Sodium carbonate

(4) Calcium hydroxide

50. Which of the following represent general formula of alkanes?

(1) C_nH_{2n} (2) C_nH_{2n+2}

(3) C_nH_{2n-2} (4) C_nH_{2n+1}

BIOLOGY : (Q. No. 51 to 60)

51. The filtration units of kidneys are called

(1) Ureter (2) Urethra

(3) Neurons (4) Nephrons

52. Which of the following is commonly known as 'birth hormone'?

(1) Prolactin (2) Oxytocin

(3) ADH (4) FSH

53. Growth hormone is produced by

(1) Adrenal (2) Pituitary

(3) Pancreas (4) Thyroid

54. Out of the following which gland is both endocrine and exocrine in function ?

(1) Pancreas (2) Pituitary

(3) Thymus (4) Thyroid

55. _____is responsible for maintaining biological clock of body

(1) Pineal (2) Kidney

(3) Thyroid (4) Adrenal

56. In which group of the organisms the food material is broken down outside the body ?

(1) Mushroom, green plants, amoeba

(2) Yeast, mushroom, bread mould

(3) Paramecium, amoeba, cuscuta

(4) Cuscuta, lice, tapeworm

57. Bryophyllum can be propagated vegetatively by the

(1) stem (2) leaf

(3) root (4) flower

58. A pregnant woman has an equal chance of her baby being blood group A or blood group AB. Which one of the following shows the possible genotypes of the woman and the father of her child?

(1) $I^A I^A$ and $I^B I^O$ (2) $I^A I^B$ and $I^B I^O$

(3) $I^A I^O$ and $I^B I^O$ (4) $I^O I^B$ and $I^A I^O$

59. What will be the number of chromosomes present in each gamete produced by the plants if the palisade cells of a species of plant contain 28 chromosomes in all?

(1) 56 (2) 28

(3) 14 (4) 4

60. The rapid spreading of bread mould on slices of bread are due to:

(i) Presence of large number of spores in air

(ii) Presence of large number of thread-like branched hyphae

(iii) Presence of moisture and nutrients

(iv) Formation of round shaped sporangia

(1) (i) and (iii) (2) (ii) and (iv)

(3) (i) and (ii) (4) (iii) and (iv)

MATHEMATICS : (Q. No. 61 to 80)

61. If the HCF of 408 and 1032 is expressible in the form (1032 × m) – (408 × 5), then the value of m is

(1) 4 (2) 3

(3) 1 (4) 2

62. If one zero of the polynomial $6x^2+37x-(K-2)$ is reciprocal of the other, then what is the value of K?

(1) -4 (2) -6

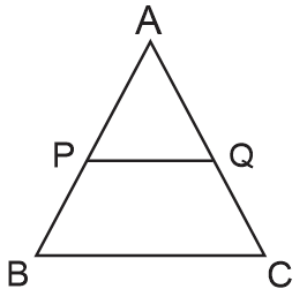
(3) 6 (4) 4

63. If a_p be the p^{th} term of AP 3, 15, 27… such that $a_p - a_{50} = 180$ then p = _____.

(1) 68 (2) 65

(3) 66 (4) 67

64. In $\Delta ABC, PQ \| BC$, If PB = 6 cm, AP = 4 cm, $AQ = 8cm$, then the length of AC is _____.



(1) 12 cm (2) 20 cm

(3) 6 cm (4) 14 cm

65. If $\operatorname{cosec}\theta = 2$ and $\cot\theta = \sqrt{3}a$, then the value of a is _____.

(1) 1 (2) 12

(3) $\sqrt{3}$ (4) $\frac{2}{\sqrt{3}}$

66. If 2tanA = 3 then value of $\frac{4\sin A + 3\cos A}{4\sin A - 3\cos A}$ is _____.

(1) $\frac{7}{\sqrt{13}}$ (2) $\frac{1}{\sqrt{13}}$

(3) 3 (4) does not exist

67. Two years ago, a father was five times as old as his son. Two years later his age will be more than 3 times the age of son. Find the present ages of father and son.

(1) 32, 10 (2) 42, 10

(3) 20, 30 (4) None

68. Distance of (–1, 7) from x-axis ?

(1) 1 (2) 7

(3) 6 (4) 8

69. The distance between the point $P(\cos 21^o, 0)$ and $Q(0, -\cos 69^o)$ is

(1) 1 (2) 2

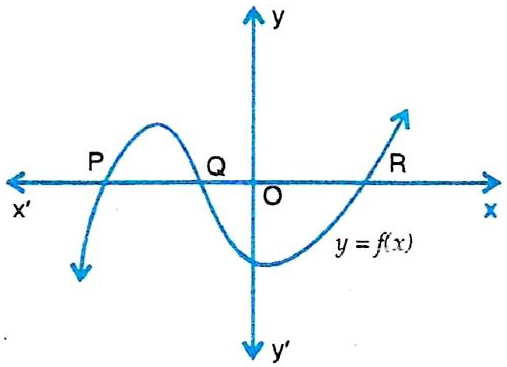
(3) $\sqrt{2}$ (4) $\sqrt{3}$

70. If p and q are two distinct prime numbers, then $LCM\ (p, q)$ is

(1) 1 (2) p

(3) q (4) pq

71. The graph of a polynomial $f(x)$ is shown in fig. The number of zeroes of $f(x)$ is



(1) 3 (2) 2

(3) 1 (4) 4

72. If $2\tan A = 3$, then the value of $\frac{4\sin A + 3\cos A}{4\sin A - 3\cos A}$ is

(1) $\frac{7}{\sqrt{13}}$ (2) $\frac{1}{\sqrt{13}}$

(3) 3 (4) does not exist

73. If $\sin\theta + \sin\theta = \sqrt{2}\cos\theta$, $\theta \neq 90^o$, then $\tan\theta =$

(1) $\sqrt{2} - 1$ (2) $\sqrt{2} + 1$

(3) $\sqrt{2}$ (4) $-\sqrt{2}$

74. If the roots of the equation $a(b-c)x^2 + b(c-a)x + c(a-b) = 0$ are equal, then

(1) $b = \frac{2ac}{a+c}$ (2) $b = \frac{ac}{a+c}$

(3) $c = \frac{2ab}{a+b}$ (4) $a = \frac{2bc}{b+c}$

75. Find the value of K for which the given equation has real and equal roots $(K-12)x^2 + 2(K-12)x + 2 = 0$

(1) $K = 14$ (2) $K = 13$

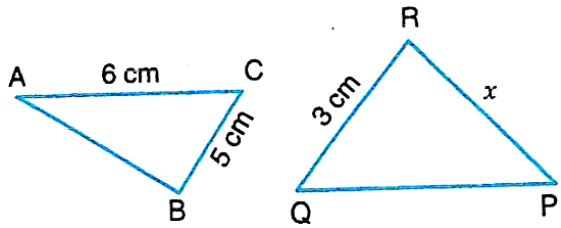
(3) $K = 12$ (4) $K = 10$

76. The next term of the *A.P.* $\sqrt{18}, \sqrt{50}, \sqrt{98}, ...$ is

(1) $\sqrt{146}$ (2) $\sqrt{128}$

(3) $\sqrt{162}$ (4) $\sqrt{200}$

77. In fig. $\Delta ABC \sim \Delta QPR$. If AC = 6 cm, BC = 5 cm, QR = 3 cm and $PR = x$ cm, then the value of x is



(1) 2.6 cm (2) 2.5 cm

(3) 10 cm (4) 3.2 cm

78. If 11^{th} term from the end of the *A.P.*: 10, 7, 4, …., –62 is

(1) 15 (2) 16

(3) –32 (4) 0

79. In ΔABC, $DE \parallel AB$. If $AB = a$, $DE = x$, BE = b and EC = c. Then, $x =$

(1) $\frac{ab}{b}$ (2) $\frac{ac}{b+c}$

(3) $\frac{ab}{c}$ (4) $\frac{ab}{b+c}$

80. If in ΔABC and ΔDEF, $\frac{AB}{DE} = \frac{BC}{FD}$, then they will be similar, then

(1) $\angle B = \angle E$ (2) $\angle A = \angle D$

(3) $\angle B = \angle D$ (4) $\angle A = \angle F$

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