ATOMIC ENERGY EDUCATION SOCIETY, MUMBAI

AEES EXCELLENCE EXAMINATION 2019

CLASS: X **MARKS : 100**

DURATION: 2 HOURS

Read the following instructions carefully before you answer the questions.

1. Answers are to be given on the OMR sheet provided to you.

2. There are 100 questions in this test.
Question number 1 to 10 are from English.
Question number 11 to 30 are from Mathematics.
Question number 31 to 50 are from Science.
Question number 51 to 70 are from Social science
Question number 71 to 75 are from Current affairs.
Question number 76 to 100 are from Mental Ability.

3. All the questions are compulsory.

4. Please read the instructions given on the OMR before marking the answers.

5. Rough work can be done anywhere in the booklet but not on the OMR or loose paper. Rough pages are also provided at the end of the question paper.

6. Every correct answer will be awarded one mark. No negative mark for wrong answer.

7. Return only the OMR sheet to the invigilator at the end of the test. The test-booklet can be carried by the candidates after the exam.

Name:	
Class/Sec:	
Roll No.:	
UID Number:	
Student Sign:	
Invigilator's Sign:	

Read the passage carefully and answer the questions 1 to 4

Bansalilal's train was late and it reached Bombay a little after midnight. It was his first visit to the city, and he didn't know where to go. He thought he would go to a choultry where he would not have to pay rent, but he did not know how to find one at that hour. He asked a porter to get him a cheap room. The porter said that if Bansalilal gave him three rupees, he would take him to one. But Bansalilal waved him away and walked out of the station. He wandered through the streets and asked a number of people, but could find a room cheap enough for him. He sat down on a park bench to think what he should do next. He was very tired and fell asleep on the bench. He woke up the next morning stiff in every limb-but he smiled when he realised that it was the cheapest night's lodging that he had ever had.

1 In the passage, the word 'choultry' should mean

A a highway motel
B an expensive hotel
C a free resting place
D a roadside eating shop

2 The porter refused to help Bansalilal because

A he refused to pay the porter any tips
B he spoke a language which the porter could not understand
C he had no previous acquantance with the porter
D he was rude to the porter

3 Bansalilal could not get any accommodation for the night because

A he wanted to spend the night in the open
B all the hotels in the city were closed
C all the hotel rooms were booked
D the hotels were too expensive for him to afford

4 From the passage, Bansalilal emerges as a

A a fun-loving person
B an adventure-seeking person
C an extravagant spender
D a thrifty person

5 What does the idiom 'to break the ice' mean?

A to start a conversation
B to remove the ice
C to make ice into pieces
D to stop conversation

6 Four sentences are given below. Only one of them is right. Three of them are wrong. Choose the correct sentence.

A P V Sindhu practised hard, lest she should win the contest.
B P V Sindhu practised hard, lest she should lose the contest.
C P V Sindhu practised hard, lest she can win the contest.
D P V Sindhu practised hard, lest she can lose the contest.

7 Choose the option that means 'The supposed power to see objects or events that cannot be perceived by senses'

A transmigration
B apparition
C exorcism
D clairvoyance

8 Choose the correct option to fill the gap.
"Open your book_____ page number five", said the teacher

A on
B upon
C in
D at

9 Two statements are given.Choose the correct combination.
1.The young businessman was extravagant. 2. It led to his downfall.

A The young businessman's extravaganza led to his downfall.
B The young businessman's extravagancy led to his downfall.
C The young businessman's extravagantness led to his downfall.
D The young businessman's extravagance led to his downfall.

10 There are six sentences marked S1, S6, P, Q, R & S. The positions of S1 and S6 are fixed. Choose the alternative which would be the most logical sequence of the sentences in the passage.
S1. Rammohan Roy was associated with several newspapers.
P. Many educationists protested vigorously against these measures.
Q. But this came to grief soon after the enactment in 1823, of new measures for the control of the press.
R. He brought out a bilingual Bengali-English magazine.
S. Later, desiring an all-India circulation, he published a weekly in Persian, which was recognised then as the language of the cultured classes all over India.
S6. Rammohan Roy even addressed a petition to the King-in-Council in England.

A QPRS
B RQPS
C RSPQ
D RSQP

11 If $\frac{x^3+3x}{3x^2+1} = \frac{35}{19}$, then the value of x is

A x = 5
B x = 4
C x = 3
D x = 2

12 If $\sqrt[3]{\frac{x}{729}} + \sqrt[3]{\frac{8x}{729}} + \sqrt[3]{\frac{27x}{5832}} = 1$, then the value of x is_____.

A x = 5
B x = 9
C x = 8
D x = 7

13 If $\frac{x^2-bx}{ax-c} = \frac{m-1}{m+1}$ the roots which are numerically equal but opposite sign, then the value of m will be ____

A (a+b)/(a-b)
B b/a+b
C a+b/ b
D (a-b)/(a+b)

14 If α and β are the roots of the quadratic equation $x^2 - 6x - 2 = 0$ and if $a_n = \alpha^n - \beta^n$ then the value of $\frac{a_{10}-2a_8}{2a_9}$ is_____

A 2
B 3
C 1
D 4

15 If x and y are two positive real numbers such that $x\sqrt{x} + y\sqrt{y} = 183$ and $x\sqrt{y} + y\sqrt{x} = 182$, then the value of $\frac{18}{5}(x+y)$ is _____

A 135
B 146
C 150
D 169

16 If $\sin^2 A + \sin A = 1$,then the value of the expression $(\cos^2 A + \cos^4 A)$ is

A 1
B 1/2
C 2
D 3

17 What are the restrictions for a and b if, $\sin\theta = \frac{2ab}{a^2+b^2}$?

A a < 0, b > 0
B a < 0, b < 0
C a > 0, b < 0
D a > 0, b > 0

18 Three circles each radius r units are drawn inside the equilateral triangle of side 'a' units, such that each circle touches the other two and the sides of the triangle , P, Q and R are the centres of the circle, then the relation between r and a is _____

A $2r(\sqrt{3}+1)=a$

B $3\,r(\sqrt{5}+1)=a$

C $r(\sqrt{3}+1)=a$

D $4\,r(\sqrt{7}+1)=a$

19 In Δ ABC, BC = 3 cm, AC = 4 cm, angle C=90^0 and CD perpendicular to AB. The length of CD is _____

A 12/7

B 7/12

C 5/12

D 12/5

20 A cone, hemisphere and a cylinder stands on equal bases and have the same height, the height being equal t the radius of the circular base, then their whole surface areas are in the ratio :

A $\sqrt{2}+1):3:4$

B $(\sqrt{3}+1):3:4$

C $\sqrt{2}:3:4$

D $\sqrt{3}:7:8$

21 In Δ ABC, AB = 5 cm, AC = 7 cm and BC = 8 cm, then the length of the median through A is

A $\sqrt{18}\,cm$

B $\sqrt{20}$cm

C $\sqrt{21}$ cm

D $\sqrt{17}\,cm$

22 If PT is tangent and PAB a secant through P to circle intersecting at A and B such that PA = 4 cm and AB = 5 cm, then the length of the tangent is _____.

A 5 cm

B 8 cm

C 6 cm

D 9 cm

23 One ticket is selected at random from 100 tickets numbered 00, 01, 02, …., 99. Suppose x is sum of the digits and y is product of the digits. Then the probability x = 9 and y = 0 is

A 2/17

B 3/23

C 1/50

D 1/25

24 Which of the following is correct relations between mean, median and mode is

A median = mode = 2/3(mean + mode)

B mean = mode + 3/2(median + mode)

C mean - mode = 3(mean - median)

D mean + mode = 3(mean + median)

25 The vertex of an equilateral Δ ABC is (-2, 3) and its centroid is (8/3, 11/3), then the area of the triangle is __

A $\frac{50}{3}\sqrt{3}$

B $\frac{40}{3}\sqrt{3}$

C $\frac{50}{3}\sqrt{5}$

D $\frac{40}{3}\sqrt{5}$

26 In Δ ABC, AD is internal bisector of angle A, if B(-3, 4), C(2, 5) and D(1, 3), then AB : AC is

A 2:1

B 3:1

C 4:1

D $4:\sqrt{5}$

27 If $\sin(90^0-3A)\ \mathrm{cosec}42^0=1$, then the value of A is ____

A 20^0 B 25^0

C 36^0 D 16^0

28 If x1, x2, x3.....xn 'n' terms lie between 'a' and 'b' then then common difference d is ____

A $\frac{b-a}{n}$ B $\frac{b-a}{n+1}$

C $\frac{b+a}{n+1}$ D $\frac{b-a}{b+a}$

29 If $(a^2+b^2)^3=(a^3+b^3)^2$ and $ab\neq 0$, then the value $\left(\frac{b}{a}+\frac{a}{b}\right)^6$ of is ____

A $\frac{a^6+b^6}{a^3b^3}$ B 64/729

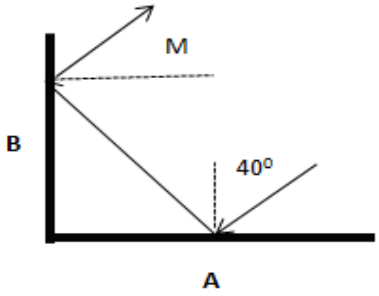
C 1 D $d=\frac{a^6+a^3b^3+b^6}{a^2b^4+a^4b^2}$

30 The perpendicular distance of (2, 3) from y-axis is _____.

A 3 B 2

C 5 D 6

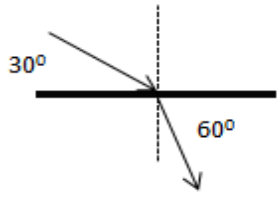
31 A ray of light falls on a plane mirror A kept at right angle to mirror B as shown in the figure.The angle M is



A 30 degree B 50 degree

C 45 degree D 40 degree

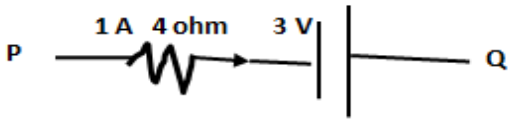
32 A ray of light undergoes refraction from medium A to B as shown in the figure. If the speed of light in medium A is v, then the speed of light in B



A V $\sqrt{3}$ B V/ $\sqrt{3}$

C V D V/2

33 What is the potential difference across PQ?



A 0 volt
B 1 volt
C 3 volt
D 1.5 volt

34 Wire of resistance 6 ohm is stretched to 4 times its original length,what is its new resistance?

A 24 ohm
B 96 ohm
C 100 ohm
D 126 ohm

35 A convex lens of focal length f produces a real image m times the size of an object,then the distance of the object from the lens is

A (m+1)f
B (m-1)f
C (m+1)f/m
D (m-1)f/m

36 Five resistors when connected in series disspated 5W power. If they are connected in parallel, the power disspated will be

A 125 W
B 96 W
C 68 W
D 32 W

37 The near point of a hypermetropic eye is 50 cm.The nature and power of the lens required to enable him to read a book placed at 25 cm from the eye are

A convex,-2D
B convex,+2D
C concave,-2D
D concave,+2D

38 The following reaction is used for the preparation of oxygen gas in the laboratory.

$$2KClO_3 \xrightarrow[\text{catalyst}]{\text{heat}} 2KCl(s)+3O_2(g)$$

which of the following statement(s) is/are correct about the reaction?

A it's a decomposition reaction and endothermic in nature
B it's a combustion reaction
C it's a decomposition reaction and accompanied by release of heat
D it's a photochemical decomposition reaction and exothermic in nature

39 The IUPAC name of $(CH_3)_3$ C-CH= CH_2 is

A Hex-1-ene
B 3,3-dimethyl but-1-ene
C 2,2 -dimethyl-3-butene
D Pent-1-ene

40 When magnesium is burnt in air, a white ash remains as left over. Aqueous solution this white ash turn red litmus blue. The formula of the white ash and the type of reaction respectively are

A MgO,non Redox reaction
B MgO,Redox
C $Mg(OH)_2$,decomposition
D MgO,Displacement

41 Arrange the following elements in the order of their increasing non metallic character- Li,O,C,Be,F

A F<O<C<Be<Li

B Li< Be< C< O< F

C F< O< C< Li< Be

D F< O< Be< C< Li

42 The nucleons of nuclei of three atoms A, B and C are given below;

A has 90 protons and 146 neutrons

B has 92 protons and 146 neutrons

C has 90 protons and 148 neutrons

Based on the above data which of these atoms are isotopes and which are isobars?

A A & C are isotopes,B&C are isobars

B A & B are isotopes, A&C are isobars

C A & B are isotopes,B&C are isobars

D A & C are isotopes,A&B are isobars

43 Which of the following compound has triple bond?

A $C_{12}H_{22}$

B $C_{15}H_{32}$

C $C_{20}H_{42}$

D $C_{16}H_{32}$

44 The loop of Henle is a part of nephron which is designed as per the need of the animal and the environment in which it lives. In which of the following will the loop of Henle be most developed?

A Desert mouse

B human beings

C fresh water fish

D cat

45 A green plant was irrigated with water containing ^{18}O isotope. What could be the possible observation and inference?

A observation- glucose obtained contained ^{18}O isotope : Inference - water is used to make glucose during photosynthesis

B observation- the oxygen evolved contains ^{18}O isotope: inference- oxygen evolved is obtained from photolysis of water during photosynthesis

C observation- glucose obtained contained ^{18}O isotope : Inference - oxygen evolved from photolysis of water is used to make glucose

D observation - carbon dioxide released during respiration contains ^{18}O isotope: inference - water is used in respiration to make carbon dioxide

46 The shoot tip of the main stem of a hibiscus plant was cut. After a few weeks it was observed that many lateral branches were growing. Which of the following conclusions can be drawn from this observation?

A the main stem was taking all the nutrients and hence the lateral buds could not grow

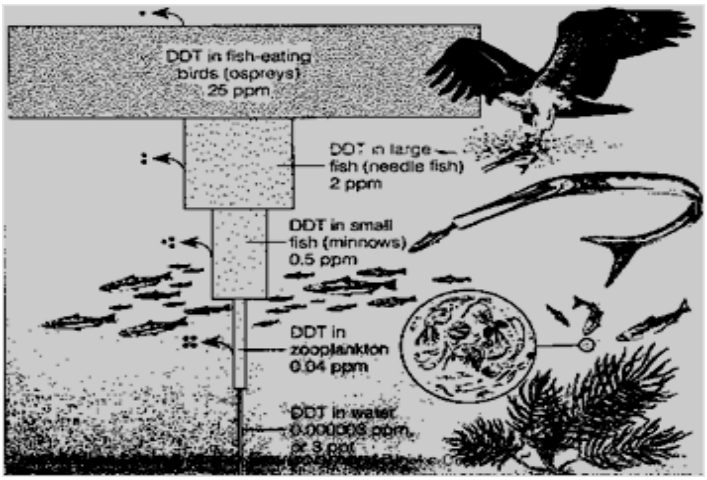
B since the acsending water could reach only the lateral buds so only they could grow

C auxin present in the lateral buds become active only after some weeks of plant growth

D auxin present in the shoot tip suppresses the growth of lateral buds

47 A mother claimed that her child's father is Mr. Wilmut. But Mr. Wilmut suspects Mr. Robert to be the child's father. Mr. Robert denied the allegation. The blood groups of the people are as follows: i) Mother- B group ii) Mr Wilmut - A group iii) Mr Robert - O group and the child- AB group. On the basis of these facts who could be lying?

A Mr. Robert
B Mr. Wilmut
C Mother
D All of them

48 

Observe and analyse the above figure and answer the following questions: i) In one week if a human being is consuming 10 minnows(small fish), what will be the concentratin of DDT in his adipose tissue? ii) if another person eats 5 needle fish (half the number of minnows), What will be the concentration of DDT in his adipose tissue? iii) Name the phenomena inferred from the figure.

A 50 ppm, 100 ppm, Biomagnification
B 5 ppm, 10 ppm, Biomagnification
C 0.5 ppm, 10 ppm, Biodegradation
D 5 ppm, 10 ppm, Biodegradation

49 Some years ago a project for building up a dam was carried out by the government. Surveys were done and it was observed that some tribals were residing in the proposed dam site and two villages were near the reservoir site. Government promised a sum of Rs 5 Lakhs as compensation and relocation of the locals. They spent Rs 50 crores for the construction of dam. The annual income from this project was approximately Rs 50000. What are the problems faced by the locals and the government?
i) no proper compensation for locals; no proper returns for the government
ii) spread of epidemics;corruption
iii) loss of traditional occupation; non cooperation from locals
iv) loss of fertile land; opposition from environmentalists

A (i), (ii) and (iii)
B (ii), (iii) and (iv)
C (i) , (iii) and (iv)
D (i), (ii), (iii) and (iv)

50 In certain organisms the female sex chromosomes are ZO and male sex chromosomes are ZZ. What is the probability of getting male offsprings in one event?

A 1/2
B 1/4
C 3/4
D 2/3

51 By whom was the Democratic Republic of Vietnam formed?

A Ho-chu-chee
B Ho-Chi-Minh
C Ho-How-Hing
D None of these

52 Who was the founder of " Hoa Hao Movement" in Vietnam?

A Huynh Phu So
B Ha Tien
C Ngu An
D None of these

53 By whom the first image of Bhrat Mata was created?

A W.C. Bonnerjee
B Bankim Chandra Chattopadhyay
C Surender Nath Banerjee
D Abanindranath Tagore

54 "Hind Swaraj" was written by_____.

A Mahatma Gandhi
B Jawaharlal Nehru
C Sardar Vallabhbai Patel
D Dr. Rajendra Prasad

55 Which City was known as "Finishing Centre"?

A London
B Mumbai
C Lisbon
D Paris

56 The Pioneer of Modern Hindi Literature is_____

A P. Harishchandra
B Bhupendra Singh
C V.S. Tyagi
D O.P. Sharma

57 Name the State famous for Rat Hole Mining in India.

A Megalaya
B Assam
C Tripura
D Nagaland

58 At which place in India, experimental project for Geothermal Energy had been set up?

A Shimla
B Manikaran
C Srinagar
D Meerut

59 Oil India Limited (OIL) belongs to which type of Industrty?

A Private Sector
B Co-operative Sector
C Public Sector
D Joint Sector

60 Which Industry, due its seasonal nature is ideally suited to the Co-operative Sector?

A Sugar
B Cotton Textile
C Jute
D None of these

61 Name the largest Public Sector undertaking in India.

A Railways
B Waterways
C Airways
D Roadways

62 The length of West Coast Canal is _____.

A 204 Km
B 305Km
C 205 Km
D 304 Km

63 Which day is observed in India as "National Consumers Rights Day"?

A December-24th
B Novemeber-24th
C March-24th
D September-24th

64 Which Logo certifies the qulity of agricultural products?

A ISI
B AGMARK
C Hallmark
D ISO

65 The American MNC that has bought over smaller Indian Company such as Parakh Foods is _____.

A Cargil Foods
B Modern Foods
C Mothers Foods
D Auro Foods

66 An Asset the borrowers owns and uses as gurantee to the bank against the loan is called_____.

A Ration Card
B Aadhar Card
C Documents
D Collateral

67 An example for "Coming Together Federation" is _____.

A Srilanka
B India
C Pakistan
D USA

68 The leader of the Civil Rights Movement in the USA was_____.

A Martin Luther King Junior
B John Carlos
C Tommie Smith
D Peter Norman

69 To get recognition of a National Party, a political should secure at least _____ % total votes polled in Lok Sabha Elections.

A 4
B 6
C 5
D 7

70 The Communist Party of India(CPI) was formed in the year_____.

A 1945
B 1935
C 1925
D 1950

71 Centre launched Apollo Proton Cancer Centre (APCC) in which of the following city?

A Chennai
B Hyderabad
C Bengaluru
D Mumbai

72 Which State declared Dolphin as State aquatic animal?

A Andhra Pradesh
B Kerala
C Punjab
D Tamil Nadu

73 Which country has won the 2019 Asian Cup Football tournament?

A Japan
B Singapore
C Qatar
D Iran

74 Which city will be the world's fastest growing city in the 2019-2035 period, as per the Global economic Research report prepared by Oxford Economics?

A Surat
B Mumbai
C Bengaluru
D Guwahati

75 What is the theme of the 2019 International Customs Day?

A Digital Customs - Progressive Engagement
B Smart borders, Smart Customs
C SMART borders for seamless Trade, Travel and Transport
D Secure & Smart business for economic development

76 Choose the word which is different from the rest.

A Chicken
B Snake
C Swan
D Crocodile

77 Choose the pair that best represents a similar relationship to the one expressed in the original pair of words.
Pesticide : Plant

A Injection : Disease
B Vaccination : Body
C Medicine : Cure
D Teacher : Student

78 In this series, you will be looking at the letter pattern. Fill the blank of the series.
AI, EO, IU, __, UE

A OU
B OI
C UA
D OA

79 Today is Friday, what will be the day after 91 days?

A Sunday
B Tuesday
C Friday
D Wednesday

80 In a certain code, COMPUTER is written as RFUVQNPC. How is MEDICINE written in the same code ?

A MFEDJJOE
B EOJDEJFM
C MFEJDJOE
D EOJDJEFM

81 In these series, you will be looking at both the letter pattern and the number pattern. Fill the blank given at the at the end of the series. ZA5, Y4B, XC6, W3D, _____

A E7 V
B V2E
C VE5
D VE7

82 In a class of 40 children, Sunetra's rank is eight from the top. Sujit is five ranks below Sunetra. What is Sujit's rank from the bottom?

A 27
B 29
C 28
D 26

83 Arrange the words given below in a meaningful sequence.
1. Probation 2. Interview 3. Selection
4. Appointment 5. Advertisement 6. Application

A 5, 6, 3, 2, 4, 1
B 5, 6, 4, 2, 3, 1
C 5, 6, 2, 3, 4, 1
D 6, 5, 4, 2, 3, 1

84 Find the missing term : 5,25,61,113,181, --

A 265 B 235

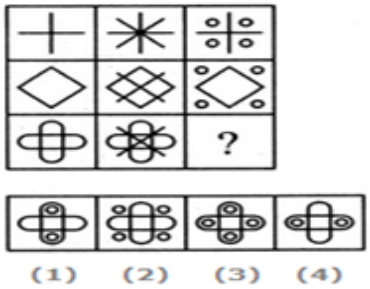
C 295 D 305

85 Arrange the given words in a meaningful logical order and then select the appropriate sequence from the alternatives provided below each questions. 1.Windows 2.Walls 3.Floor 4.Foundation 5.Roof 6. Room

A 4,5,3,2,1,6 B 4,3,5,6,2,1

C 4,2,1,5,3,6 D 4,1,5,6,2,3

86 Fill the ? With a figure.



A 1 B 2

C 3 D 4

87 Out of the five figures marked (1), (2), (3), (4) and (5), four are similar in a certain manner. However, one figure is not like the other four. Choose the figure which is different from the rest.

1 2 3 4

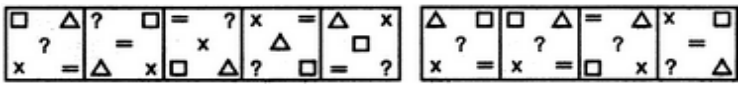
A 1 B 2

C 3 D 4

88 This question consists of five figures as the problem figure followed by four figures marked (a), (b), (c) and (d) as the answer figures. Select the correct answer figure which will continue the series as established by the problem figures.

Problem figures **Answer figures**

1 2 3 4 5



a b c d

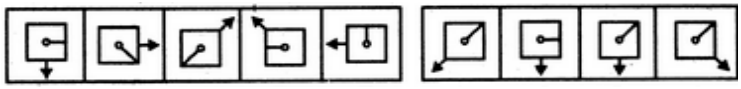
A a B b

C c D d

89 This question consists of five figure as the problem figure followed by four figures marked (a), (b), (c) and (d) as the answer figures. Select the correct answer figure which will continue the series as established by the problem figures.

Problem figures **Answer figures**

1 2 3 4 5



a b c d

A a B b

C c D d

90 Select a figure from amongst the Answer Figures which will continue the same series as established by the Problem Figures.

Problem Figures **Answer Figures**

1 2 3 4 5

a b c d

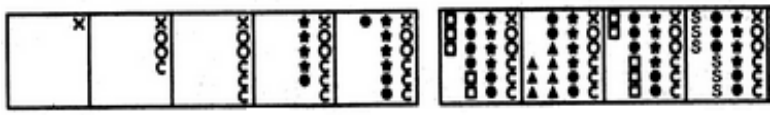
A a B b

C c D d

91 Identify the figure from a ,b,c,d that completes the pattern.

Problem Figures **Answer Figures**

1 2 3 4 5



a b c d

A a B b

C c D d

92 Look at this series: 2 , 4 , 11 , 37 , ? What number should come next?

A 152 B 153

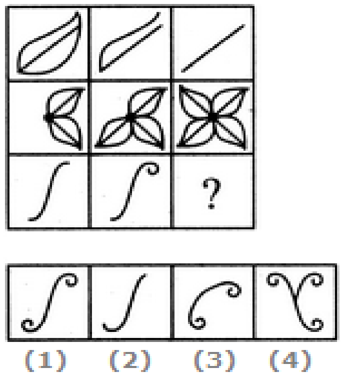
C 232 D 233

93 Look at this series: 24 , 30 , 36 , 42 , 54 , 60 , 68 . Find out the wrong term in the series. ..

A 36 B 42

C 54 D 68

94 Select a suitable figure from the four alternatives that would complete the figure matrix.



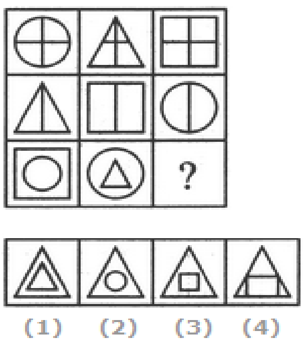
A 1

B 2

C 3

D 4

95 Select a suitable figure from the four alternatives that would complete the figure matrix



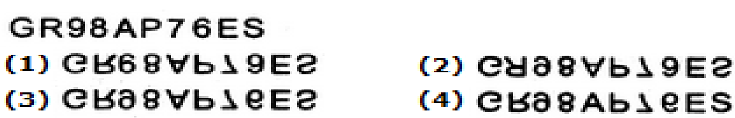
A 1

B 2

C 3

D 4

96 Choose the alternative which is closely resembles the water-image of the given combination-



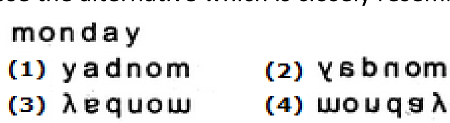
A 1

B 2

C 3

D 4

97 Choose the alternative which is closely resembles the water-image of the given combination-



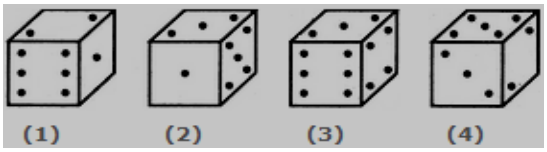
A 1

B 2

C 3

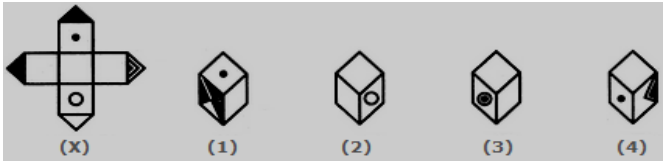
D 4

98 If the total number of dots on opposite faces of a cubical block is always 7, find the figure which is correct.



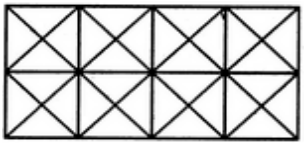
A 1
B 2
C 3
D 4

99 Choose the box that is similar to the box formed from the given sheet of paper (X)



A 1 and 2 only
B 1, 2 and 3 only
C 1 and 3 only
D 1, 2, 3 and 4

100 Count the number of squares in the given figure



A 20
B 21
C 24
D 26

Rough page

Rough page

ATOMIC ENERGY EDUCATION SOCIETY	
EXCELLENCE EXAM-2019	
ANSWER KEY	
CLASS :X	
Q.NO	CORRECT OPTION
1	C
2	A
3	D
4	D
5	A
6	B
7	D
8	D
9	D
10	D
11	A
12	C
13	D
14	B
15	B
16	A
17	D
18	A
19	D
20	A
21	C
22	C
23	C
24	C
25	A
26	D
27	D
28	B
29	B
30	B
31	B
32	B
33	B
34	B
35	C
36	A
37	B
38	A
39	B
40	B

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

71	A
72	C
73	C
74	A
75	C
76	A
77	B
78	D
79	C
80	D
81	D
82	C
83	C
84	A
85	C
86	B
87	CANCELLED QUESTION
88	B
89	C
90	C
91	C
92	B
93	C
94	A
95	C
96	C
97	D
98	B
99	A
100	C