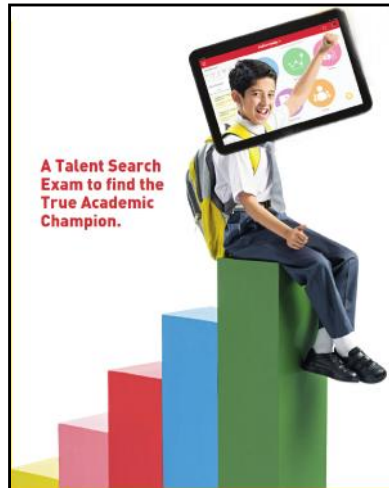


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SAMPLE QUESTIONS

for

CLASS XI-NM

Name : _____

School Name : _____

Contact No. : _____



Contact us at :

Campus Chandigarh : SCO No.-350,351 & 352, Sector 34A, Tel. 0172-4612029, 8556015577

Campus Panchkula : SCO-264, 2nd Floor, Sector-14, Tel. 0172-4004028, 4005028

Campus Patiala : SCF 99-102, Chotti Barandari. Tel. 0175-5012029, 5012030

INSTRUCTIONS

Time duration: 1:00 hr. (Time of OMR filling is included in time duration).

Maximum Marks: 240

This Paper contains 60 questions divided in three sections

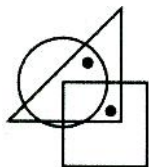
Section-A	MAT	30 questions	120 marks
Section-B	Physics	10 questions	40 marks
Section-C	Chemistry	10 questions	40 marks
Section-D	Mathematics	10 questions	40 marks

Each Question has a single correct answer.

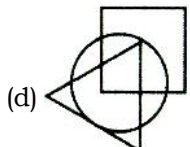
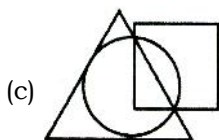
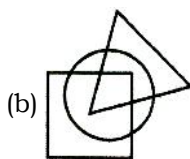
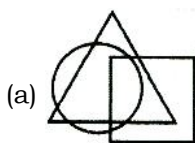
Marking Scheme: +4 marks for correct answers. There is **NO NEGATIVE MARKING**

SECTION-A (MAT)
MENTAL APTITUDE

1.



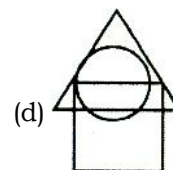
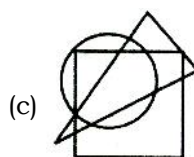
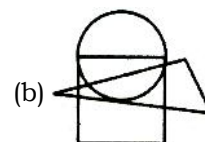
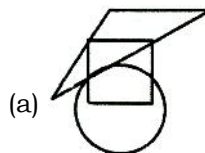
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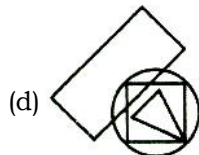
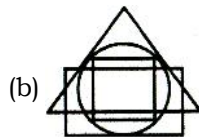
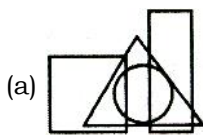
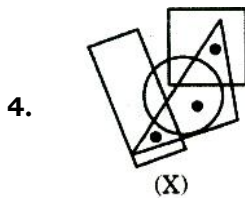
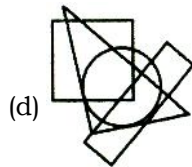
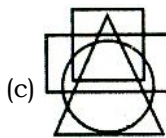
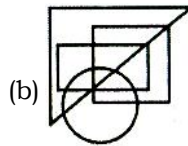
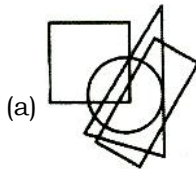
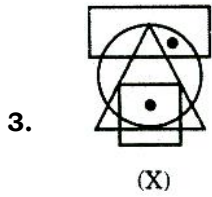


2.



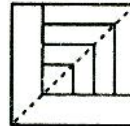
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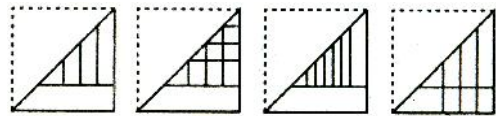


Directions (Q. no. 5 to 21): In each of the following problems, a square transparent sheet with a pattern is given. Figure out from amongst the four alternatives as to how the pattern would appear when the transparent sheet is folded at the dotted line.

5. Transparent Sheet

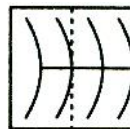


Response Figures

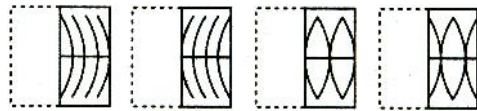


(a) (b) (c) (d)

6. Transparent Sheet

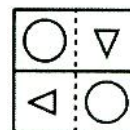


Response Figures

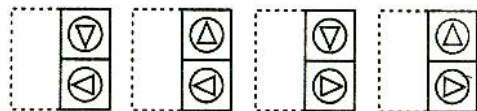


(a) (b) (c) (d)

7. Transparent Sheet

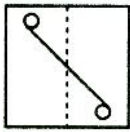


Response Figures

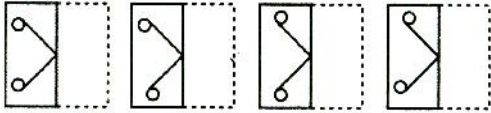


(a) (b) (c) (d)

8. Transparent Sheet

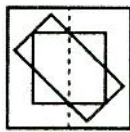


Response Figures

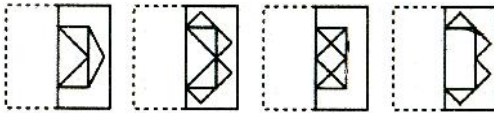


(a) (b) (c) (d)

9. Transparent Sheet

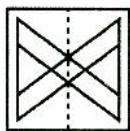


Response Figures

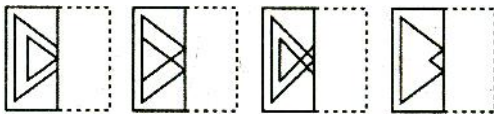


(a) (b) (c) (d)

10. Transparent Sheet

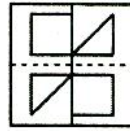


Response Figures

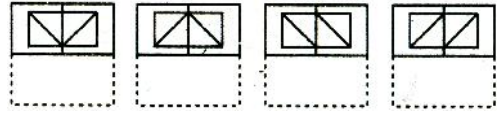


(a) (b) (c) (d)

11. Transparent Sheet

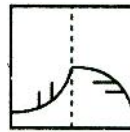


Response Figures

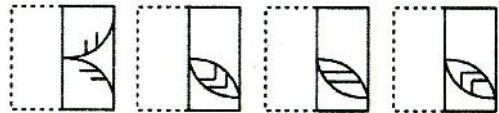


(a) (b) (c) (d)

12. Transparent Sheet

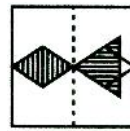


Response Figures

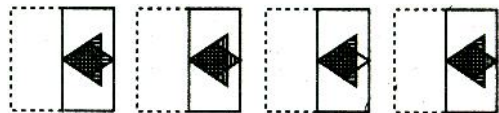


(a) (b) (c) (d)

13. Transparent Sheet

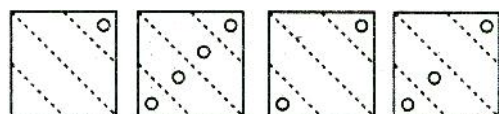
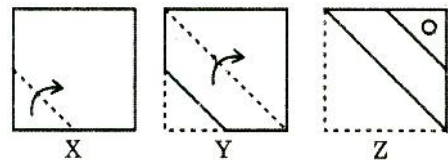


Response Figures

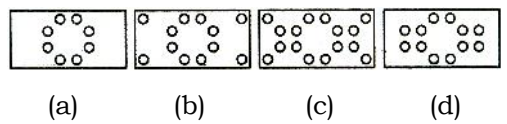
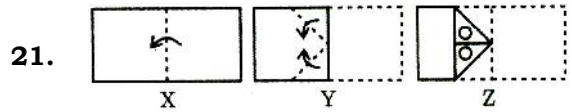
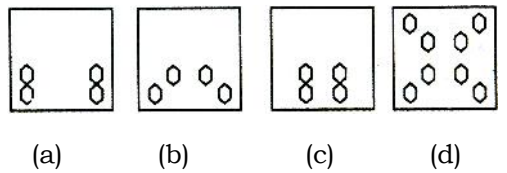
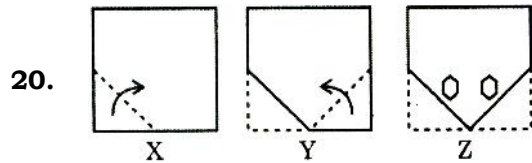
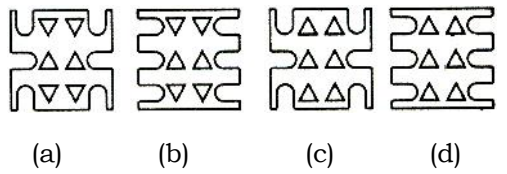
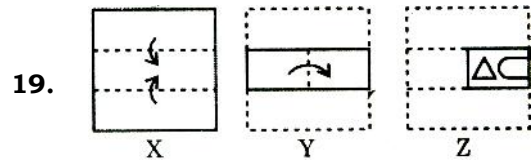
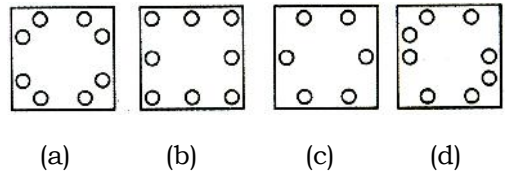
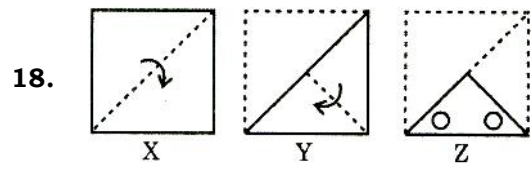
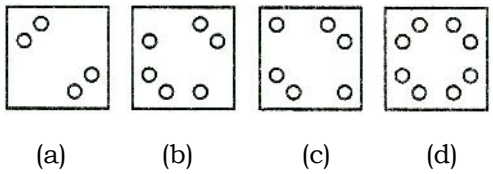
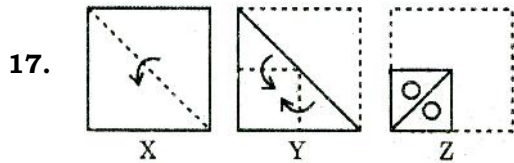
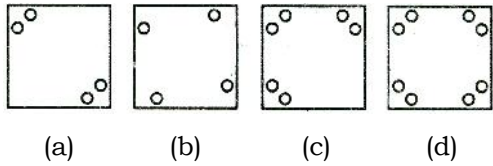
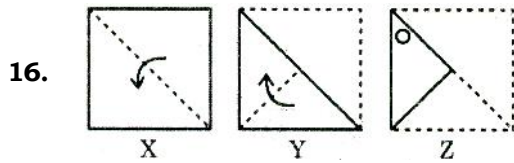
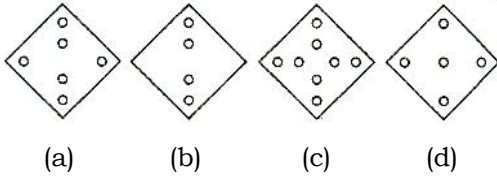
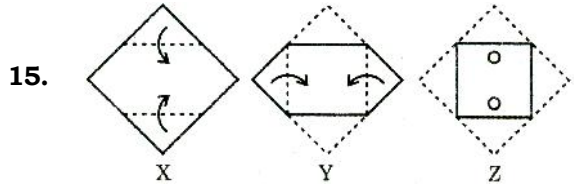


(a) (b) (c) (d)

14.



(a) (b) (c) (d)



Directions (Q. no. 22 to 30) : In each of the following questions, arrange the given words in a meaningful sequence and then choose the most appropriate sequence from amongst the alternatives provided below each question :

- 22.** 1. Honey 2. Flower
3. Bee 4. Wax
(a) 1, 3, 4, 2 (b) 2, 1, 4, 3
(c) 2, 3, 1, 4 (d) 4, 3, 2, 1
- 23.** 1. Site 2. Plan
3. Rent 4. Money
5. Building 6. Construction
(a) 1, 2, 3, 6, 5, 4 (b) 2, 3, 6, 5, 1, 4
(c) 3, 4, 2, 6, 5, 1 (d) 4, 1, 2, 6, 5, 3
- 24.** 1. Reading 2. Composing
3. Writing 4. Printing
(a) 1, 3, 2, 4 (b) 2, 3, 4, 1
(c) 3, 1, 2, 4 (d) 3, 2, 4, 1
- 25.** 1. Sentence 2. Chapter
3. Letter 4. Book
5. Word 6. Paragraph
(a) 4, 2, 1, 6, 5, 3 (b) 4, 2, 6, 1, 5, 3
(c) 4, 6, 1, 2, 3, 5 (d) 4, 6, 2, 5, 1, 3

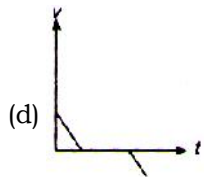
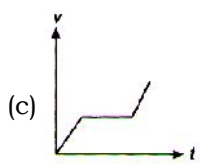
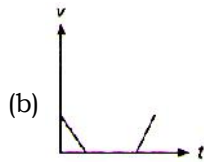
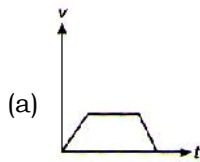
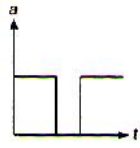
- 26.** 1. Cut 2. Put on
3. Mark 4. Measure
5. Tailor
(a) 1, 2, 3, 4, 5 (b) 2, 4, 3, 1, 5
(c) 3, 1, 5, 4, 2 (d) 4, 3, 1, 5, 2
- 27.** 1. Police 2. Punishment
3. Crime 4. Justice
5. Judgement
(a) 1, 2, 3, 4, 5 (b) 3, 1, 2, 4, 5
(c) 3, 1, 4, 5, 2 (d) 5, 4, 3, 2, 1
- 28.** 1. Country 2. Furniture
3. Forest 4. Wood
5. Trees
(a) 1, 3, 5, 4, 2 (b) 1, 4, 3, 2, 5
(c) 2, 4, 3, 1, 5 (d) 5, 2, 3, 1, 4
- 29.** 1. Elephant 2. Cat
3. Mosquito 4. Tiger
5. Whale
(a) 1, 3, 5, 4, 2 (b) 2, 5, 1, 4, 3
(c) 3, 2, 4, 1, 5 (d) 5, 3, 1, 2, 4
- 30.** 1. Key 2. Door
3. Lock 4. Room
5. Switch on
(a) 1, 2, 3, 5, 4 (b) 1, 3, 2, 4, 5
(c) 4, 2, 1, 5, 3 (d) 5, 1, 2, 4, 3

SECTION-B

PHYSICS

- 31.** Two particles are simultaneously projected in opposite directions horizontally from a given point in space where g is uniform ; If u_1 and u_2 are initial speeds. Then time 't' at which there velocities are perpendicular
- (a) $\sqrt{u_1 u_2} / g$
 (b) $\sqrt{u_1^2 u_2^2} / g$
 (c) $\sqrt{u_1(u_1 + u_2)} / g$
 (d) $\sqrt{u_2(u_1 + u_2)} / g$
- 32.** Find the angle of projection of a projectile for a body to have Range = half of maximum height
- (a) $\tan^{-1} 4$ (b) $\tan^{-1} 3$
 (c) $\tan^{-1} 5$ (d) $\tan^{-1} 8$
- 33.** A stone is dropped from a height h simultaneously, another stone is thrown up from the ground which reaches a height $4h$. The two stone cross each other after time
- (a) $\sqrt{\frac{h}{8g}}$ (b) $\sqrt{8gh}$
 (c) $\sqrt{2gh}$ (d) $\sqrt{\left(\frac{h}{2g}\right)}$
- 34.** A body starts from rest. What is the ratio of the distance travelled by the body during the 4th and 3rd second
- (a) 7/5 (b) 5/7
 (c) 7/3 (d) 3/7
- 35.** A stone is thrown vertically upward with an initial velocity v_0 . The distance travelled in time $4v_0/3g$ is
- (a) $\frac{2v_0^2}{g}$ (b) $\frac{v_0^2}{2g}$
 (c) $\frac{4v_0^2}{3g}$ (d) $\frac{5v_0^2}{9g}$
- 36.** A particle is projected from the ground with an initial speed of v at an angle θ with horizontal. The average velocity of the particle between its point of projection and highest point of trajectory is
- (a) $\frac{v}{2}\sqrt{1+2\cos^2\theta}$ (b) $\frac{v}{2}\sqrt{1+\cos^2\theta}$
 (c) $\frac{v}{2}\sqrt{1+3\cos^2\theta}$ (d) $v \cos \theta$
- 37.** The equation of motion of a projectile is $y = 12x - \frac{3}{4}x^2$. Given that $g = 10 \text{ ms}^{-2}$, what is the range of the projectile
- (a) 12.4 m (b) 16 m
 (c) 30.6 m (d) 36.0 m
- 38.** The acceleration of a particle is increasing linearly with time t as bt . The particle starts from the origin with an initial velocity v_0 . The distance travelled by the particle in time t will be :
- (a) $v_0 t + \frac{1}{6}bt^3$ (b) $v_0 t + \frac{1}{3}bt^3$
 (c) $v_0 t + \frac{1}{3}bt^2$ (d) $v_0 t + \frac{1}{2}bt^2$

39. Acceleration-time graph of a body is shown. The corresponding velocity-time graph of the same body is



40. A particle is dropped vertically from rest from a height. The time taken by it to fall through successive distances of 1 m each will then be

- (a) All equal, being equal to $\sqrt{2/g}$ second
 (b) In the ratio of the square roots of the integers 1, 2, 3...
 (c) In the ratio of the difference in the square roots of the integers i.e. $\sqrt{1}, (\sqrt{2} - \sqrt{1}), (\sqrt{3} - \sqrt{2}), (\sqrt{4} - \sqrt{3})...$
 (d) In the ratio of the reciprocal of the square roots of the integers i.e.,.

SECTION-C CHEMISTRY

- 41.** Be^{3+} and a proton are accelerated by the same potential, their de-Broglie wavelengths have the ratio (assume mass of proton = mass of neutron) :
- (a) 1 : 2 (b) 1 : 4
(c) 1 : 1 (d) 1 : $3\sqrt{3}$
- 42.** Which of the following orbitals has two spherical nodes ?
- (a) 2s (b) 4s
(c) 3d (d) 6f
- 43.** If a_0 be the radius of first Bohr's orbit of H-atom the de-Broglie's wavelength on an electron revolving in the second Bohr's orbit will be :
- (a) $6\pi a_0$ (b) $4\pi a_0$
(c) $2\pi a_0$ (d) None of these
- 44.** Relation between wavelength (λ) and momentum (p) of a material particle is
- (a) $\lambda = hp$ (b) $\lambda = h/p$
(c) $\lambda = h + p$ (d) $\lambda = h - p$
- 45.** Ionic mass of X^{3-} is 17. If it has 10 electrons, then number of neutrons are
- (a) 10 (b) 13
(c) 7 (d) 17
- 46.** What is the series limit for Balmer series for hydrogen.
- (a) 36.4 nm (b) 3.64 nm
(c) 364 nm (d) None of these
- 47.** Calculate the potential energy of the electron in second orbit of He^+ ion.
- (a) 13.6 eV (b) -27.2 eV
(c) 27.2 eV (d) None of these
- 48.** The uncertainties in the velocities of two particles, A and B are 0.05 and 0.02 ms^{-1} respectively. The mass of B is five times to that of the mass of A. What is the ratio of uncertainties in their positions $\left(\frac{\Delta x_A}{\Delta x_B}\right)$?
- (a) 2 (b) 0.25
(c) 4 (d) 1
- 49.** The pair of ions having same electronic configuration is _____.
- (a) Cr^{3+} , Fe^{3+} (b) Fe^{3+} , Mn^{2+}
(c) Fe^{3+} , Co^{3+} (d) Sc^{3+} , Cr^{3+}
- 50.** Out of the following pairs of electrons, identify the pairs of electrons present in degenerate orbitals :
- (a) (i) $n = 3, l = 1, m_l = -2, m_s = -\frac{1}{2}$
(ii) $n = 3, l = 2, m_l = -1, m_s = -$
(b) (i) $n = 3, l = 1, m_l = 1, m_s = +$
(ii) $n = 3, l = 2, m_l = 1, m_s = +$
(c) (i) $n = 4, l = 1, m_l = 1, m_s = +$
(ii) $n = 3, l = 2, m_l = 1, m_s = +$
(d) (i) $n = 3, l = 2, m_l = +2, m_s = -$
(ii) $n = 3, l = 2, m_l = +2, m_s = +$

SECTION-D MATHEMATICS

- 51.** In a city 20% of the population travels by car, 50% travels by bus and 10% travels by both car and bus. Then, persons travelling by car or bus is
- (a) 80% (b) 40%
(c) 60% (d) 70%
- 52.** The domain of the function $f(x) = \sqrt{\frac{x+3}{(2-x)(x-5)}}$ is
- (a) $(-\infty, -3] \cup (2, 5)$
(b) $(-\infty, -3) \cup (2, 5)$
(c) $(-\infty, -3] \cup [2, 5]$
(d) none of these
- 53.** Solve for x : $\left| \frac{x^2+6}{5x} \right| \geq 1$
- (a) $(-\infty, -3)$
(b) $(-\infty, -3) \cup (3, \infty)$
(c) R
(d) $(-\infty, -3] \cup [-2, 0) \cup (0, 2] \cup [3, \infty)$
- 54.** If one factor of $a(x+y+z) + bx + by + bz$ is $(x+y+z)$ then the second factor is
- (a) $ax + ay + az$ (b) $bx + by + bz$
(c) $bx + by - bz$ (d) $a + b$
- 55.** The radius of the circle whose arc of length 15π cm makes an angle of $\frac{3\pi}{4}$ radian at the centre is
- (a) 10 cm (b) 20 cm
(c) $11\frac{1}{4}$ cm (d) $22\frac{1}{2}$ cm
- 56.** Solution of $(x-1)^2(x+4) < 0$ is
- (a) $(-\infty, 1)$ (b) $(-\infty, -4)$
(c) $(-1, 4)$ (d) $(1, 4)$
- 57.** A circular wire of radius 7 cm is cut and bent again into an arc of a circle of radius 12 cm. The angle subtended by the arc at the centre is
- (a) 50° (b) 210
(c) 100 (d) 60
- 58.** The Set of real values of x for which $\frac{10x^2+17x-34}{x^2+2x-3} < 8$, is
- (a) $(-5/2, 2)$ (b) $(-3, -5/2) \cup (1, 2)$
(c) $(-3, 1)$ (d) none of these
- 59.** If $A + B + C = 180^\circ$, then $\sec A (\cos B \cos C - \sin B \sin C)$ is equal to
- (a) 0 (b) -1
(c) 1 (d) none of these
- 60.** $\sin^6 A + \cos^6 A + 3 \sin^2 A \cos^2 A =$
- (a) 0 (b) 1
(c) 2 (d) 3

Dream on !!



**SECTION-A (MAT)
MENTAL APTITUDE**

- | | | | | |
|---------|---------|---------|---------|---------|
| 1. (a) | 2. (c) | 3. (d) | 4. (a) | 5. (a) |
| 6. (c) | 7. (c) | 8. (c) | 9. (b) | 10. (b) |
| 11. (a) | 12. (d) | 13. (d) | 14. (a) | 15. (b) |
| 16. (a) | 17. (d) | 18. (a) | 19. (b) | 20. (b) |
| 21. (a) | 22. (c) | 23. (d) | 24. (d) | 25. (b) |
| 26. (d) | 27. (c) | 28. (a) | 29. (c) | 30. (b) |

**SECTION-B
PHYSICS**

- | | | | | |
|---------|---------|---------|---------|---------|
| 31. (a) | 32. (d) | 33. (a) | 34. (a) | 35. (d) |
| 36. (c) | 37. (b) | 38. (a) | 39. (c) | 40. (c) |

**SECTION-C
CHEMISTRY**

- | | | | | |
|---------|---------|---------|---------|---------|
| 41. (d) | 42. (d) | 43. (b) | 44. (b) | 45. (a) |
| 46. (c) | 47. (b) | 48. (a) | 49. (b) | 50. (d) |

**SECTION-D
MATHEMATICS**

- | | | | | |
|---------|---------|---------|---------|---------|
| 51. (c) | 52. (a) | 53. (d) | 54. (d) | 55. (b) |
| 56. (b) | 57. (b) | 58. (b) | 59. (b) | 60. (b) |