

Reg. No.

Name : _____

Time allowed : 3 hours

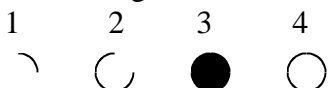
Maximum Marks : 200

Please read the instructions in Question Booklet before answering the question paper.

INSTRUCTIONS

- (i) The question paper has '20' printed pages. Please ensure that the copy of the question paper you have received contains all pages.
- (ii) Before starting the paper, fill up the required details in the blank space provided in the answer sheet.
- (iii) Write your name and Seven digit **Reg. No.** in the space provided at the top of this booklet.
- (iv) The question paper consists of '100' objective type questions. Each question carry **2 marks** and all of them are compulsory.
- (v) Each question contains four alternatives out of which only **ONE** is correct.
- (vi) There is **NEGATIVE** marking. For each wrong answer **0.5** mark will be deducted.
- (vii) Indicate the correct answer for each question by filling appropriate bubble in your answer sheet.
- (viii) Use only HB pencil for darkening the bubble.
- (ix) For rough work, use the space provided at the bottom of each page. No extra sheet will be provided for rough work and you are not supposed to bring the same.
- (x) Use of **blank papers, clip boards, log tables, calculator, slide rule, mobile** or any other **electronic gadgets** in any form is "**NOT PERMISSIBLE**".
- (xi) You must not carry mobile phone even if you have the same, give it to your Invigilator before commencement of the test and take it back from him/her at 2 pm, after the exam.
- (xii) The Answer Sheet will be checked through computer hence the answer of the questions must be marked by shading the circles against the question by dark HB pencil only.

For example if only 'C' choice is correct then, the correct method for filling the bubble is



the wrong method for filling the bubble are

- | | | | | | |
|-----|---|---|---|---|--------------------------|
| (a) | 1 | 2 | 3 | 4 | |
| | ○ | ○ | ☑ | ○ | Tick Mark |
| (b) | 1 | 2 | 3 | 4 | |
| | ○ | ○ | ⊗ | ○ | Cross Mark |
| (c) | 1 | 2 | 3 | 4 | |
| | ○ | ○ | ◐ | ○ | Half filled or Semi Dark |

The answer of the questions in wrong or any other manner will be treated as wrong.

Q.1 A wire of resistance R is elongated n-fold to make a new uniform wire. The resistance of new wire

- (1) nR (2) n²R
(3) 2nR (4) 2n²R

Q.2 The value of solar constant is:

- (1) 1.4 KJ (2) 1.4 KJ / sec
(3) 1.4 sec (4) 1.4 kw/m²

Q.3 If a lens of glass is immersed in water. The power of the lens

- (1) Increases (2) Decreases
(3) Remains same (4) Data Insufficient

Q.4 A convex lens is placed in a medium in which it behaves as an ordinary plate. What is the refractive index of the medium relative to the lens

- (1) 1 (2) less than 1
(3) greater than 1 (4) Both (2) and (3)

Q.5 For the same angle of incidence, the angles of Refraction in media P, Q, R are 35°, 25°, 15° respectively. The medium in which velocity of light is minimum is

- (1) P (2) R
(3) Q (4) Can't be Determined

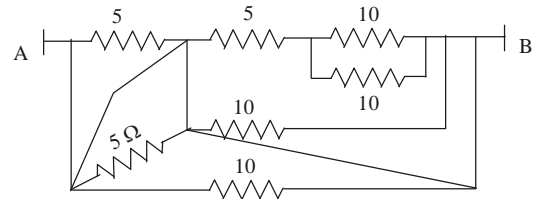
Q.6 The Image of a small Painting fixed on the wall of a room is to be obtained on the opposite wall 4m away by means of a large convex lens. The maximum possible focal length of the lens required for the purpose is :

- (1) 1m (2) 2m
(3) 3/4 m (4) 4/3m

Q.7 When we move in the direction of electric field, then the potential:

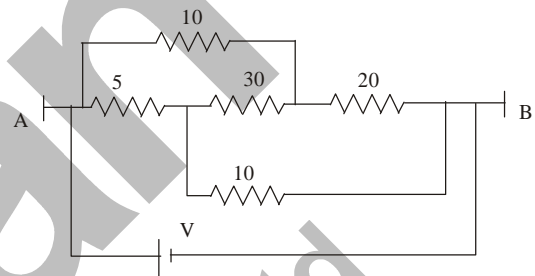
- (1) increases
(2) decreases
(3) first increases than decreases
(4) first decreases than increases

Q.8 Calculate the equivalent resistance between A and B.



- (1) 5 Ω (2) 10 Ω
(3) zero (4) none of these

Q.9 Find the potential difference across the 20 Ω resistor.



- (1) zero (2) $\frac{2V}{3}$
(3) $\frac{V}{3}$ (4) $\frac{V}{2}$

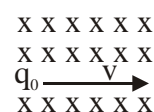
Q.10 If a 0.1% length is increased due to stretching, then the percentage increase in its resistance will be

- (1) 0.2% (2) 2%
(3) 1% (4) 0.1%

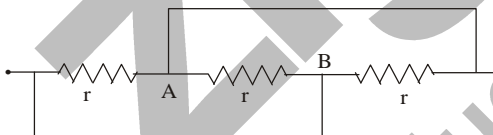
Q.11 There are two electric bulbs of 40 W and 100 W. Which one will glow brighter when first connected in series and then in parallel?

- (1) 40 W in series and 100 W in parallel
(2) 100 W in series and 40 W in parallel
(3) 40 W both in series and parallel will be uniform
(4) 100 W both in series and parallel will be uniform

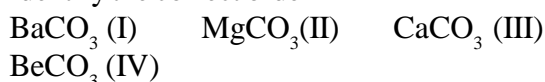
Q.12 A positive charge enters a uniform magnetic field as shown. What is the direction of the magnetic force?



- (1) Out of the page (2) Into the page
(3) Downwards (4) Upward

- Q.13 A proton enters a magnetic field of flux density 1.5 wb/m^2 with a speed of $2 \times 10^7 \text{ m/s}$ at an angle of 30° with the field. The force on a proton will be
 (1) $0.24 \times 10^{-12} \text{ N}$ (2) $2.4 \times 10^{-12} \text{ N}$
 (3) $24 \times 10^{-12} \text{ N}$ (4) $0.024 \times 10^{-12} \text{ N}$
- Q.14 The path of a charged particle moving in a magnetic field can be a
 (1) straight line (2) circle
 (3) helix (4) all of these
- Q.15 A magnetic needle kept in a non-uniform magnetic field experiences
 (1) a force and torque
 (2) a force but not a torque
 (3) a torque but not a force
 (4) Neither a torque nor a force
- Q.16 By mistake a voltmeter is connected in series and an ammeter is connected in parallel with a resistance in an electrical circuit. What will happen to the instruments?
 (1) Voltmeter is damaged
 (2) Ammeter is damaged
 (3) Both are damaged
 (4) None are damaged
- Q.17 Three resistors each having resistance r are connected as shown in figure. The equivalent resistance between points A and B is

 (1) r (2) $3r$
 (3) $\frac{r}{3}$ (4) $\frac{2}{3}r$
- Q.18 Two plane mirrors are inclined to each other at an angle of $Q = 70^\circ$. A ray of light falls at some angle i on the mirror M_1 . After Reflection from M_1 it Strikes on mirror M_2 , From which it gets reflected along a direction parallel to the plane of mirror M_1 . Then the value of angle i is:
 (1) 50° (2) 40°
 (3) 140° (4) 70°
- Q.19 If $\mu_g = 3/2, \mu_w = 4/3$ then the value of μ_{gw} is
 (1) $8/9$ (2) $3/4$
 (3) $9/8$ (4) 2
- Q.20 What is the rise in position of an object below a rectangular block of glass 6 cm thick and having a layer of water 4 cm thick on the top of the glass ($\mu_g = 3/2, \mu_w = 4/3$)
 (1) 3cm (2) 4 cm
 (3) 7 cm (4) 6 cm
- Q.21 NaNO_3 on heating gives—
 (1) $\text{O}_2 + \text{NaNO}_2$ (2) NO_2
 (3) $\text{O}_2 + \text{NO}_2$ (4) None of these
- Q.22 Which does not exist in solid state—
 (1) LiHCO_3 (2) CaCO_3
 (3) NaHCO_3 (4) Na_2CO_3
- Q.23 Crude common salt is hygroscopic because of impurities of—
 (1) CaSO_4 and MgSO_4
 (2) CaCl_2 and MgCl_2
 (3) CaBr_2 and MgBr_2
 (4) $\text{Ca}(\text{HCO}_3)_2$ and $\text{Mg}(\text{HCO}_3)_2$
- Q.24 Dolomite is—
 (1) $\text{KCl} \cdot \text{MgCl}_2 \cdot 6\text{H}_2\text{O}$
 (2) $\text{CaCO}_3 \cdot \text{MgCO}_3$
 (3) $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$
 (4) $\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$
- Q.25 Which of the following hydrides is not ionic—
 (1) CaH_2 (2) BaH_2
 (3) SrH_2 (4) BeH_2
- Q.26 Which of the following is an amphoteric oxide—
 (1) CaO (2) SrO
 (3) BeO (4) MgO
- Q.27 Both temporary and permanent hardness is removed on boiling water with—
 (1) $\text{Ca}(\text{OH})_2$ (2) Na_2CO_3
 (3) CaCO_3 (4) CaO
- Q.28 The pair whose both species are used in anti-acid medicinal preparations is—
 (1) NaHCO_3 and $\text{Mg}(\text{OH})_2$
 (2) Na_2CO_3 and $\text{Ca}(\text{HCO}_3)_2$
 (3) $\text{Ca}(\text{HCO}_3)_2$ and $\text{Mg}(\text{OH})_2$
 (4) $\text{Ca}(\text{OH})_2$ and NaHCO_3

Q.29 The following compounds have been arranged in order of their increasing thermal stabilities. Identify the correct order—



- (1) I < II < III < IV (2) IV < II < III < I
(3) IV < II < I < III (4) II < IV < III < I

Q.30 On passing excess of CO₂ in lime water, its milky appearance disappears because—

- (1) Soluble Ca(OH)₂ is formed
(2) Soluble Ca(HCO₃)₂ is formed
(3) Reaction becomes reversible
(4) Calcium compound evaporated

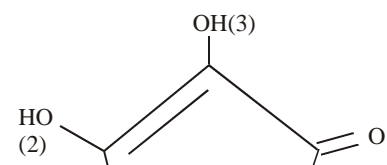
Q.31 Lithium is the only alkali metal is not placed in kerosene but is wrapped in paraffin wax, because—

- (1) It reacts with kerosene
(2) It floats to the surface of kerosene because of low density
(3) It does not react with air and H₂O
(4) None of these

Q.32 The IUPAC name of



- (1) 4-hydroxy-2-pentanone
(2) 2-hydroxy-4-pentanone
(3) 2-oxo-4-pentanol
(4) 4-keto-2-pentanol



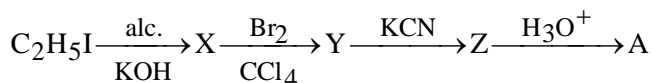
Q.33



Arrange the hydrogens in the decreasing order of acidity.

- (1) 1 > 2 > 3 > 4
(2) 4 > 3 > 2 > 1
(3) 2 > 3 > 1 > 4
(4) 2 > 3 > 4 > 1

Q.34 The acid produced (A) in the sequence given below is



- (1) succinic acid
(2) malonic acid
(3) oxalic acid
(4) maleic acid

Q.35 Which of the following compounds is isomeric with 2, 2, 4, 4-tetramethylhexane?

- (1) 3-Ethyl-2, 2-dimethylpentane
(2) 4-Isopropylheptane
(3) 4-Ethyl-3-methyl-4-(n-propyl)octane
(4) 4, 4-diethyl-3-methylheptane

Q.36 In the reaction, R-OH + HX → RX + H₂O the reactivity of alcohols is in the order

- (1) tertiary > secondary > primary
(2) tertiary < secondary < primary
(3) tertiary > primary > secondary
(4) secondary > primary > tertiary

Q.37 Arrange the following compounds in increasing order of boiling point:

- (1) Propan-1-ol, butan-2-ol, butan-1-ol, pentan-1-ol
(2) Propan-1-ol, butan-1-ol, butan-2-ol, pentan-1-ol
(3) Pentan-1-ol, butan-2-ol, butan-1-ol, propan-1-ol
(4) Pentan-1-ol, butan-1-ol, butan-2-ol, propan-1-ol

Q.38 The strongest acid amongst the following is

- (1) CH₃COOH (2) F₃CCOOH
(3) Cl₃CCOOH (4) Br₃CCOOH

Q.39 Ratio of σ and π bond in benzene is—

- (1) 4 : 1 (2) 1 : 4
(c) 2 : 1 (4) 1 : 2

Q.40 Which of the following statement is correct for F₃C – CF₂ – CF₃ ?

- (1) All C–F bond lengths are identical
(2) Two C–F bond attached to middle carbon atom are longer as compared to the other C–F bond at the terminal carbon
(3) Two C–F bond attached to the middle carbon atom are shorter as compared to the other C–F bond at the terminal carbon.
(4) None of these

Q.41 If $2^x = 3^y = 72^z$, then $z =$ _____.

(1) $\frac{xy}{3x+2y}$ (2) $\frac{xy}{8x+9y}$

(3) $\frac{xy}{2x+3y}$ (4) $\frac{xy}{9x+8y}$

Q.42 A number when divides 206, 368 and 449 leaves the same remainder in each case. What is the largest such number?

- (1) 32 (2) 48
(3) 81 (4) 96

Q.43 What is the last digit of the number equal to the sum $1 + 6 + 6^2 + \dots + 6^{100}$?

- (1) 0 (2) 1
(3) 2 (4) 6

Q.44 The quadratic equation $ax^2 + bx + c = 0$ has real roots α and β . If a, b, c real and of the same sign, then

- (1) α and β are both positive
(2) α and β are both negative
(3) α and β are of opposite sign
(4) Nothing can be said about the signs of α and β as the information is insufficient

Q.45 The sum of all roots of the equations $|x - 1|^2 - 5|x - 1| + 6 = 0$ is:

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

Q.46 If $y = \frac{x^2 - 2x + 4}{x^2 + 2x + 4}$ where x can take real values, then

- (1) $\frac{1}{3} \leq y \leq 3$ (2) $3 < y \leq 5$
(3) $5 < y \leq 7$ (4) $7 < y \leq 9$

Q.47 If $\sin x + \sin^2 x = 1$, then the value of $\cos^{12}x + 3 \cos^{10}x + 3 \cos^8 x + \cos^6 x - 1$ is

- (1) -1 (2) 0 (3) 1 (4) 2

Q.48 If in an equilateral triangle, 3 coins of radii 1 unit each are kept so that they touch each other and also the sides of the triangle, then the area of the triangle is:

- (1) $4 + 2\sqrt{3}$ (2) $6 + 4\sqrt{3}$
(3) $12 + \frac{7\sqrt{3}}{4}$ (4) $3 + \frac{7\sqrt{3}}{4}$

Q.49 If the vertices of a triangle be (2, 1), (5, 2) and (3, 4) then its circumcenter is:

(1) $\left(\frac{13}{2}, \frac{9}{2}\right)$ (2) $\left(\frac{13}{4}, \frac{9}{4}\right)$

(3) $\left(\frac{9}{4}, \frac{13}{4}\right)$ (4) None of these

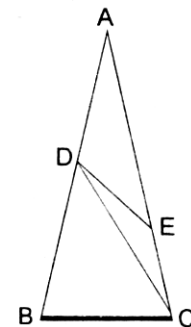
Q.50 If a_1, a_2, a_3, \dots are in A.P. such that $a_1 + a_5 + a_{10} + a_{15} + a_{20} + a_{24} = 225$ then $a_1 + a_2 + a_3 + \dots + a_{23} + a_{24}$ is equal to

- (1) 909 (2) 75
(3) 750 (4) 900

Q.51 The roots of the equation $x^2 - 2x + A = 0$ are p, q and the roots of the equation $x^2 - 18x + B = 0$ are r, s. If $p < q < r < s$ are in A.P. then

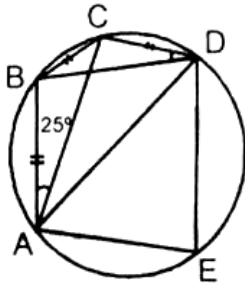
- (1) $A = 3, B = 77$
(2) $A = -3, B = 77$
(3) $A = 3, B = -77$
(4) $A = -3, B = -7$

Q.52 In the figure below $AB = AC$ and $\angle BAC = 20^\circ$. The points D on AB and E on AC are such that $AD = DE = EC$. Then $\angle BDC$ equals:



- (1) 10° (2) 20°
(3) 30° (4) 80°

Q.53 In the given figure $AB = BC = CD$, If $\angle BAC = 25^\circ$, then value of $\angle AED$ is:



- (1) 50° (2) 60°
 (3) 65° (4) 75°

Q.54 Two circles touch internally. the sum of their areas is 116π sq cm and distance between their centres is 6 cm. The radii of the circles are
 (1) 10 cm, 4 cm (2) 10 cm, 2 cm
 (3) 2 cm, 12 cm (4) None of these

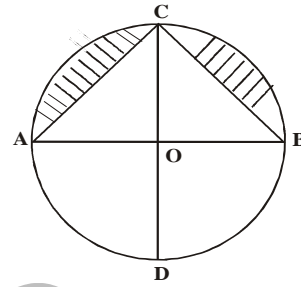
Q.55 A 4cm cube is cut into 1 cm cubes. What is the percentage increase in the surface area after such cutting?
 (1) 4% (2) 300%
 (3) 75% (4) 400%

Q.56 A cylinder of radius 6 cm and height h cm is filled with ice cream. The ice cream is then distributed among 10 children in identical cones having hemispherical tops. The radius of the base of the cone is 3 cm and its height is 12 cm. Then the height h of the cylinder must be :
 (1) $100/7$ cm (2) 18 cm
 (3) 15 cm (4) $200/11$ cm

Q.57 In a single throw of a pair of dice, the probability of getting the sum a perfect square is
 (1) $\frac{1}{18}$ (2) $\frac{7}{36}$
 (3) $\frac{1}{6}$ (4) $\frac{2}{9}$

Q.58 If one root of $x^2 - px + q = 0$ is the n^{th} power of the other root, then $\frac{1}{q^{n+1}} + \frac{n}{q^{n+1}}$ is equal to
 (1) $-p$ (2) q
 (3) $-q$ (4) p

Q.59 The area of the shaded region in the figure, given that AB and CD are perpendicular diameters of the circle (in square units) and the radius of the circle is a units.



- (1) $\frac{a^2}{2} \left(\frac{\pi}{2} - 1 \right)$ (2) $a^2(\pi - 1)$
 (3) $a^2 \left(\frac{\pi}{2} - 1 \right)$ (4) $\frac{a^2}{2}(\pi - 1)$

Q.60 The volume of the greatest sphere that can be cut off from a cylindrical log of wood of base radius 1 cm and height 5 cm is

- (1) $\frac{4}{3}\pi$ (2) $\frac{10}{3}\pi$
 (3) 5π (4) $\frac{20}{3}\pi$

Q.61 What can be said about the expansion of $212n - 64n$, where n is a positive integer?

- (1) Last digit is 4
 (2) Last digit is 8
 (3) Last digit is 2
 (4) Last two digits are zero

Q.62 Real numbers a, b, c satisfy the equation

$$a + b + c = 26, \frac{1}{a} + \frac{1}{b} + \frac{1}{c} = 28$$

then value of $\frac{a}{b} + \frac{b}{c} + \frac{c}{a} + \frac{a}{c} + \frac{c}{b} + \frac{b}{a}$ is

- (1) 725 (2) 625
 (3) 525 (4) 425

Q.63 If lengths of medians of a triangle are 12 cm, 5 cm and 13 cm, then area of triangle is:

- (1) 30 cm^2 (2) 40 cm^2
 (3) 50 cm^2 (4) None of these

Q.64 What is the sum of the digits of the number from the product $2^{1999} \times 5^{2001}$

- (1) 4 (2) 7
 (3) 5 (4) 8

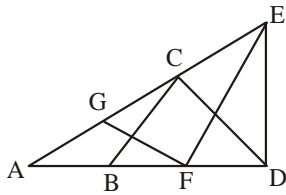
Q.65 Let

$$x = \frac{4}{\left(5^{\frac{1}{2}} + 1\right) \cdot \left(5^{\frac{1}{4}} + 1\right) \cdot \left(5^{\frac{1}{8}} + 1\right) \cdot \left(5^{\frac{1}{16}} + 1\right)}$$

then $(x + 1)^{48}$ is:

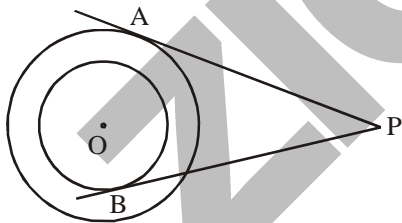
- (1) 25 (2) 125
(3) 625 (4) 5

Q.66 In the figure, $AB = BC = CD = DE = EF = FG = GA$, then $\angle DAE$ is equal to:



- (1) 24° (2) 20°
(3) 27° (4) None of these

Q.67 In figure, there are two concentric circle with centre O and of radii 5 cm and 3 cm. From an external point P, tangents PA and PB are drawn to these circles. If $AP = 12$ cm, find the length of BP.



- (1) $4\sqrt{10}$ cm (2) $2\sqrt{10}$ cm
(3) $\sqrt{10}$ cm (4) $3\sqrt{10}$ cm

Q.68 The sums of n terms of two arithmetic series are in the ratio $2n + 3 : 6n + 5$, then the ratio of their 13th terms is

- (1) 53 : 155 (2) 27 : 77
(3) 29 : 83 (4) 31 : 89

Q.69 Let the sequence $a_1, a_2, a_3, \dots, a_{2n}$ form an A.P. Then

$$a_1^2 - a_2^2 + a_3^2 - \dots + a_{2n-1}^2 - a_{2n}^2 =$$

- (1) $\frac{n}{2n-1}(a_1^2 - a_{2n}^2)$ (2) $\frac{2n}{n-1}(a_{2n}^2 - a_1^2)$

- (3) $\frac{n}{n+1}(a_1^2 + a_{2n}^2)$ (4) None of these

Q.70 Simplify

$$\frac{1}{\sqrt{1} + \sqrt{3}} + \frac{1}{\sqrt{3} + \sqrt{5}} + \frac{1}{\sqrt{5} + \sqrt{7}} + \dots \text{ up to } 50 \text{ terms.}$$

- (1) $\frac{\sqrt{101} - 1}{2}$ (2) $\sqrt{109} - \sqrt{99}$

- (3) $1 - \frac{1}{\sqrt{101}}$ (4) None of these

Q.71 Resting membrane potential in neuron is maintained by

- (1) Hormones (2) Neurotransmitters
(3) Ion pumps (4) None of the above

Q.72 The function of our visceral organs is controlled by

- (1) Sympathetic and somatic neural system
(2) Sympathetic and para sympathetic neural system
(3) Central and somatic nervous system
(4) None of the above

Q.73 Which of the following is not involved in Knee-jerk reflex?

- (1) Muscle spindle (2) Motor neuron
(3) Brain (4) Inter neurons

Q.74 Listed below are the hormones of anterior pituitary origin. Tick the wrong entry.

- (1) Growth hormone
(2) Follicle stimulating hormone
(3) Oxytocin
(4) Adrenocorticotrophic hormone

Q.75 Mary is about to face an interview. But during the first five minutes before the interview she experiences sweating, increased rate of heart beat, respiration etc. Which hormone is responsible for her restlessness?

- (1) Estrogen and progesterone
(2) Oxytocin and vasopressin
(3) Adrenaline and noradrenaline
(4) Insulin and glucagon

- Q.76 The steroid responsible for balance of water and electrolytes in our body is
 (1) Insulin (2) Melatonin
 (3) Testosterone (4) Aldosterone
- Q.77 Heart pumps blood more forcefully in older persons than younger ones due to
 (1) Decrease in oxygen content of blood
 (2) Decrease in elasticity of arteries
 (3) Fall in nutrient content of blood
 (4) Increase in elasticity of arteries.
- Q.78 Which one of the following is a matching pair?
 (1) Lubb - sharp closure of AV valves at the beginning of ventricular systole
 (2) Dup - sudden opening of semilunar valves at the beginning of ventricular diastole
 (3) Pulsation of the radial artery - valves in the blood vessels
 (4) Initiation of the heart beat - Purkinje fibres
- Q.79 We can produce a concentrated/ dilute urine. This is facilitated by a special mechanism. Identify the mechanism.
 (1) Reabsorption from PCT
 (2) Reabsorption from Collecting
 (3) Reabsorption/ Secretion in DCT
 (4) Counter current mechanism in Henle's loop/ Vasa recta
- Q.80 Dialyzing unit (artificial kidney) contains a fluid which is almost same as plasma except that it has
 (1) High glucose (2) High urea
 (3) No urea (4) High uric acid
- Q.81 The following substances are the excretory products in animals. Choose the least toxic form among them?
 (1) Urea (2) Uric acid
 (3) Ammonia (4) Carbon dioxide
- Q.82 Filtration of the blood takes place at
 (1) PCT (2) DCT
 (3) Collecting ducts (4) Malpighian body
- Q.83 Read the given statements and select the correct option.
Statement-1: Respiration is most efficient in the insects.
Statement-2: In the insects, air is carried directly to the cells by tracheoles.
 (1) Both statements I and 2 are correct and statement 2 is the correct explanation of statement I.
 (2) Both statements I and 2 are correct but statement 2 is not the correct explanation of statement I.
 (3) Statement I is correct and statement 2 is incorrect.
 (4) Both statements 1 and 2 are incorrect.
- Q.84 After taking a long deep breath we do not respire for some seconds due to
 (1) More CO₂ in blood
 (2) more O₂ in blood
 (3) less CO₂ in blood
 (4) Less O₂ in blood
- Q.85 The toxic effect of carbon monoxide is due to its greater affinity for haemoglobin as compared to oxygen approximately by
 (1) 200 times (2) 1000 times
 (3) 2 times (4) 20 times
- Direction (Q.86 and 87) : Find the missing term in the series.**
- Q.86 $11\frac{1}{9}, 12\frac{1}{2}, 14\frac{2}{7}, 16\frac{2}{3} ?$
 (1) $8\frac{1}{3}$ (2) $19\frac{1}{2}$
 (3) 20 (4) $22\frac{1}{3}$
- Q.87

3	4	12	45	196
2	(a)	(b)	(c)	(d)

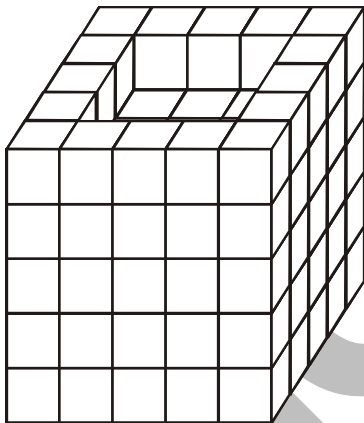
 Which number can replace (d) ?
 (1) 168 (2) 172
 (3) 184 (4) 190
- Q.88 Choose the wrong term out of the given alternatives.
 84, 103, 120, 135, 145, 159, 168, 175
 (1) 135 (2) 145
 (3) 159 (4) 168

Q.89 In the following questions, a matrix of certain characters is given. These characters follow a certain trend, row-wise or column-wise. Find out this trend and choose the missing character from the given alternative

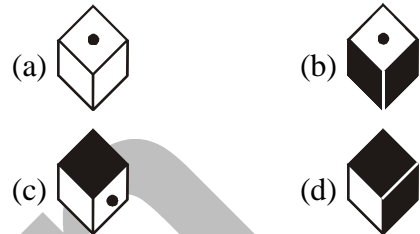
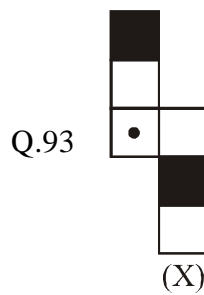
5	9	8	7
8	6	9	10
7	13	?	19
5	7	8	9

- (1) 9 (2) 10
(3) 12 (4) 15

Directions (Q.90 to Q.91) : Some equal cubes are arranged in the form of a solid block as shown in the adjoining figure. All the visible surfaces of the block (except bottom) are then painted.

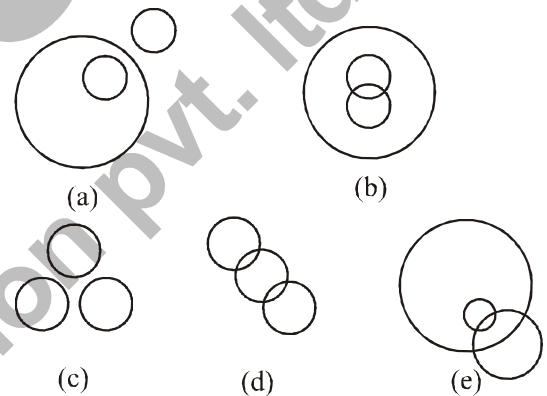


- Q.90 How many cubes do not have any of the faces painted?
(1) 27 (2) 32
(3) 36 (4) 40
- Q.91 How many cubes have only three faces painted?
(1) 4 (2) 12
(3) 16 (4) 20
- Q.92 In a group of 15 people, 7 read French, 8 read English while 3 of them read none of these two. How many of them read French and English Both.
(1) 0 (2) 3
(3) 4 (4) 5



- (1) a only (2) a and c only
(3) b and c only (4) a, b, c and d

Q.94 Which is the most suitable Venn Diagram among the following, which represents interrelationship for the given questions?



Social workers, Alcoholics, Tetotallers
(1) a (2) b
(3) c (4) d

- Q.95 A bowl of sweets was placed on a table to be distributed among three brothers – Rajan, Sajal and Karan. Rajan arrived first and ate what he thought was his share of sweets and left. Then, Sajal arrived. He thought that he was the first one to arrive and ate the number of sweets, he thought was his share and left. Lastly, Karan arrived. He again thought he was the first to arrive and he took what he thought was his share. If 16 sweets are left in the bowl finally, how many sweets did the bowl contain initially?
(1) 27 (2) 36
(3) 48 (4) 54

Q.96 A player holds 13 cards of four suits, of which seven are black and six are red. There are twice as many diamonds as spades and twice as many hearts as diamonds. How many clubs does he hold?

- (1) 4 (2) 5
(3) 6 (4) 7

Q.97 Statements : All trains are buses. No room is bus. All boats are rooms.

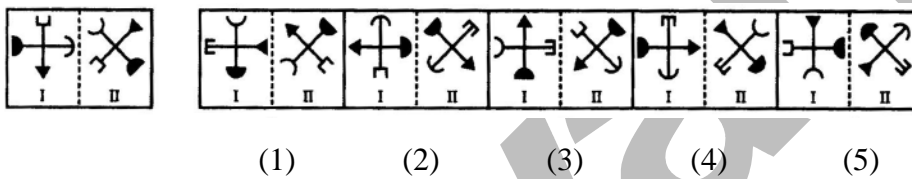
Conclusions : I. No boat is train.

II. No bus is boat.

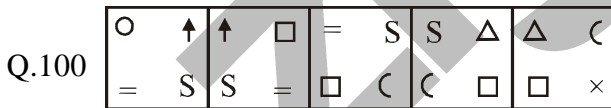
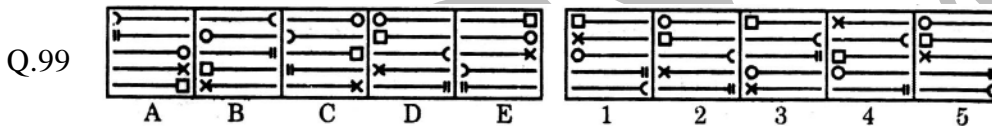
III. No train is room.

- (1) None follows
(2) Only I and II follow
(3) Only II and III follow
(4) All follow

Q.98 Out of the five numbered pairs select the pair that has a relationship similar to that in the unnumbered pair.



Direction (Q.99 & Q.100) : Select the figure which will continue the series established by the problem figures.



- (1)

×	△
★	□

 (2)

×	△
⊂	★

 (3)

⊂	★
×	△

 (4)

⊂	○
×	□

ANSWER KEY

PHYSICS

Q.1	B	Q.2	D	Q.3	B	Q.4	A	Q.5	B	Q.6	A	Q.7	A
Q.8	C	Q.9	B	Q.10	A	Q.11	A	Q.12	D	Q.13	B	Q.14	D
Q.15	A	Q.16	B	Q.17	C	Q.18	B	Q.19	C	Q.20	A		

CHEMISTRY

Q.21	A	Q.22	A	Q.23	B	Q.24	B	Q.25	D	Q.26	C	Q.27	B
Q.28	A	Q.29	B	Q.30	B	Q.31	B	Q.32	A	Q.33	C	Q.34	A
Q.35	B	Q.36	A	Q.37	A	Q.38	B	Q.39	A	Q.40	B		

MATHEMATICS

Q.41	C	Q.42	C	Q.43	A	Q.44	B	Q.45	B	Q.46	A	Q.47	B
Q.48	B	Q.49	B	Q.50	D	Q.51	B	Q.52	C	Q.53	D	Q.54	A
Q.55	B	Q.56	C	Q.57	B	Q.58	D	Q.59	C	Q.60	A	Q.61	D
Q.62	A	Q.63	B	Q.64	B	Q.65	B	Q.66	D	Q.67	A	Q.68	A
Q.69	A	Q.70	A										

BIOLOGY

Q.71	C	Q.72	B	Q.73	C	Q.74	C	Q.75	C	Q.76	D	Q.77	B
Q.78	D	Q.79	D	Q.80	C	Q.81	B	Q.82	D	Q.83	A	Q.84	C
Q.85	A												

MENTAL ABILITY

Q.86	3	Q.87	2	Q.88	2	Q.89	4	Q.90	1	Q.91	3	Q.92	2
Q.93	2	Q.94	4	Q.95	4	Q.96	3	Q.97	4	Q.98	2	Q.99	1
Q.100	4												