BIG BANG
EDGE TEST

SAMPLE PAPER
For Students presently in Class X

Paper 2

JEE Advanced

Paper Code: 1011-2

Duration : 135 minutes *Maximum Marks : 201*

Please read the instructions and guidelines carefully :

Important Note : Please ensure to accurately input the details for the Question Paper Code as indicated at the top of this sheet (Side 2) into the corresponding columns / fields on the OMR sheet before proceeding with the paper. Incorrectly filled information regarding the class or paper may result in inaccurate outcomes or results.

"This paper has been scientifically designed to evaluate your potential – manifested and hidden for the target examinations mentioned in various sections of the paper. Thus, your adherence to the instructions is critical in the evaluation of the same"

1. This Question paper consists of 2 sections.
2. Student should devote allotted time for each section. If a section is easy, then it is easy for everyone & was meant to be like that with a goal in mind. Do not switch over to another section if you find the section to be easy. If a section is tough, then it is tough for everyone. You are advised to spend 60 Minutes on Section-I and 75 Minutes on Section-II. Dedicating the required time to finish each section successfully is essential. Opening the next section before completing the allotted time for the preceding section is not permitted. This adherence is crucial for assessing your true potential, as each section is meticulously crafted to evaluate your potential for the corresponding competitive examinations.
3. Candidate should open the seal of Section-II only after devoting 60 minutes on Section-I.
4. Sheets will be given to each candidate for rough work. Candidate must fill all details on the rough sheet and submit the same to invigilator along with OMR sheet. Candidate must mention the Question No. while doing the rough work in the sheet.
5. Please note candidates are not allowed to bring any prohibited items into the exam hall such as electronic devices, mobile phones, smart watch, earphones, calculators, books, notes, formula sheets, and bags.
6. Marking scheme is given in table below:

Section	Subject		Question no.	Marking Scheme for each question	
				Correct answer	Wrong answer
SECTION – I (JEE Advanced) Time Allotted: 60 Minutes	**Higher Order Thinking Skills (IQ)**		**1 to 30**	**+3**	**–1**
SECTION – II (JEE Advanced) Time Allotted: 75 Minutes	**PHYSICS**	**(PART-A)**	**31 to 33**	**+3**	**–1**
	CHEMISTRY	**(PART-B)**	**34 to 36**	**+3**	**–1**
	MATHEMATICS	**(PART-C)**	**37 to 39**	**+3**	**–1**
	PHYSICS	**(PART-D)**	**40 to 41**	**+4 *Partial Marking**	**–2**
	CHEMISTRY	**(PART-E)**	**42 to 43**	**+4 *Partial Marking**	**–2**
	MATHEMATICS	**(PART-F)**	**44 to 45**	**+4 *Partial Marking**	**–2**
	PHYSICS	**(PART-G)**	**46 to 50**	**+4**	**–1**
	CHEMISTRY	**(PART-H)**	**51 to 55**	**+4**	**–1**
	MATHEMATICS	**(PART-I)**	**56 to 60**	**+4**	**–1**

*** Partial Marking: (Q. No. 40 to 45):**

Full Marks	**: +4**	If only (all) the correct option(s) is(are) chosen;
Partial Marks	**: +3**	If all the four options are correct but ONLY three options are chosen;
Partial Marks	**: +2**	If three or more options are correct but ONLY two options are chosen, both of which are correct;
Partial Marks	**: +1**	If two or more options are correct but ONLY one option is chosen and it is a correct option;
Zero Marks	**: 0**	If none of the options is chosen (i.e. the question is unanswered)
Negative Marks	**: -2**	In all other cases.

Section – I

Time: 60 Minutes

HIGHER ORDER THINKING SKILLS (IQ)

*This part contains **18 Multiple Choice Questions** number **1 to 18.** Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.*

1. Mohan travels 7 km Eastwards and then he turns right and travelled 3 km and further turns right again and travelled 11 km. How far is he from the starting point?
(A) 25 km (B) 15 km
(C) 5 km (D) None of these

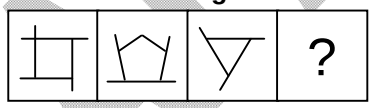
2. Pointing towards a person a man said to a woman. "His mother is the only daughter of your father". How is the woman related to that person?
(A) Aunty (B) Mother
(C) Son-in-law (D) None

3. Find the Missing number.
(A) 9 (B) 6
(C) 3 (D) 7

3	1	4
5	4	7
2	8	?
38	81	74

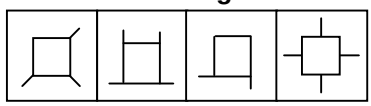
4. The second figure in the first unit of the problem figures bears a certain relationship to the first figure. Similarly, one of the figures in the answer figures bears the same relationship to the first figure in the second unit of the problem figures. You are therefore to locate the figure which would replace the question mark.

Problem Figures



1 2 3 4

Answer Figures



(A) (B) (C) (D)

5. In the question given below is a sequence in which some letters are missing from the choices. Select the choice that gives the letters that can fill the blanks in the given sequence.
a_cd_c_a_da_d_b_
(A) bbdcbac (B) bbcdabc
(C) bacbbabc (D) bcdbabc

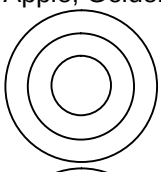
6. If "DISTANCE" is coded as "ECNATSID", then how will "UDOMETER" be coded?
(A) RETEOMDU (B) RETMEODU
(C) RETEMODU (D) RETMOEDU

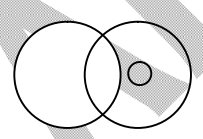
7. In this type of question, two numbers are given. These numbers are related to each other in some way. Another number is also given. The candidate is required to find out the relationship between the first two numbers and choose the number from the given alternatives, which bears the same relationship to the third number, as the first two bear.
2 : 9 : : 64 : ?
(A) 125 (B) 257
(C) 422 (D) 600

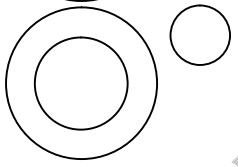
8. 4 April 1988 fell on Monday. What day of the week was 3 November 1987?
(A) Monday (B) Tuesday
(C) Wednesday (D) Friday

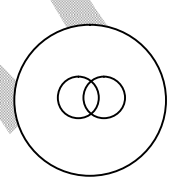
9. Pointing towards a man in the photograph Archana said "He is the son of the only son of my grandmother". How is that man related to Archana?
(A) Brother (B) Cousin
(C) Uncle (D) Father

10. Choose the correct diagram given below which can best represent the following data.
Fruit, Apple, Golden Apple.

(A) 

(B) 

(C) 

(D) 

11. A, CD, GHI, ?, UVWXY
(A) LMNO (B) MNO
(C) MNOP (D) NOPQ

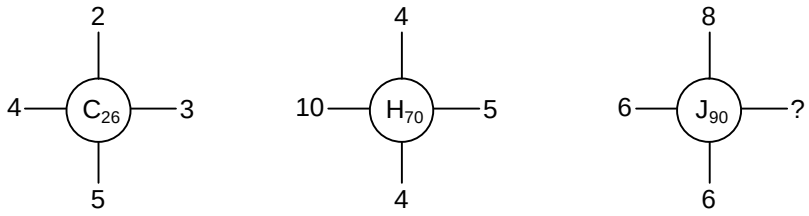
12. What is the least number of cuts required to cut the cube into 24 identical pieces?
(A) 2 (B) 4
(C) 6 (D) 8

13. Moin started to walking towards South and after covering 5 km then he turned to the left and cover 3 km. After that he turned to the right and cover 5 km. Now towards which direction Moin is facing now?
(A) North-East (B) South
(C) North (D) South-East

14. A and B can do a piece of work in 12 days, B and C in 15 days, C and A in 20 days. How long will each take separately to do the same work?
(A) 10, 20, 30 (B) 30, 20, 60
(C) 30, 40, 60 (D) 20, 15, 40

15. At what time between 5 O'clock and 6 O'clock will the minute and the hour hand be perpendicular to each other?
(A) 5 hr $10\frac{9}{11}$min. and again 5 hr $43\frac{5}{11}$min. (B) 5 hr $10\frac{10}{11}$min. and again 5 hr $43\frac{7}{11}$min.
(C) 5 hr $10\frac{8}{11}$min. and again 5 hr $43\frac{6}{11}$min. (D) None of these

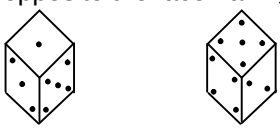
16. Find the missing term.



(A) 2 (B) 3
(C) 4 (D) 5

17. K is 40 m South-West of L. If M is 40 m South-East of L, then M is in which direction of K?
(A) East (B) West
(C) North-East (D) South

18. The different positions of a dice are given below. What will be the number of dots on the face opposite the face having 2 dots?



(i) (ii)
(A) 1 (B) 3
(C) 6 (D) Cannot be determined

*This part contains **FOUR (04)** comprehensions**.** Based on each comprehension, there are **THREE (03)** questions of **Multiple Choice Questions**. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.*

Comprehension for Q. No. 19 to 21

Study the following information carefully and answer the given questions:
A Business School with six Professors L, M, N, O, P and Q has decided to implement a new scheme of course management. Each Professor has to coordinate one course and support another course. This semester, O's support course is Finance, while three others have it in coordinator's role. P and Q have Marketing as one of their subjects. Q coordinates Operations, which is a support course for both N and P. Finance and IT are L's subjects. Both L and O have same subjects. Strategy is a support course for only one of the Professors.

19. Who coordinate the IT course?
(A) L (B) N
(C) O (D) None of these

20. Which course is supported by M?
(A) Operations (B) Strategy
(C) IT (D) Finance

21. Who among the following are coordinating the Finance course?
(A) L and N (B) N and O
(C) L, M and N (D) M, N and O

Comprehension for Q. No. 22 to 24

In each of the following questions, a word is represented by only one set of numbers as given in any one of the alternatives. The sets of numbers given in the alternatives are represented by two classes of alphabets as in the two given matrices. The columns and rows of Matrix I are numbered from 0 to 4 and those of Matrix II from 5 to 9. A letter from these matrices can be represented first by row and then the column number, e.g., M can be represented by 02, 14, 21 etc.

Matrix I

	0	1	2	3	4
0	D	O	B	A	I
1	O	B	A	I	D
2	B	A	I	D	O
3	A	I	D	O	B
4	I	D	O	B	A

Matrix II

0	5	6	7	8	9
5	W	N	R	M	L
6	N	R	M	L	W
7	R	M	L	W	N
8	M	L	W	N	R
9	L	W	N	R	M

22. DRAW
(A) 41, 66, 23, 55
(B) 32, 75, 44, 76
(C) 23, 57, 30, 68
(D) 14, 89, 12, 78

23. BAND
(A) 43, 21, 97, 33
(B) 11, 21, 79, 41
(C) 34, 44, 66, 14
(D) 20, 30, 89, 23

24. BLOW
(A) 11, 68, 42, 69
(B) 21, 95, 33, 97
(C) 34, 68, 10, 88
(D) 34, 86, 44, 78

Comprehension for Q. No. 25 to 27

Study the following information carefully and answer the questions given below:
Seven boy A, D, Y, U, P, Q and J live in three different buildings – Ashiana, Top-view and Ridge. Each of them is flying kites of different colours i.e. red, green, blue, white, black, yellow and pink, (not necessarily in the given order). Not more than three or less than two stay in any of the buildings. Q is flying a pink kite and lives in the same building as only J. i.e. Ashiana. Y is flying a black kite and does not live in Ridge building. U does not live in the same building as A or P and is flying a yellow coloured kite. D lives in Ridge building with only one more person and is flying a green kite. None in the top-view building flies a white kite. P does not fly a blue kite. -

25. Who live in Ridge building?
(A) D, U
(B) D, A, P
(C) Y, A, P
(D) A, P

26. Who is flying the blue kite?
(A) A
(B) J
(C) P
(D) Data inadequate

27. Who flies the red kite?
(A) A
(B) J
(C) P
(D) Data inadequate

Comprehension for Q. No. 28 to 30

In each question given below two statements followed by two conclusions numbered I and II. You have to take the two given statements to be true even if they seem to be at variance with commonly known facts and then decide which of the given conclusions logically follows from the two given statements, disregarding commonly known facts. Give Answer:

(A) if only conclusion I follows
(B) if only conclusion II follows
(C) if either I or II follows
(D) if neither I nor II follows

28. **Statement:** I. Some pubs are cows.
II. No kitten are pubs.
Conclusions: I. No pubs are kitten.
II. Some cows are kitten.

29. **Statements:** I. Some cameras are radios.
II. Some statues are cameras.
Conclusions: I. Some radios are statues.
II. No radio is statue.

30. **Statement:** I. All gardens are schools.
II. All schools are colleges.
Conclusions: I. All gardens are colleges.
II. Some gardens are not colleges.

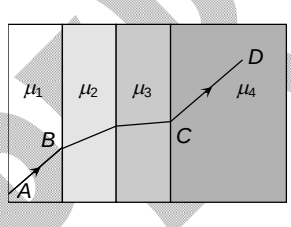
Section – II

Time: 75 Minutes

PHYSICS (PART – A)

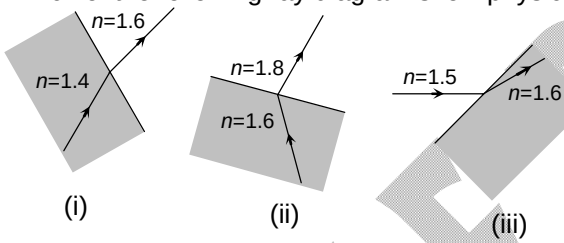
*This part contains **3 Multiple Choice Questions** number **31 to 33.** Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.*

31. A ray of light passes through four transparent media with refractive indices μ_1, μ_2, μ_3 and μ_4 as shown in the figure. The surfaces of all media are parallel. If the emergent ray *CD* is parallel to the incident ray *AB*, we must have



(A) $\mu_1 = \mu_2$ (B) $\mu_2 = \mu_3$
(C) $\mu_3 = \mu_4$ (D) $\mu_4 = \mu_1$

32. Which of the following ray diagram show physically possible refraction?



(i) (ii) (iii)

(A) (i) (B) (ii)
(C) (iii) (D) None of these

33. A convex lens *A* of focal length 20 cm and a concave lens *B* of focal length 5 cm are kept along the same axis with a distance *d* between them. If a parallel beam of light falling on *A* leaves *B* as a parallel beam, then the distance *d* in cm will be

(A) 25 (B) 15
(C) 30 (D) 50

CHEMISTRY (PART – B)

*This part contains **3 Multiple Choice Questions** number **34 to 36.** Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.*

34. Which of the following is a dibasic acid?

(A) HCl (B) H_3PO_2
(C) HNO_3 (D) $H_2C_2O_4$

35. Which of the following is the ore of a metal which belongs to group–14?

(A) Galena (B) Cinnabar
(C) Bauxite (D) Pyrolusite

36. How many times a solution of pH = 3 be diluted to get a solution of pH = 6?

(A) 2 times (B) 10 times
(C) 100 times (D) 1000 times

MATHEMATICS – (PART – C)

*This part contains **3 Multiple Choice Questions** number **37 to 39.** Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.*

37. If $\tan x + \tan^2 x + \tan^3 x = 1$ then the value of $2\cos^6 x - 2\cos^4 x + \cos^2 x$ equals to
(A) 1/2 (B) 2
(C) 1 (D) none of these

38. If the value of a quadratic polynomial P(x) is 0 only at x = – 1 and P(–2) = 2, then the value of P(3) is :
(A) 32 (B) 35
(C) 36 (D) 24

39. Point R (h, k) divides line segment AB between axes in the ratio 1 : 2 where A lies on X-axis. Find the equation of line.
(A) 2hx + ky = 3hk (B) 2kx + hy = 3hk
(C) kx + hy = 2hk (D) 3hx + hy = 4hk

PHYSICS – (PART – D)

*This part contains **2 Multiple Choice Multi Correct Type Questions** number **40 to 41.** Each question has 4 choices (A), (B), (C) and (D), out of which **ONE OR MORE THAN ONE** is/are correct.*

40. Two identical heater wires of equal length are first connected in series and then in parallel, the ratio of
(A) their resistance is 4 : 1
(B) their resistance is 2 : 1
(C) the heat produced in them is 1 : 2
(D) the heat produced in them is 1 : 4

41. For a real-extended object, the image formed by a convex mirror will be
(A) real (B) virtual
(C) erect (D) diminished

CHEMISTRY (PART – E)

*This part contains **2 Multiple Choice Multi Correct Type Questions** number **42 to 43.** Each question has 4 choices (A), (B), (C) and (D), out of which **ONE OR MORE THAN ONE** is/are correct.*

42. Which of the following is not a homogenous reaction?
(A) $C(s) + O_2(g) \rightarrow CO_2(g)$ (B) $2Mg(s) + O_2(g) \rightarrow 2MgO(s)$
(C) $N_2(g) + O_2(g) \rightarrow 2NO(g)$ (D) $CaO(s) + H_2O(\ell) \rightarrow Ca(OH)_2(aq)$

43. Which is true for diamond?
(A) all the four valence electrons are bonded to carbon atoms by covalent bonds
(B) it is a giant molecule
(C) it is made up of carbon atoms
(D) it cannot be burnt at any temperature

MATHEMATICS (PART – F)

*This part contains **2 Multiple Choice Multi Correct Type Questions** number **44 to 45.** Each question has 4 choices (A), (B), (C) and (D), out of which **ONE OR MORE THAN ONE** is/are correct.*

44. The unit digit of $73^{2n+1} - 27^{2n+1}$ can be, where $n \in \mathbb{N}$
(A) 2 (B) 4
(C) 6 (D) 8

45. If $x + \frac{1}{x} = \sqrt{3}$, then choose the correct statement
(A) the value of. $x^{98} + x^{92} + x^{45} + x^{39} + 2x^6 + 3$ is 3
(B) the value of $x^{46} + x^{40} + x^{35} + x^{29} + x^7 + x$ is 0
(C) $x^6 + 1 = 0$
(D) If we resolve the given equation in quadratic form, the roots are real and irrational.

PHYSICS (PART – G)

*This part contains **TWO (02)** comprehensions. Based on **1st comprehension**, there are **THREE (03)** questions of **Multiple Choice Questions** and **2nd comprehension;** there are **TWO (02)** questions of **Multiple Choice Questions.** Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.*

Comprehension for Q. No. 46 to 48

An ammeter and a voltmeter are connected in series to a battery with emf E = 6 volt and negligible resistance. When a resistance $R = 3\Omega$ is connected in parallel to voltmeter, reading of ammeter increases three times while that of voltmeter reduces to one third.

46. The resistance of ammeter is
(A) 24 Ω (B) 8 Ω
(C) 4 Ω (D) 3Ω

47. The resistance of voltmeter is
(A) 24 Ω (B) 8Ω
(C) 4Ω (D) 3Ω

48. Reading of voltmeter after the connection of resistance is
(A) 1 Volt (B) 3 Volt
(C) 9/2 Volt (D) 3/2 Volt

Comprehension for Q. No. 49 to 50

If the light ray is incident at angle of 60° on first surface of prism (prism angle = 45°). Then the light ray falls on the other surface at angle 90°.

49. In this case refractive index of the material of prism μ
(A) $\mu = \sqrt{\frac{3}{5}}$ (B) $\mu = 1.5$
(C) $\mu = \frac{\sqrt{3}}{2}$ (D) $\mu = \sqrt{\frac{3}{2}}$

50. The angle of deviation δ is
(A) $\delta = 30°$ (B) $\delta = 15°$
(C) $\delta = 60°$ (D) none of these

CHEMISTRY (PART – H)

*This part contains **TWO (02)** comprehensions. Based on **1st comprehension**, there are **THREE (03)** questions of **Multiple Choice Questions** and **2nd comprehension;** there are **TWO (02)** questions of **Multiple Choice Questions.** Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.*

Comprehension for Q. No. 51 to 53

Fluorine, chlorine, bromine and iodine belong to Group 17 and are collectively known as halogens (which means salt producer).

The halogens are very reactive and react with metals and many nonmetals. Fluorine is the most reactive and the reactivity decreases with increase in atomic number. The oxidizing power of halogens decrease down the group and the reducing power increases down the group.

All halogens from nonnegative ions by accepting one electron each into the singly filled p orbital. The halides of metals in low-valence states are mostly ionic, but in high valence states, metal halides tend to be polar covalent. The halides of all nonmetals and some metals are covalent, and the halogen atoms (except fluorine) may have +1 or –1 oxidation state depending on the electronegativity of other element with which it is covalently bonded.

51. Chlorine acts as a bleaching agent only in presence of
(A) dry air (B) moisture
(C) sunlight (D) pure oxygen

52. The halogen exhibiting no positive oxidation state is
(A) fluorine (B) chlorine
(C) bromine (D) iodine

53. Amongst the halogens, the strongest oxidizing agent is
(A) fluorine (B) chlorine
(C) briomine (D) iodine

Comprehension for Q. No. 54 to 55

An oxidizing agent (often referred to as an oxidant) is a chemical species that tends to oxidize other substances, A substance which loses electrons to other substances in a redox reaction and gets oxidised to a higher valency state is called a reducing agent. A redox equation can be balanced using the following stepwise procedure: (1) Divide the equation into two half-reactions. (2) Balance each half-reaction for number of atoms and charge. (3) Equalize the number of electrons transferred in each half-reaction. (4) Add the half-reactions together

54. What is the value of x in given equation? $yAl + xH^{+} \rightarrow yAl^{3+} + zH_2$
(A) 2 (B) 4
(C) 6 (D) 8

55. What is the ratio of coefficients reducing agent to oxidizing agent, if the following reaction is correcting
balanced? $NH_3 + O_2 \rightarrow NO + H_2O$
(A) 4 : 5 (B) 5 : 4
(C) 5 : 3 (D) 3 : 5

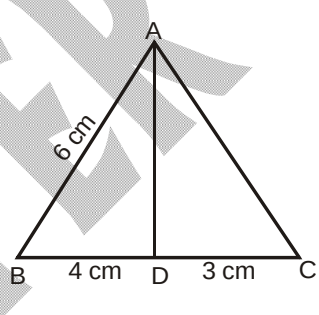
MATHEMATICS (PART – I)

*This part contains **TWO (02)** comprehensions. Based on **1st comprehension**, there are **THREE (03)** questions of **Multiple Choice Questions** and **2nd comprehension;** there are **TWO (02)** questions of **Multiple Choice Questions.** Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.*

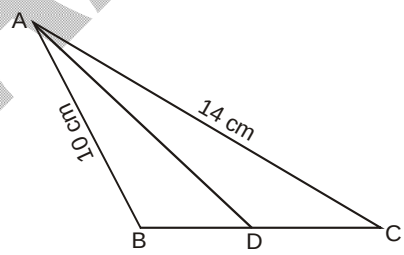
Comprehension for Q. No. 56 to 58

The internal / external bisector of an angle of a triangle divides the opposite side internally / externally in the ratio of the side containing the angle.

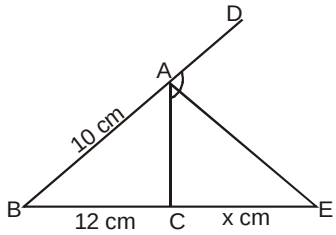
56. In the given figure, AD is the bisector of $\angle A$. If BD = 4 cm, DC = 3 cm and AB = 6 cm determine AC.
(A) 4.5 cm (B) 3.5 cm
(C) 4.8 cm (D) 3.2 cm



57. In the given figure AD is the bisector of $\angle BAC$. If AB = 10 cm, AC = 14 cm, and BC = 6 cm. Find BD and DC.
(A) 3.5 cm, 2.5 cm
(B) 2.5 cm, 3.5 cm
(C) 4.5 cm, 3.5 cm
(D) 3.5 cm, 4.5 cm



58. In the given figure AE is the bisector of the exterior $\angle CAD$ meeting BC produced in E. If AB = 10 cm, AC = 6 cm and BC = 12 cm. Find CE.
(A) 12 cm
(B) 16 cm
(C) 20 cm
(D) 18 cm



Comprehension for Q. No. 59 to 60

For a natural number 'a' and a prime number p such (a,p) are co-prime, then if a^{p-1} is divided by p, the remainder would be 1.

59. The remainder when 2^{67} is divided by 67
(A) 1 (B) 2
(C) 4 (D) 8

60. The remainder when 2^{60} is divided by 13.
(A) 1 (B) 2
(C) 4 (D) 8

BIG BANG
EDGE TEST

SAMPLE PAPER

For Students presently in Class X

Paper 2

JEE Advanced

Paper Code: 1011-2

ANSWER KEYS

1.	**C**	2.	**B**	3.	**C**	4.	**C**
5.	**A**	6.	**C**	7.	**B**	8.	**B**
9.	**A**	10.	**A**	11.	**C**	12.	**C**
13.	**B**	14.	**B**	15.	**B**	16.	**C**
17.	**A**	18.	**B**	19.	**C**	20.	**B**
21.	**C**	22.	**D**	23.	**B**	24.	**A**
25.	**A**	26.	**A**	27.	**C**	28.	**A**
29.	**C**	30.	**A**	31.	**D**	32.	**A**
33.	**B**	34.	**D**	35.	**A**	36.	**D**
37.	**A**	38.	**A**	39.	**B**	40.	**A, D**
41.	**B, C, D**	42.	**A, B, D**	43.	**A, B, C**	44.	**B, C**
45.	**B, C**	46.	**B**	47.	**A**	48.	**D**
49.	**D**	50.	**B**	51.	**B**	52.	**A**
53.	**A**	54.	**C**	55.	**A**	56.	**A**
57.	**B**	58.	**D**	59.	**B**	60.	**A**