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GTSE

GOAL TALENT SEARCH EXAM

2023-24

CLASS - 11th (PCB / PCM)

DON'T OPEN THE SEAL WITHOUT INSTRUCTION

PRACTICE PAPER

Time : 2.00 Hrs. | **Max. Marks : 400**

INSTRUCTIONS

- This paper has 100 questions. All questions are compulsory.
- In this paper Question of Biology is from 71 to 100 which is only for PCB group and in same way Math from 71 to 100 for PCM group. You have to attempt only one segment as per your group.
- The maximum marks for each question is 4.
- 1 mark will be deducted against each negative response from the total marks.
- Use of calculator, slide rule, graph paper & trigonometric tables is **NOT PERMITTED.**

Name of the Candidate : _____

Class : _____

Roll No. : _____

Exam Centre : _____

GOAL TALENT SEARCH EXAM : 2023-24

[Time : 2.00 Hours] **CLASS : XI (PCB / PCM) Practice Paper** **Full Marks : 400**

01. If vector $\vec{A} = \cos\omega t\,\hat{i} + \sin\omega t\,\hat{j}$ and $\vec{B} = \cos\frac{\omega t}{2}\,\hat{i} + \sin\frac{\omega t}{2}\,\hat{j}$ are functions of time, then the value of t at which they are orthogonal to each other is

(1) $t = \frac{\pi}{2\omega}$ (2) $t = \frac{\pi}{\omega}$ (3) $t = 0$ (4) $t = \frac{\pi}{4\omega}$

02. Which of the following quantities has the same dimensions as that of energy

(1) Power (2) Force

(3) Momentum (4) Work

03. A particle of unit mass undergoes one-dimensional motion such that its velocity varies according to $v(x) = bx^{-2n}$.

Where b and n are constants and x is the position of the particle. The acceleration of the particle as function of x, is given by

(1) $-2nb^2x^{-4n-1}$ (2) $-2b^2x^{-2n+1}$

(3) $-2nb^2e^{-4n+1}$ (4) $-2nb^2x^{-2n-1}$

04. A ball A is thrown up vertically with a speed u and at the same instant another ball B is released from a height h. At time t, the speed of A relative to B is

(1) u (2) 2u (3) u–gt (4) $\sqrt{(u^2 - gt)}$

05. Two bodies of mass 10 kg and 5 kg moving in concentric orbits of radii R and r such that their periods are the same. Then the ratio between their centripetal acceleration is

(1) R/r (2) r/R (3) R^2/r^2 (4) r^2/R^2

06. The horizontal range and the maximum height of a projectile are equal. The angle of projection of the projectile is :

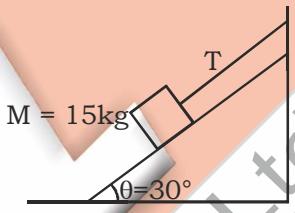
(1) $\theta = \tan^{-1}\left(\frac{1}{4}\right)$ (2) $\theta = \tan^{-1}(4)$

(3) $\theta = \tan^{-1}(2)$ (4) $\theta = 45°$

07. Three blocks A, B and C of masses 4 kg, 2 kg and 1 kg respectively, are in contact on a frictionless surface, as shown. If a force of 14 N is applied on the 4 kg block then the contact force between A and B is :

(1) 6 N (2) 8 N (3) 18 N (4) 2 N

08. A block of mass 15 kg is held by a string on an inclined plane (angle 30°). The tension T in the string is ($g = 10\ m/s^2$)



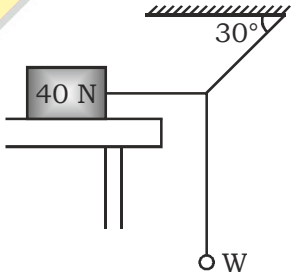
(1) 55 N (2) 60 N (3) 75 N (4) 90 N

09. A box is lying on the inclined plane. What is the coefficient of static friction if the box starts sliding when an angle of inclination is 60°?

(1) 1.173 (2) 1.732

(3) 2.732 (4) 1.677

10. In the figure given, the system is in equilibrium. What is the maximum value that W can have if the friction force on the 40 N block cannot exceed 12.0 N?



(1) 3.45 N (2) 6.92 N

(3) 10.35 N (4) 12.32 N

11. A particle moves in a straight line with retardation proportional to its displacement. Its loss of kinetic energy for any displacement x is proportional to

(1) x^2 (2) e^x (3) x (4) $\log_e x$

12. A body of mass m accelerates uniformly from rest to v_1 in time t_1. As a function of time t, the instantaneous power delivered to the body is

(1) $\frac{mv_1t}{t_1}$ (2) $\frac{mv_1^2t}{t_1}$ (3) $\frac{mv_1t^2}{t_1}$ (4) $\frac{mv_1^2t}{t_1^2}$

13. Let $\vec{F}$ be the force acting on a particle having position vector $\vec{r}$ and $\vec{\tau}$ be the torque of this force about the origin. Then

(1) $\vec{r}\cdot\vec{\tau}=0$ and $\vec{F}\cdot\vec{\tau}=0$

(2) $\vec{r}\cdot\vec{\tau}=0$ and $\vec{F}\cdot\vec{\tau}\neq 0$

(3) $\vec{r}\cdot\vec{\tau}\neq 0$ and $\vec{F}\cdot\vec{\tau}=0$

(4) $\vec{r}\cdot\vec{\tau}\neq 0$ and $\vec{F}\cdot\vec{\tau}\neq 0$

14. A solid sphere is in rolling motion. In rolling motion a body possesses translational kinetic energy (K_t) as well as rotational kinetic energy (K_r) simultaneously. The ratio $K_t : (K_t + K_r)$ for the sphere is

(1) 7 : 10 (2) 5 : 7 (3) 10 : 7 (4) 2 : 5

15. The change in the gravitational potential energy when a body of mass m is raised to a height nR above the surface of the earth is (here R is the radius of the earth)

(1) $\left(\frac{n}{n+1}\right)$mgR (2) $\left(\frac{n}{n-1}\right)$mgR

(3) nmgR (4) $\frac{mgR}{n}$

16. A satellite of mass 'm' is revolving in circular orbit of radius 'r' round the earth. Its angular momentum w.r.t. the centre of its orbit is (M = mass of earth, G = universal gravitational constant)

(1) $(GMmr)^{1/2}$ (2) $(GMm^2r)^{1/2}$

(3) $(GMm^2r^2)^{1/2}$ (4) $(GM^2m^2r)^{1/2}$

17. A metallic rod of length *l* and cross-sectional area A is made of a material of Young modulus Y. If the rod is elongated by an amount y, then the work done is proportional to

(1) y (2) 1/y (3) y^2 (4) $1/y^2$

18. The surface tension of a liquid :

(1) increases with area

(2) decreases with area

(3) increases with temperature

(4) decreases with temperature

19. A body is floating in liquid with 50% of its volume outside the liquid. When the entire system accelerates upwards with an acceleration g/3, the percentage of its volume outside the liquid is

(1) 33% (2) 50% (3) 25% (4) 66%

20. The coefficient of volume expansion of a liquid is $49 \times 10^{-5}\ K^{-1}$. Calculate the fractional change in its density when the temperature is raised by 30°C. (approximately)

(1) 7.5×10^{-2} (2) 3.0×10^{-2}

(3) 1.5×10^{-2} (4) 1.1×10^{-2}

21. An ideal gas is expanding such that PT^2 = constant. The coefficient of volume expansion of the gas is

(1) $\frac{1}{T}$ (2) $\frac{2}{T}$ (3) $\frac{3}{T}$ (4) $\frac{4}{T}$

22. If the degree of freedom of a gas are f, then the ratio of two specific heats C_P/C_V is given by

(1) $\frac{2}{f}+1$ (2) $1-\frac{2}{f}$ (3) $1+\frac{1}{f}$ (4) $1-\frac{1}{f}$

23. Two mole of oxygen is mixed with eight mole of helium. The effective specific heat of the mixture at constant volume is

(1) 1.3 R (2) 1.4 R (3) 1.7 R (4) 1.9 R

24. A monatomic gas (γ = 5/3) is suddenly compressed to $\frac{1}{8}$ of its original volume adiabatically, then the pressure of the gas will change to

(1) $\frac{24}{5}$

(2) 8

(3) $\frac{40}{3}$

(4) 32 times its initial pressure

25. A carnot engine takes 3×10^6 cal of heat from a reservoir at 627°C, and gives it to a sink at 27°C. The work done by the engine is

(1) 4.2×10^6 J (2) 8.4×10^6 J

(3) 16.8×10^6 J (4) Zero

26. Consider a compound slab consisting of two different materials having equal thickness and thermal conductivities K and 2K respectively. The equivalent thermal conductivity of the slab is

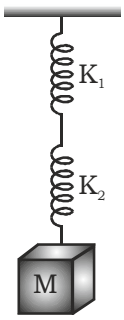
(1) $\sqrt{2K}$ (2) 3 K (3) $\frac{4}{3}$K (4) $\frac{2}{3}$K

27. The amplitude of a particle executing S.H.M. with frequency of 60 Hz is 0.01 m. The maximum value of the acceleration of the particle is

(1) $144\ \pi^2 m/s^2$ (2) $144\ m/s^2$

(3) $\frac{144}{\pi^2}\ m/s^2$ (4) $288\ \pi^2 m/s^2$

28. A mass M is suspended by two springs of force constants K_1 and K_2 respectively as shown in the diagram. The total elongation (stretch) of the two springs is



(1) $\frac{Mg}{K_1 + K_2}$

(2) $\frac{Mg(K_1 + K_2)}{K_1K_2}$

(3) $\frac{MgK_1K_2}{K_1 + K_2}$

(4) $\frac{K_1 + K_2}{K_1K_2Mg}$

29. A string vibrates according to the equation $y = 5\sin\left(\frac{2\pi x}{3}\right)\cos 20\pi t$, where x and y are in cm and t in sec. The distance between two adjacent nodes is

(1) 3 cm (2) 4.5 cm (3) 6 cm (4) 1.5 cm

30. If the velocity of sound in air is 340 m/s. Then the fundamental frequency of an open organ pipe of length 50 cm, will be

(1) 350 Hz (2) 340 Hz (3) 900 Hz (4) 750 Hz

31. 1 g-atom of nitrogen represents :

(1) 6.02×10^{23} N_2 molecules

(2) 22.4 L of N_2 at S.T.P.

(3) 11.2 L of N_2 at S.T.P.

(4) 28 g of nitrogen

32. 0.078 grams of a hydrocarbon occupy 22.4 ml. of volume at STP. The molecular formula of hydrocarbon is :

(1) C_2H_2 (2) C_6H_6

(3) C_8H_8 (4) C_4H_4

33. If r_o be the radius of first Bohr's orbit of H-atom, the de-Broglie's wavelength of an electron revolving in the third Bohr's orbit will be :

(1) $2\pi r_0$ (2) $4\pi r_0$ (3) $6\pi r_0$ (4) πr_0

34. Consider the following sets of quantum number

	n	l	m	s
(i)	3	0	0	+1/2
(ii)	2	2	1	+1/2
(iii)	4	3	–2	–1/2
(iv)	1	0	–1	–1/2
(v)	3	2	3	+1/2

Which of the following sets of quantum number is not possible ?

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

(2) (ii), (iv) and (v)

(3) (i) and (iii)

(4) (ii), (iii) and (iv)

35. The ions which are arranged in correct order of increasing radii are :

(1) K^+, Ca^{2+}, S^{2-} (2) Be^{2+}, Mg^{2+}, Na^+

(3) O^{2-}, F^-, N^{3-} (4) S^{2-}, O^{2-}, As^{3-}

36. The first ionisation enthalpies of Na, Mg, Al and Si are in the order :

(1) Na < Mg > Al < Si (2) Na > Mg > Al > Si

(3) Na < Mg < Al < Si (4) Na > Mg > Al < Si

37. Among the following, the boiling point is high for :

(1) Ethyl alcohol (2) Dimethyl ether

(3) Acetone (4) Chloroform

38. 8.2 L of an ideal gas weighs 9.0 g at 300 K and 1 atm. pressure. The molecular mass of the gas is :

(1) 9 (2) 27 (3) 54 (4) 81

39. 8.8 g of dry ice is added to an open container of volume 8.2 L at 27°C, the lid is closed immediately. What will be the final pressure in the container when CO_2 is vaporized ?

(1) 0.6 atm (2) 1.6 atm (3) 0.8 atm (4) 6.4 atm

40. The intensive property among these quantities is :

(1) Mass (2) Volume

(3) Enthalpy (4) $\frac{\text{Mass}}{\text{Volume}}$

41. Standard enthalpy of vaporization ΔH^o for water at 100°C is 40.66 kJ/mol^{-1}. The internal energy change of vaporization of water at 100°C (in kJ/mol^{-1}) is :

(1) 37.56 (2) –43.16 (3) +43.76 (4) +40.66

42. Which of the following is correct option for free expansion of an ideal gas under adiabatic condition ?

(1) $q = 0, \Delta T \neq 0, w = 0$ (2) $q \neq 0, \Delta T = 0, w = 0$

(3) $q = 0, \Delta T = 0, w = 0$ (4) $q = 0, \Delta T < 0, w \neq 0$

43. How many gram of NaOH must be present in one litre of the solution to give it a pH = 12 ?

(1) 0.20 g litre^{-1} (2) 0.4 g litre^{-1}

(3) 4.0 g litre^{-1} (4) 0.10 g litre^{-1}

44. For the reaction,

$$2NOBr_{(g)} \rightleftharpoons 2NO_{(g)} + Br_{2(g)}$$

The ratio $\frac{K_p}{P}$, where P is the total pressure of gases at equilibrium and $P_{Br_2} = P/9$ at a certain temperature is :

(1) 1/9 (2) 1/81

(3) 1/27 (4) 1/3

45. Following reaction is given

$CH_3COCH_{3(g)} \rightleftharpoons CH_3 - CH_3 + CO_{(g)}$, initial pressure of CH_3COCH_3 is 100 mm of Hg. When equilibrium is set up, the mole fraction of $CO_{(g)}$ is 1/3, hence Kp is :

(1) 10 mm (2) 50 mm

(3) 25 mm (4) 150 mm

46. Which of the following salts has maximum solubility ?

(1) HgS, $K_{sp} = 1.6 \times 10^{-54}$

(2) $PbSO_4$, $K_{sp} = 1.3 \times 10^{-8}$

(3) ZnS, $K_{sp} = 7.0 \times 10^{-26}$

(4) AgCl, $K_{sp} = 1.7 \times 10^{-10}$

47. A solution has pH = 5. It is diluted 100 times. Then it will become :

(1) Neutral (2) Basic

(3) Less acidic (4) More acidic

48. Which one of the following is not a redox reaction?

(1) $CaCO_3 \rightarrow CaO + CO_2$

(2) $2H_2 + O_2 \rightarrow 2H_2O$

(3) $Na + H_2O \rightarrow NaOH + \frac{1}{2}H_2$

(4) $MnCl_3 \rightarrow MnCl_2 + \frac{1}{2}Cl_2$

49. Metal hydrides are ionic, covalent or molecular in nature. Among LiH, NaH, KH, RbH, CsH, the correct order of increasing ionic character is :

(1) LiH > NaH > CsH > KH > RbH

(2) LiH < NaH < KH < RbH < CsH

(3) RbH > CsH > NaH > KH > LiH

(4) NaH > CsH > RbH > LiH > KH

50. The least stable carbonate of alkali metal is :

(1) Cs_2CO_3 (2) Na_2CO_3

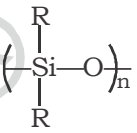
(3) K_2CO_3 (4) Li_2CO_3

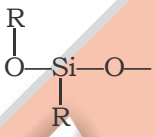
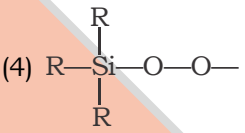
51. The solution which does not produce precipitate when treated with K_2CO_3 is :

(1) $BaCl_2$ (2) $CaBr_2$

(3) $MgCl_2$ (4) Na_2SO_4

52. The repeating structural unit of silicone is :

(1) SiO_2 (2) 

(3)  (4) 

53. Which of the following will liberate O_2 upon heating ?

(1) $K_2Cr_2O_7$ (2) $KClO_3$

(3) HgO (4) All of these

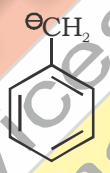
54. Which of the following compound has a P-P bond?

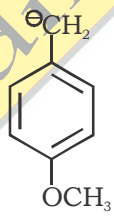
(1) $H_4P_2O_5$ (2) $(HPO_3)_3$ (3) $H_4P_2O_6$ (4) $H_4P_2O_7$

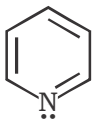
55. Silica is soluble in :

(1) HCl (2) HNO_3 (3) H_2SO_4 (4) HF

56. Which carbanion is maximum stable ?

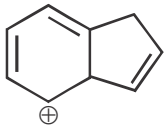
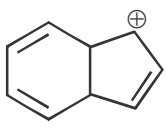
(1)  (2) 

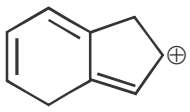
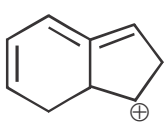
(3)  (4) 

57. In pyridine;  Number of conjugated electrons are :

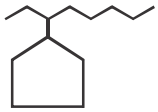
(1) 6 (2) 8 (3) Zero (4) 5

58. Which carbocation is the most stabilized ?

(1)  (2) 

(3)  (4) 

59. The IUPAC name of the given compound



is :

(1) Octyl cyyclopentane

(2) 3-cyclopentyl octane

(3) Cyclopentane octane

(4) 6-cyclopentyl octane

60. The gases liberated at anode in the electrolysis of sodium acetate are :

(1) CO_2 & H_2 (2) C_2H_6 & CO_2

(3) H_2 & C_2H_6 (4) H_2 & O_2

61. If 'A × B' means 'A is the sister of B'; 'A + B' means 'A is the father of B; 'A – B' means 'A is the brother of B'; '$A \div B$' means 'A is the mother of B' and 'A = B' means 'A is the son of B'. What does $P + Q \div R - S \times T = U$ mean if U is male?

(1) P is the mother-in-law of U

(2) U is the son of P

(3) P is the father-in-law of U

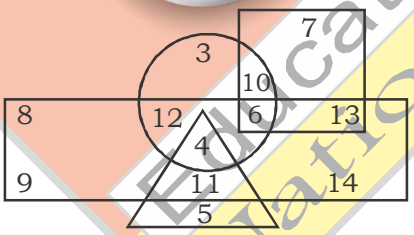
(4) P and U are brothers

62. Two students Ram and Shyam 10 m apart are standing on a horizontal line. Both of them run the same distance towards North-East. They again travelled equal distance towards South. How far is Ram now from Shyam?

(1) $10\sqrt{2}$ m (2) $5\sqrt{2}$ m

(3) 10 m (4) $20\sqrt{2}$ m

63. The following question is based on the diagram given below.



(i) Rectangle represents males.

(ii) Triangle represents educated people.

(iii) Circle represents urban people.

(iv) Square represents civil servants.

Who among the following is uneducated urban male who is not a civil servant?

(1) 8 (2) 3 (3) 11 (4) 12

64. Find the missing character from the given alternatives.

(1) 16 (2) 22 (3) 23 (4) 24

65. Select a figure from the options which is exactly embedded in Fig. (X) as one of its part.

Fig. (X)

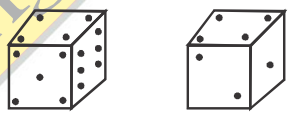
(1) 

(2) 

(3) 

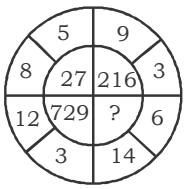
(4) 

66. Here two positions of a dice are shown. If there are four dots in the bottom, then how many dots will be on the top?



(1) 2 (2) 3 (3) 5 (4) 6

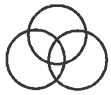
67. The missing character in the given number pattern is



(1) 64 (2) 125 (3) 512 (4) 343

68. The relationship among the three words in the question can best be represented by one of the four diagrams given below. Choose the correct answer.

Nitrogen, Ice, Air

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

69. A square transparent sheet with a pattern is given. Select the best answer, to how the pattern would appear when the transparent sheet is folded along the dotted line.

Fig. (X)

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

70. How many symbols are there in the given arrangement each of which is not immediately preceded by a digit but immediately followed by a letter?

4 2 @ + A P 5 > ÷ 6 < T M 4 L Z = 1 – 8 3 D * #

(1) None (2) One (3) Two (4) Three

THIS SEGMENT IS ONLY FOR PCB GROUP STUDENTS

71. Choose the incorrect option :

(1) Asexual reproduction occurs in fungi, yeast, hydra, planaria, amoeba etc.

(2) Solanum, Petunia & datura belongs to solanaceae family.

(3) Panthera has Leo, Felidae & Pardus, three species

(4) The higher the category, the least is the number of common character.

72. Taxonomy is the process of :

(1) Characterisation (2) Identification

(3) Nomenclature (4) All of the above

73. (I) Somatostatin is the inhibitory hormones.

(II) Oxytocin helps in milk ejection from mammary gland.

(III) Melatonin plays a very important role in the regulation of body rhythm.

(IV) Adrenaline & Nor-adrenaline are called catecholamines.

Choose the incorrect option for given statement

(1) IV is secreted by adrenal medulla

(2) III also influences metabolism

(3) II is secreted by posterior pituitary

(4) I is secreted by pituitary gland

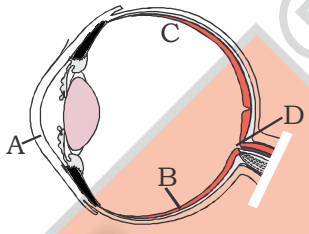
74. Choose the correct pair.

(1) Slime moulds — Gonyaulax

(2) Chrysophytes — Trypanosoma

(3) Sac fungi — Aspergillus

(4) Bacteriophage — ssDNA

75. 

Choose the correct option for A, B, C & D.

(1) A – it contains three layers of neural cell

(2) B – it continues backward to form iris

(3) C – watery fluid present between cornea & lens

(4) D – Photoreceptor cells are not present in this reason.

76. Which one of the following statement is wrong?

(1) Non-flagellated & anisogamous – spirogyra

(2) Natural system of classification – Bentham & Hooker

(3) Dictyota & Ectocarpus – Brown algae

(4) All of the above

77. Match the following :

(a) Spermatozoa	(i) store house of calcium ion
(b) Sarcoplasmic reticulum	(ii) 8th, 9th & 10th ribs.
(c) Vertebrochondral ribs	(iii) Flagellar movement
(d) Saddle joint	(iv) 9^{th}, 10^{th} & 11^{th} ribs
	(v) Between carpals & metacarpals of thumb
	(vi) Between the carpals

(1) (a-iii), (b-i), (c-ii), (d-iv)

(2) (a-iii), (b-i), (c-ii), (d-v)

(3) (a-iii), (b-iv), (c-vi), (d-i)

(4) (a-i), (b-iii), (c-ii), (d-v)

78. Which of the following component is not living?

(1) Xylem parenchyma

(2) Phloem fibres

(3) Companion cell

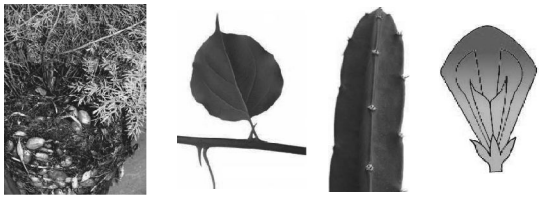
(4) Sieve tube

79. Which of the following is not found in sweat ?

(1) Uric acid (2) Ammonia

(3) Acetic acid (4) All of the above

80.



A B C D

Choose the incorrect statement for given figure.

(1) A – is the modification of root for storage of food.

(2) B – is the modification of stem for protection.

(3) C – is the modification of stem

(4) D – Vexillary Aestivation

81. (I) Platelets are cell fragments produced magakaryotes.

(II) Fibrinogen is active form of protein

(III) Atrium & ventricles of heart are separated by Inter ventricular septum.

(IV) SA Node is present in right upper corner of right atrium.

(V) Hepatic portal vein carries blood from liver to intestine.

Which one of the following statement are correct ?

(1) I & II (2) II & III (3) I & IV (4) IV & V

82. Choose the mismatch pair.

(1) Father of cytology – Robert hook

(2) Nucleus discovered by – Robert brown

(3) Ribosome – George Mendle

(4) Chromatin – Flemming

83. Oxygen dissociation curve shifts to right due to:

(1) $\uparrow CO_2$ (2) $\uparrow H^+$

(3) $\downarrow$ PH (4) All of the above

84. Cholesterol has :

(1) 3 Hexagonal ring +1 pentagonal ring.

(2) 3 Hexagonal ring +2 pentagonal ring

(3) 2 Hexagonal ring +2 pentagonal ring

(4) 1 Hexagonal ring +3 pentagonal ring

85. Choose the incorrect option.

	Parts of Alimentary canal	Digestion	Absorption
(1)	Mouth	30 % Hydrolysis of starch	Certain drugs
(2)	Stomach	Protein & some fat	Water, simple sugar & fat
(3)	Small intestine	Digestion complete	Principal organ for Absorption
(4)	Large intestine	No significant digestive activity	some water, minerals & certain drugs

86. DNA replication & centriole duplication occurs in :

(1) G_1 - phase (2) S-phase

(3) G_2 - phase (4) G_0-phase

87. Choose the correct statement for cockroach.

(1) It is unsegmented

(2) 1^{st} pairs of wings rises from metathorax

(3) Labrum is a upper lip

(4) All of the above

88. Which one of the following external factors is not affecting transpiration ?

(1) Temperature (2) Number of stomata

(3) Light (4) Wind speed

89. (I) Have bony endoskeleton with streamlined body.

(II) Skin is covered with cternoid scales

(III) Have four pair of gills which are covered by operculum on each side.

Given statement does not represent :

(1) Flying fish (2) Fighting fish

(3) Angle fish (4) Jelly fish

90. Match the following :

Column I	Column II
(a) Mg^{2+}	(i) activates alcohol dehydrogenase
(b) Fe^{2+}	(ii) PEP carboxylase
(c) Zn^{2+}	(iii) activates catalase

(1) (a-ii), (b-iii), (c-i) (2) (a-i), (b-ii), (c-iii)

(3) (a-ii), (b-i), (c-iii) (4) (a-i), (b-iii), (c-ii)

91. Choose the incorrect pair for leaf pigment.

(1) Chlorophyll 'a' – bright or blue green – Main pigment

(2) Chlorophyll 'b' – yellow green – Main pigment

(3) Xanthophylls – Yellow – Accessory pigment

(4) Carotenoids – Yellow to yellow orange

– Accessory pigment

92. Which one is not a part of aerobic respiration ?
(1) Kreb's cycle
(2) Alcoholic fermentation
(3) Lactic Acid fermentation
(4) Both (2) & (3)

93. (I) Affect plant growth & development.
(II) Antagonist to gibberellins.
(III) Plant growth inhibit & stimulates closure of stomata.
Given statement shows.
(1) ABA (2) IAA (3) IBA (4) NAA

94. Choose the incorrect statement.
(1) Phylogenetic classification is based on evolutionary sequence.
(2) Flower of canna is asymmetric
(3) Larva of echinodermata is radially symmetrical
(4) None of the above

95. Which one of the following is living fossil ?
(1) Limulus (2) King crab
(3) Ginkgo (4) All of the above

96. Which one is not an excretory organ ?
(1) Kidney (2) Skin
(3) Stomach (4) Liver

97. Choose the correct pair.
(1) 1 June – Doctors day
(2) Philosophic Zoologique – Lamarck
(3) Father of Biology – Theophrastus
(4) Hepatology – Blood

98. National Botanical Research institute is located in :
(1) Kolkata (2) Lucknow
(3) England (4) New Delhi

99. IC (Inspiratory capacity) is :
(1) IRV + TV (2) TV + ERV
(3) ERV + IRV (4) TV + ERV + IRV

100. Pseudounipolar neuron is present in :
(1) Retina
(2) Cerebral cortex
(3) Dorsal root ganglion
(4) All of the above

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71. Let S = set of points inside the square, T = the set of points inside the triangle and C = the set of the points inside the circle. If the triangles and circle, intersect each other and are contained in a square. Then
(1) $S \cup T \cap C = \phi$ (2) $S \cap T \cap C = \phi$
(3) $S \cup T \cup C = S$ (4) none of these

72. The domain of the function $f(x) = \frac{\sin^{-1}(x-3)}{\sqrt{9-x^2}}$ is
(1)] 2, 3] (2) [2, 3]
(3) [2, 3) (4) none of these

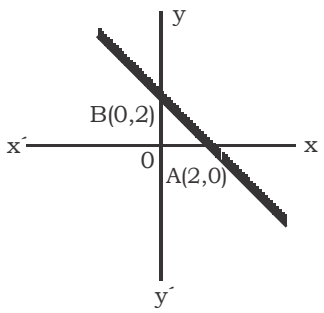
73. If two real numbers α and β satisfies $a\cos x + b\sin x = c$, then value of $\sin(\alpha+\beta)$ = ?
(1) $\frac{ab}{a^2+b^2}$ (2) $\frac{2ab}{a^2+b^2}$
(3) $\frac{2ab}{a^2-b^2}$ (4) None

74. If $n \in N$, then $7^{2n} + \left(2^{3n-3}\right)\left(3^{n-1}\right)$ is always divisible by
(1) 20 (2) 22
(3) 25 (4) None of these

75. If the complex number $z = x + iy$ satisfies the condition $|z + 1| = 1$, then z lies on
(1) circle with centre (–1, 0) and radius 1
(2) circle with centre (1, 0) and radius 1
(3) y-axis
(4) none of these

76. If α and β are imaginary cube root of unity then value of $\alpha^4 + \beta^4 + \alpha^{-1}\beta^{-1}$ =
(1) 0 (2) 1 (3) 2 (4) none

77. Which of the following linear inequalities satisfy the shaded region of the given figure



(1) $x + y < 2$ (2) $x + y > 2$
(3) $(x + y) \geq 2$ (4) None of these

78. If m parallel lines in plane are intersected by family of n parallel lines. The number of parallelogram is formed is

(1) $\frac{mn(m-1)(n-1)}{4}$ (2) $\frac{m(m-1)}{4}$

(3) $\frac{m(m-1)(n-1)}{4}$ (4) none of these

79. If in the expansion of $\left(\sqrt[3]{2}+\frac{1}{\sqrt[3]{3}}\right)^n$, the ratio of the seventh term from the beginning to the seventh term from the end is equal to $\frac{1}{6}$, then n is equal to

(1) 3 (2) 6

(3) 9 (4) none of these

80. If $a_1, a_2, a_3, \ldots\ldots a_n$ are n distinct odd numbers not divisible by any prime greater than 5. Then

$\frac{1}{a_1}+\frac{1}{a_2}+\ldots+\frac{1}{a_n}=$

(1) ≤ 1 (2) < 1

(3) < 2 (4) none of these

81. If two equations $ax^2 + 2xhy + by^2 = 0$ and $y^2 - (m_1 + m_2)xy + m_1m_2x^2 = 0$ represents the same curve then $m_1 + m_2 =$

(1) $\frac{2h}{b}$ (2) $-\frac{2h}{b}$

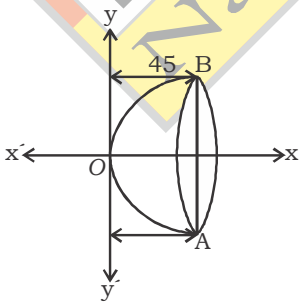
(3) $\frac{a}{b}$ (4) none of these

82. The distance of the line 4x–y=0 from the point P(4, 1) measured along the line making an angle of 135° with positive x-axis is—

(1) 3 units (2) 2 units

(3) $3\sqrt{2}$ units (4) none

83. The focus of a parabolic mirror as shown in the fig. is at a distance of 5 cm from its vertex. If the mirror is 45 m deep then distance AB =



(1) 46 cm (2) 64 cm

(3) 60 cm (4) none of these

84. If the eccentricity of the hyperbola $x^2 - y^2\sec^2\theta = 4$ is $\sqrt{3}$ times the eccentricity of the ellipse $x^2\sec^2\theta + y^2 = 16$, then the value of θ equals

(1) $\frac{\pi}{3}$ (2) $\frac{3\pi}{4}$ (3) $\frac{4\pi}{5}$ (4) none

85. If $f(x)=\begin{cases} x, & \text{when x is rational} \\ 1-x, & \text{when x is irrational} \end{cases}$ and $\lim_{x\to a} f(x)$ exists, then number of possible values of a is—

(1) 0 (2) 1

(3) 2 (4) none of these

86. The negation of the statement "A circle is an ellipse" is—

(1) an ellipse is root a circle

(2) an ellipse is a circle

(3) a circle is not a ellipse

(4) none of these

87. Let $x_1, x_2\ldots\ldots x_n$ be n observations and $\bar{x}$ be their arithmetic mean. The formula for the standard deviation is given by

(1) $\sqrt{\frac{\Sigma(x_i-\bar{x})^2}{n}}$ (2) $\sqrt{\frac{\Sigma(x_i-\bar{x})^2}{n^2}}$

(3) $\Sigma(x_i-\bar{x})^2$ (4) None of these

88. A coin is tossed three times.consider the following elements :

A : No head appears

B : Exactly one head appear

C : At least two heads appear.

Then, which is/are true ?

(1) A, B and C are exhaustive events

(2) A, B and C are pair-wise disjoint

(3) Both (1) and (2)

(4) None of these

89. If $\frac{\cos A}{3}=\frac{\cos B}{4}=\frac{1}{5}, -\frac{\pi}{2}<A<0, \frac{-\pi}{2}<B<0$, then value of 2sinA + 4sinB is—

(1) 4 (2) –2 (3) –4 (4) 0

90. If $f(x) = \sin\left[\log\left(\frac{\sqrt{4-x^2}}{1-x}\right)\right]$ then the domain of f is—

(1) $(-2, \infty)$ (2) $(-2, 1)$

(3) $[-2, 1]$ (4) $(-2, -1)$

91. If Z is a complex number such that Z + |Z| = 8 + 12i, then the value of $|z^2|$ is equal to

(1) 228 (2) 144 (3) 121 (4) 169

92. The first term of an infinite G.P. is 1 and each term is twice the sum of the succeeding terms, then the sum of the series is

(1) 2 (2) $\frac{5}{2}$ (3) $\frac{7}{2}$ (4) $\frac{3}{2}$

93. For different values of α, the locus of the point of intersection of the two straight lines $\sqrt{3}x - y - 4\sqrt{3}\alpha = 0$ and $\sqrt{3}\alpha x + \alpha y - 4\sqrt{3} = 0$ is

(1) a hyperbola with eccentricity $\sqrt{\frac{2}{3}}$

(2) an ellipse with eccentricity $\frac{3}{4}$

(3) a hyperbola with eccentricity 2

(4) a hyperbola with eccentricity $\sqrt{\frac{19}{16}}$

94. The ratio in which zx-plane divides the line segment AB joining the points A(4, 2, 3) and (–2, 4, 5) is equal to

(1) 1 : 2 internally (2) 1 : 2 externally

(3) –2 : 1 (4) none of these

95. If siny = x sin(a + y), then find $\frac{dy}{dx}$

(1) $\frac{\sin^2(a+y)}{\sin a}$ (2) $\frac{\sin a}{\sin^2(y+a)}$

(3) $\sin a.\sin^2(y-a)$ (4) $\frac{\sin^2(a-y)}{\sin a}$

96. Sum of coefficients of the last 6 terms in the expansion of $(1 + x)^{11}$ when the expansion is in ascending powers of x is :

(1) 2048 (2) 32 (3) 512 (4) 1024

97. Let a, b > 0 satisfy $a^3 + b^3 = a - b$, then

(1) $a^2 + b^2 > 1$ (2) $a^2 + b^2 < 0$

(3) $a^2 + b^2 = 1$ (4) $a^2 - ab + b^2 < 1$

98. If a variate takes values a, ar, ar^2.....ar^{n-1}, then which of the following relations between means hold ?

(1) A–H = G^2 (2) $\frac{A+H}{2} = G$

(3) A > G > H (4) A = G = H

99. If the centre, one of the foci and length of semi-major axis of an ellipse be (0, 0), (0, 3) and 5 respectively. Then its equation is—

(1) $\frac{x^2}{16} + \frac{y^2}{25} = 1$ (2) $\frac{x^2}{25} + \frac{y^2}{16} = 1$

(3) $\frac{x^2}{9} + \frac{y^2}{25} = 1$ (4) n

100. $\lim_{x\to 0} \frac{\sin x^n}{(\sin x)^m}, (m < n)$ is equal to

(1) 1 (2) 0 (3) $\frac{n}{m}$ (4) none

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1.	(2)	31.	(3)	61.	(3)	71.	(3)	71.	(3)
2.	(4)	32.	(2)	62.	(3)	72.	(4)	72.	(3)
3.	(1)	33.	(3)	63.	(4)	73.	(4)	73.	(2)
4.	(1)	34.	(2)	64.	(4)	74.	(3)	74.	(3)
5.	(1)	35.	(2)	65.	(2)	75.	(4)	75.	(1)
6.	(2)	36.	(1)	66.	(2)	76.	(1)	76.	(1)
7.	(1)	37.	(1)	67.	(3)	77.	(2)	77.	(3)
8.	(3)	38.	(2)	68.	(4)	78.	(2)	78.	(1)
9.	(2)	39.	(2)	69.	(2)	79.	(4)	79.	(3)
10.	(2)	40.	(4)	70.	(2)	80.	(3)	80.	(3)
11.	(1)	41.	(1)			81.	(3)	81.	(2)
12.	(4)	42.	(3)			82.	(3)	82.	(3)
13.	(1)	43.	(2)			83.	(4)	83.	(3)
14.	(2)	44.	(2)			84.	(1)	84.	(2)
15.	(1)	45.	(2)			85.	(2)	85.	(2)
16.	(2)	46.	(2)			86.	(2)	86.	(3)
17.	(3)	47.	(3)			87.	(3)	87.	(1)
18.	(4)	48.	(1)			88.	(2)	88.	(3)
19.	(1)	49.	(2)			89.	(4)	89.	(3)
20.	(3)	50.	(4)			90.	(1)	90.	(2)
21.	(3)	51.	(4)			91.	(2)	91.	(4)
22.	(1)	52.	(2)			92.	(4)	92.	(4)
23.	(3)	53.	(4)			93.	(1)	93.	(3)
24.	(4)	54.	(3)			94.	(3)	94.	(2)
25.	(2)	55.	(4)			95.	(4)	95.	(1)
26.	(3)	56.	(4)			96.	(3)	96.	(4)
27.	(1)	57.	(1)			97.	(2)	97.	(4)
28.	(2)	58.	(3)			98.	(2)	98.	(3)
29.	(4)	59.	(2)			99.	(1)	99.	(1)
30.	(2)	60.	(2)			100.	(3)	100.	(2)

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