

SAMPLE PAPER

Class : X

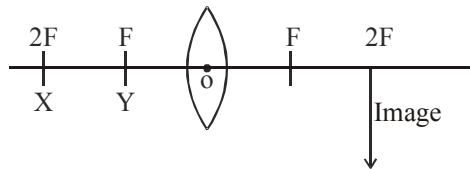
Time allowed : 2 hours

Maximum Marks : 240

GENERAL INSTRUCTIONS

- The question paper consists of '60' objective type questions. Each question carry 4 marks and all of them are compulsory.
- Each question contains four alternatives out of which only **ONE** is correct.
- There is **NEGATIVE** marking. **1 mark** will be deducted for each wrong answer.

- Q.1 To produce an image by a convex lens, in the position shown (see figure) the object would have to be placed.



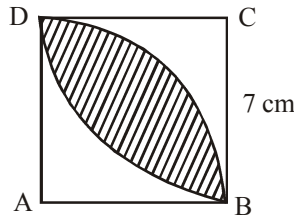
- (A) Between Y and O
(B) At Y
(C) Between X and Y
(D) At X
- Q.2 Which of the following is correct?
 (A) $\lambda_{\text{visible}} > \lambda_{\text{x-ray}} > \lambda_{\text{infrared}}$
 (B) $\lambda_{\text{x-ray}} > \lambda_{\text{infrared}} > \lambda_{\text{visible}}$
 (C) $\lambda_{\text{infrared}} > \lambda_{\text{visible}} > \lambda_{\text{x-ray}}$
 (D) $\lambda_{\text{x-ray}} > \lambda_{\text{visible}} > \lambda_{\text{infrared}}$
- Q.3 Three equal resistors connected in series across a source of e.m.f. together dissipate 10 watt. If the same resistors are connected in parallel across the same e.m.f., then the power dissipated will be:
 (A) 10 watt (B) 30 watt (C) 10/3 watt (D) 90 watt
- Q.4 A body of mass 'm' kg starts from rest and travels a distance of 's' m in 't' seconds. The constant force acting on it is :
 (A) $\frac{2ms}{t^2}$ N (B) $\frac{ms}{t}$ N (C) $\frac{ms^2}{2t}$ N (D) $\frac{ms^2}{t}$ N
- Q.5 A ball is released from the top of a tower of height h metres. It takes T seconds to reach the ground. What is the position of the ball in T/3 seconds/?
 (A) (h/9)metre above the ground. (B) (7/h) metre above the ground
 (C) (8h/9) metre above the ground (D) (17h/18) metre above the ground

- Q.6 A body of mass 6 kg is under a force which causes displacement in it given by $S = \frac{t^2}{4} m$. The work done by the force in 0 to 2s is
 (A) 12 J (B) 9 J (C) 6 J (D) 3 J
- Q.7 When a composite light wave passes through a medium other than vacuum:
 (A) the speed of higher frequency is greater than the speed of lower frequency
 (B) the speeds of all component frequencies in the medium are equal
 (C) the speed of higher frequency is less than the speed of lower frequency
 (D) the speeds of all frequencies are greater than those in vacuum.
- Q.8 A proton is given with a velocity $4 \times 10^5 \text{ ms}^{-1}$ in a uniform magnetic field of 0.3 T. Find the kinetic energy of proton after 3 sec.
 (A) $1.44 \times 10^{-16} \text{ J}$ (B) $1.28 \times 10^{-16} \text{ J}$ (C) $1.24 \times 10^{-12} \text{ J}$ (D) $1.28 \times 10^{-13} \text{ J}$
- Q.9 44 grams of CO_2 contains
 (A) 2 moles of oxygen atoms (B) 1 mole of oxygen atom
 (C) 1.5 moles of oxygen atoms (D) 2 moles of oxygen molecules
- Q.10 Which of the following sets of quantum numbers represents electron in hydrogen atom?
 (A) 1, 1, 0, $+\frac{1}{2}$ (B) 1, 0, 0, $+\frac{1}{2}$ (C) 3, 0, 0, $-\frac{1}{2}$ (D) 4, 2, 1, $-\frac{1}{2}$
- Q.11 Predict the powerful oxidizing agent in 3rd period
 (A) Sulphur (B) Sodium (C) Chlorine (D) Bromine
- Q.12 The number of valence electrons that can be present in the second element in any period is
 (A) 1 (B) 2 (C) 5 (D) 7
- Q.13 Which of the following statements is wrong?
 (A) KCl is soluble in water
 (B) HCl conducts electricity in its aqueous solution
 (C) Acetic acid is soluble in water
 (D) The bond formed between aluminium and fluorine is covalent
- Q.14 The number of sigma (σ) and pi (π) bonds in benzene are
 (A) 6σ and 3π bonds (B) 12σ and 3π bonds
 (C) 9σ and 3π bonds (D) 6σ and 6π bonds
- Q.15 Electrolysis of aqueous CuSO_4 with inert electrodes gives _____.
 (A) Cu at cathode, anode gets dissolved (B) Cu at cathode, O_2 at anode
 (C) O_2 at anode, H_2 at cathode (D) O_2 at anode, cathode gets dissolved
- Q.16 Which of the following can not show acidic nature?
 (A) H_2CO_3 (B) CaCO_3 (C) HCl (D) HSO_4^-
- Q.17 In bacteria the respiratory enzymes are located on

(A) Plasmid (B) Episome (C) Mesosome (D) Nucleoid

- Q.18 A group of cells having a common origin & performing similar function is called
(A) tissue (B) organ (C) organ system (D) cell aggregate
- Q.19 Human kidney resembles contractile vacuole of Amoeba in expelling out
(A) Excess H₂O (B) Salts (C) Glucose (D) Urea
- Q.20 The visible part of electromagnetic spectrum lies in between :
(A) X-ray and ultra-violet (B) Ultra violet and infra red
(C) Infra red and microwave (D) X-ray and infra red
- Q.21 Whales respire through :
(A) Lungs (B) Gills (C) Moist skin (D) Buccal cavity
- Q.22 Which one of the following animals requires comparatively less energy for body maintenance?
(A) Mosquito (B) Bird (C) Fish (D) Elephant
- Q.23 Functional unit of kidney is
(A) neuron (B) axon (C) glomerulus (D) Nephron
- Q.24 Intercellular communication in multicellular organisms occur through
(A) digestive system only (B) nervous system only
(C) both nervous and endocrine system (D) respiratory system only
- Q.25 Which of the following is not a plant hormone
(A) Auxin (B) Gibberellins (C) Cytokinin (D) Adrenaline
- Q.26 A permanent plant tissue consisting of thin walled living cells is
(A) parenchyma (B) collenchyma (C) sclerenchyma (D) xylem
- Q.27 P, Q and R are points on AB, BC and AC of the equilateral triangle ABC respectively. AP : PB = CQ : QB = 1 : 2. G is the centroid of the triangle PQB and R is the mid-point of AC. Find BG : GR.
(A) 1 : 2 (B) 2 : 3 (C) 3 : 4 (D) 4 : 5
- Q.28 If $x^2 - 4$ is a factor of $2x^3 + ax^2 + bx + 12$, where a and b are constant. Then the value of a and b are
(A) -3, 8 (B) 3, 8 (C) -3, -8 (D) 3, -8
- Q.29 If the decimal 0.d25d25d25— is expressible in the form $n/27$, then d + n must be :
(A) 9 (B) 28 (C) 30 (D) 34
- Q.30 Evaluate: $\frac{(a-b)^2}{(b-c)(c-a)} + \frac{(b-c)^2}{(a-b)(c-a)} + \frac{(c-a)^2}{(a-b)(b-c)}$
(A) 0 (B) 1 (C) 2 (D) 3

Q.31 In the figure given below, ABCD is a square of side 7 cm. BD is an arc of a circle of radius AB. What is the area of the shaded region ?



- (A) 14 cm^2 (B) 21 cm^2 (C) 28 cm^2 (D) 35 cm^2

Q.32 Five years ago, A was three times as old as B and ten years later, A shall be twice as old as B. What are the present ages of A & B (in years)?

- (A) 45, 15 (B) 30, 40 (C) 50, 30 (D) 50, 20

Q.33 ABC is a triangle. Angle bisectors of $\angle A$, $\angle B$ and $\angle C$ intersect circumcircle of ΔABC on X, Y and Z respectively. If $\angle BAC = 50^\circ$, $\angle CZY = 30^\circ$, then value of $\angle BYZ$ is

- (A) 45° (B) 55° (C) 30° (D) None of these

Q.34 The average of 20 numbers is zero. How many of them, at most, may be greater than zero ?

- (A) 0 (B) 1 (C) 10 (D) 19

Q.35 A tree is broken by wind and the top of it struck the ground at an angle of 30° and at a distance of 50 m from the foot, find the initial height of tree.

- (A) $\frac{75}{\sqrt{3}} \text{ m}$ (B) $\frac{150}{\sqrt{3}} \text{ m}$ (C) 100 m (D) $\frac{100}{\sqrt{3}} \text{ m}$

Q.36 The value of the expression $\frac{4}{3} \cot^2 30^\circ + 3 \sin^2 60^\circ - 2 \operatorname{cosec}^2 60^\circ - \frac{3}{4} \tan^2 30^\circ$ is

- (A) 1 (B) $-\frac{20}{3}$ (C) $\frac{10}{3}$ (D) 5

Q.37 JKLM is a square with sides of lengths 6 units. Points A and B are the midpoints of the sides KL and LM respectively. If a point is selected at random from the interior of the square. What is the probability that the point is chosen from the interior of ΔJAB ?

- (A) $\frac{1}{8}$ (B) $\frac{1}{36}$ (C) $\frac{3}{16}$ (D) $\frac{3}{8}$

Q.38 In a ΔABC , $AB = 3$, $BC = 5$ and $AC = 7$. If AD and CE are angle bisectors meeting at P then the ratio $\frac{PD}{AD}$ is equal to

- (A) $\frac{1}{2}$ (B) $\frac{1}{3}$ (C) $\frac{2}{3}$ (D) $\frac{1}{4}$

Q.39 The side of the rhombus is 'a' cm and the angle between two adjacent sides is 60° . Then the area of the rhombus is

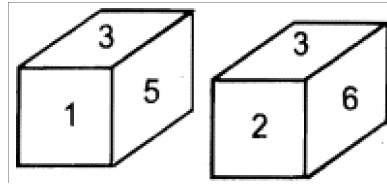
- (A) $\sqrt{3} a^2$ (B) $3\sqrt{3} a^2$ (C) $\frac{\sqrt{3}}{2} a^2$ (D) $6\sqrt{3} a^2$

- Q.40 The largest possible sphere is carved out of a cube of side 8 m. If this sphere is divided into two hemispheres then the total surface area of the so formed one hemisphere is
 (A) 32π sq m (B) 48π sq m (C) 64π sq m (D) $\frac{128\pi}{3}$ sq m
- Q.41 In a parallelogram if the distance between one pair of parallel sides is equal to the distance between the other pair of parallel sides then which one of the following does not hold good?
 (A) diagonals of the parallelogram are at right angles
 (B) adjacent sides of the parallelogram become equal
 (C) each diagonal bisects the internal angle of the parallelogram
 (D) diagonals of the parallelogram become equal
- Q.42 The sides of triangle are 50 m, 40 m and 30 m. What is the length of the altitude drawn from vertex opposite to the side 50 m long?
 (A) 22 m (B) 24 m (C) 25 m (D) 26 m

Direction (Q.43 to 47) : Find the missing term in the series. [5 questions together]

- Q.43 45, 54, 47, ?, 49, 56, 51, 57, 53
 (A) 48 (B) 50 (C) 55 (D) None of these
- Q.44 3, 2, 8, ?, 13, 22, 18, 32, 23, 42
 (A) 8 (B) 9 (C) 13 (D) 22
- Q.45 ABD, DGK, HMS, MTB, SBL, _____
 (A) ZKW (B) ZKU (C) ZAB (D) XKW
- Q.46 a __ ca __ bc __ bcc __ bca
 (A) bbaa (B) bbab (C) aabb (D) baba
- Q.47 PERPENDICULAR, ERPENDICULA, RPENDICUL, ?
 (A) PENDICUL (B) PENDIC (C) ENDIC (D) None of these
- Q.48
- | | | |
|-----|-----|-----|
| 4 | 9 | 25 |
| 49 | ? | 361 |
| 121 | 169 | 289 |
- (A) 519 (B) 81 (C) 100 (D) 529
- Q.49 Manik is 14th from right end in a row of 40 boys. What is his position from the left end?
 (A) 24th (B) 25th (C) 26th (D) 27th
- Q.50 Certain number of horses and an equal number of men are going some where. Half of the owners are on their horses' back while the remaining one are walking along leading their horses. If the number of legs walking on the ground is 70, how many horses are there?
 (A) 10 (B) 12 (C) 14 (D) 16

Q.51 Two positions of a dice are shown. Which number will appear on the face opposite the one having 5?



- (A) 1 (B) 2 (C) 4 (D) 6

Q.52 Find out the wrong term.
10, 26, 74, 218, 654, 1946, 5834

- (A) 26 (B) 74 (C) 218 (D) 654

Q.53 If $3 \times 6 = 18$; $4 \times 7 = 22$; $9 \times 1 = 20$, then $5 \times 2 = ?$ Find the value of ? from the following

- (A) 7 (B) 10 (C) 14 (D) 3

Q.54 In a certain code, CONDEMN is written as CNODMEN. How will TEACHER be written in that code?

- (A) TEACHER (B) TAECHR (C) TCAEERH (D) TAECEHR

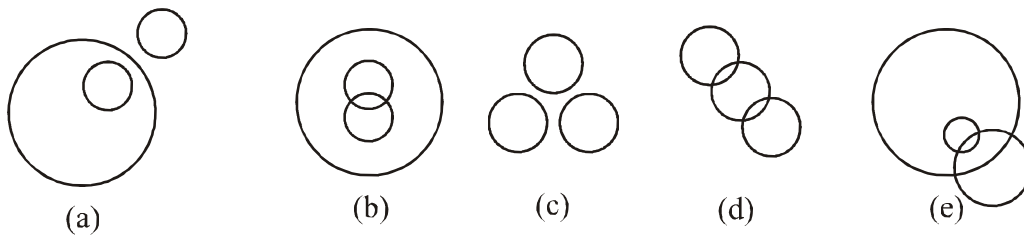
Q.55 In a class of 35 students Kiran is placed 7th from the bottom whereas Sohan is placed 9th from the top. Mohan is placed exactly in between the two. What is Kiran's position from Mohan ?

- (A) 10 (B) 11 (C) 13 (D) 12

Q.56 Nitin was counting down from 32. Sumit was counting upwards the numbers starting from 1 and he was calling out only the odd numbers. What common number will they call out at the same time if they were calling out at the same speed ?

- (A) 19 (B) 21
(C) 22 (D) They will not call out the same number

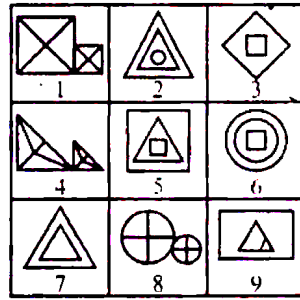
Directions (Q.57) : Which is the most suitable Venn Diagram among the following, which represents interrelationship for the given questions ?



Q.57 Females, Mothers, Nurses

- (A) a (B) b (C) c (D) d

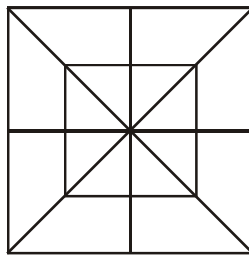
Q.58 In question, group the given figures into three classes using each figure only once.



- (A) 1, 3, 7; 2, 4, 6; 5, 8, 9
 (C) 1, 4, 8; 2, 5, 6; 3, 7, 9

- (B) 1, 4, 6; 2, 5, 7; 3, 8, 9
 (D) 1, 4, 8; 2, 7, 9; 3, 5, 6

Q.59 Count the number of triangles and squares in the following figure :



- (A) 28 triangles, 10 squares
 (C) 32 triangles, 10 squares

- (B) 28 triangles, 8 squares
 (D) 32 triangles, 8 squares

Directions (Q.60) : Select the figure which will continue the series established by the problem figures.

