JEE Main 2023 Paper 2A (B.Arch) Jan 28 Single sitting Question Paper

Conducted by the National Testing Agency (NTA)

Time Allowed: 3 Hours **B.Arch** **Maximum Marks: 400**

General Instructions

(i) This is **Paper 2A (B.Arch)** of **JEE (Main) 2023**, conducted by the National Testing Agency on **28 Jan 2023**.

(ii) The paper contains **82 questions**; attempt **77** as specified in the section table. The maximum score is **400 marks**.

(iii) Multiple choice questions have four options. Select one answer. Each correct answer carries **4 marks**; an incorrect answer carries **−1 mark**.

(iv) Numerical value questions carry **4 marks** for a correct answer and **−1 marks** for an incorrect answer. Unanswered questions carry **0 marks**.

(v) The Drawing section contains **two questions of 50 marks each**. Follow the alternatives and instructions printed within each question.

(vi) In Mathematics Section B, attempt **any five of the ten** numerical value questions.

Section	Questions	To attempt	Marks
Mathematics Section A	20	20	80
Mathematics Section B	10	5	20
Aptitude Test	50	50	200
Drawing	2	2	100

Mathematics Section A

1. 4 marks

Let R_1 and R_2 be two relations on $\mathbb{R}^2$ defined as

$(a, b)\ R_1\ (c, d)$ if $ad - bc \geq 0$

$(a, b)\ R_2\ (c, d)$ if $a + d \geq b + c$. Then :

(1) R_1 is transitive but R_2 is not transitive

(2) R_2 is transitive but R_1 is not transitive

(3) Both R_1 and R_2 are transitive

(4) Neither R_1 nor R_2 is transitive

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2. 4 marks

Let α and β be the roots of $x^2 - 3x + 9 = 0$. Then $\left(\frac{\beta^{30}}{(9\alpha)^{10}} + \frac{\alpha^{30}}{(9\beta)^{10}}\right)^2$ is equal to

(1) 1

(2) $\frac{1}{9}$

(3) 3

(4) 9

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3. 4 marks

For $z = 2 + 5i$, the modulus of $2z^3 + 21z^2 - 58z + 4$ is :

(1) 1153

(2) 947

(3) 537

(4) 837

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4. 4 marks

If the system of equations

$$Kx-\sqrt{2}y+\sqrt{5}z=\sqrt{7}$$

$$\sqrt{5}x+\sqrt{3}y-\sqrt{2}z=\sqrt{11}$$

$$30x+(3\sqrt{15}-5\sqrt{6})y+(5\sqrt{15}-3\sqrt{10})z=5\sqrt{21}+3\sqrt{55}$$

has infinitely many solutions, then K^2 is

(1) 27

(2) $\frac{1}{3}$

(3) 9

(4) 3

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5. 4 marks

For $\alpha, \beta \in \mathbb{R}$, if the matrices $A=\begin{pmatrix}\alpha & 0\\ 0 & \beta\end{pmatrix}$, $B=\begin{pmatrix}\alpha & 0\\ 0 & \alpha\end{pmatrix}$ and $I=\begin{pmatrix}1 & 0\\ 0 & 1\end{pmatrix}$ satisfy the equation $(A*B)*2I=20I$, where $*$ is defined as $A*B=A^2+B^2$, then $|\alpha\beta|$ is equal to :

(1) $2\sqrt{3}$

(2) $2\sqrt{2}$

(3) 4

(4) 2

---

6. 4 marks

The sum of the first eleven terms of the series is $\frac{1}{1+1^2+1^4}+\frac{2}{1+2^2+2^4}+\frac{3}{1+3^2+3^4}+\ldots$

(1) $\frac{61}{133}$

(2) $\frac{66}{133}$

(3) $\frac{16}{33}$

(4) $\frac{33}{67}$

---

7. 4 marks

$\lim\limits_{x\to 0}(1+3x)^{\frac{x+2}{x}}$ is equal to

(1) e

(2) e^3

(3) e^6

(4) e^9

---

8. 4 marks

Let $P(\alpha,\beta,\lambda)$ be the image of the point Q(1,2,0) in the line $\frac{x-5}{3}=\frac{y-12}{1}=\frac{z-10}{2}$, then $(PQ)^2$ is equal to

(1) 90
(2) 180
(3) 360
(4) 270

9. 4 marks

A box contains 7 red and 9 white balls.The number of ways of drawing 8 balls such that there are at least three balls of each colour, is :

(1) 8820
(2) 10584
(3) 1764
(4) 3515

10. 4 marks

Let [t] denote the greatest integer function. If $\int_0^1\left[1+x^2+x^4\right]dx=a$, then $36a-25a^2+8a^3-a^4$ is equal to

(1) 19
(2) -19
(3) 18
(4) -21

11. 4 marks

Let PL = 8 units and QM = 2 units be two parallel line segments such that the line segments PM and QL intersect at the point R. If PL and QM are tangents to a circle passing through points P, Q, R then radius of this circle is

(1) $\sqrt{2}$
(2) 2
(3) $2\sqrt{2}$
(4) 4

12. 4 marks

For some $\alpha \in \mathbb{N}$, let PQR be a triangle with two fixed vertices P(2, 5) and Q(α, –11). If the point R moves on the line l_1: $9x + 7y + \alpha = 0$, then the centroid of ΔPQR moves on the line l_2, which is parallel to l_1 at a distance $\frac{20}{3\sqrt{130}}$ units from it. If the distance of Q from l_2 is $\frac{k}{3\sqrt{130}}$, then k is equal to :

(1) 117
(2) 129
(3) 131
(4) 133

13. 4 marks

Let $A_i(x_i, y_i)$, $i = 1,2,3$ be points on the circle $x^2 + y^2 = 10$ such that A_1 lies in the 1st quadrant and it is the image of point A_2 with respect to y-axis. If the distance of point A_1 from each of the points A_2 and A_3 is 2, then twenty times the area of the $\Delta A_1 A_2 A_3$ is

(1) 12 (2) 30
(3) 24 (4) 48

14. 4 marks

The remainder when 7^{89} is divided by 15 is

(1) 5 (2) 7
(3) 9 (4) 11

15. 4 marks

If the plane $y = \alpha x - \beta z + \gamma$ passing through the point $(1, -1, 3)$ is perpendicular to each of the planes $2x + y + z = 1$ and $3x - 2y + 2z = 0$, then $\alpha + \beta + \gamma$ is equal to :

(1) 5 (2) 13
(3) 19 (4) 27

16. 4 marks

Let $\vec{a} = \hat{i} + 2\hat{j} + 3\hat{k}$, $\vec{b} = \hat{i} - \hat{j} + 2\hat{k}$, $\vec{c} = 2\hat{i} + \hat{j} - 4\hat{k}$ be three vectors. If $\vec{r}$ is the vector such that $\vec{r} \times \vec{a} = \left(\vec{b} + \vec{c}\right) \times \vec{a}$ and $\vec{r} \cdot \left(\vec{b} - \vec{c}\right) = 0$, then $\vec{r} \cdot \left(\hat{i} + \hat{j} - \hat{k}\right)$ is equal to :

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

17. 4 marks

The probability that a randomly selected root of the equation $1 + x + x^2 + ... + x^{118} = 0$ satisfies the equation $x^7 = 1$, is

(1) 0 (2) $\frac{1}{59}$
(3) $\frac{3}{59}$ (4) $\frac{7}{118}$

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18. 4 marks

Let X have the binomial distribution B(n, p). If its mean is 3 and variance is 2, then $P(X < \frac{n}{4})$ is equal to :

(1) $\frac{29\times 2^8}{3^9}$

(2) $\frac{25\times 2^9}{3^9}$

(3) $\frac{163}{3^9}$

(4) $\frac{835}{3^9}$

19. 4 marks

The domain of the function $f(x)=\cos^{-1}\left(\frac{x^2-3x+2}{x^2+2x-1}\right)$ is :

(1) $\left(\sqrt{2}-1, \frac{3}{5}\right]$

(2) $\left[\frac{3}{5}, \infty\right)$

(3) $\mathbb{R}-\{-\sqrt{2}-1,\ \sqrt{2}-1\}$

(4) $(-\infty, -1-\sqrt{2}) \cup (\sqrt{2}-1, \infty)$

20. 4 marks

Which of the following statements is a tautology ?

(1) $((p \Rightarrow q) \vee p) \Rightarrow q$

(2) $((p \wedge q) \Rightarrow p) \Rightarrow q$

(3) $((p \wedge q) \wedge (\sim q)) \Rightarrow p$

(4) $((p \Rightarrow q) \vee p) \Rightarrow p$

Mathematics Section B

21. Numerical value · 4 marks

The curve $y = x^2 + 1$ divides the area enclosed by the curves $y + |x| = 3$ and $y = |x-1|$ in the ratio m : n , where m and n are coprime, then m + n is equal to _____ .

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22. Numerical value · 4 marks

The number of ways in which 30 identical pens can be distributed among 12 students so that each student gets at least one pen and exactly two students get at least two pens each, is _____.

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23. Numerical value · 4 marks

Let $\left(1+x^2-x^4\right)^{12} = \sum_{n=0}^{48} a_n x^n$. Then $a_0 + a_2 + a_4 + ... + a_{44}$ is equal to

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24. Numerical value · 4 marks

If S_n denotes the sum of first n terms of the series $7 + 10 + 16 + 25 + 37 + ...$, then $S_{30} - S_{20}$ is equal to _____.

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25. Numerical value · 4 marks

If [t] denotes the greatest integer $\leq$ t, then the number of points , at which the function $f(x)=\left[x+x^3\right]+\left|x-x^3\right|+\left|x+\frac{1}{2}\right|$ is not differentiable in the open interval (–10, 10), is _____.

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26. Numerical value · 4 marks

If $\int \frac{dx}{(3x^2+5)\sqrt{10x^2+7}} = -\frac{1}{\sqrt{580}} \log_e |f(x)| + C$ where C is an arbitrary constant, then $f(0)$ is equal to

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27. Numerical value · 4 marks

Let the equation of the hyperbola with foci (1, 5), (1, –1) and eccentricity $\sqrt{3}$ be $x^2 - 2y^2 + ax + by + c = 0$. Then $|a + b + c|$ is equal to _____.

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28. Numerical value · 4 marks

Let α_1, α_2 be the values of α such that the distance between the point (2, 4, 3) and the plane $3x + y + \alpha z + 10 = 0$ is $\sqrt{35}$ units. Then the area of the triangle with vertices $(\alpha_1, \alpha_2, 0)$, $(\alpha_2, \alpha_1, 0)$ and $\left(\frac{164}{13}, 5, 0\right)$ is _____ unit^2.

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29. Numerical value · 4 marks

Let O be the origin and let the vectors $\overrightarrow{OA} = -3\hat{i} + 7\hat{j} + 5\hat{k}$, $\overrightarrow{OB} = -5\hat{i} + 7\hat{j} - 3\hat{k}$ and $\overrightarrow{OC} = \hat{u}$ represent three sides of a parallelopiped, where $\hat{u}$ is a unit vector in the xy- plane. If the maximum volume of the parallelopiped is $2\sqrt{\alpha}$, then α is equal to _____.

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30. Numerical value · 4 marks

If the solution curve of the differential equation $\frac{x+y-2}{x+y-1}\frac{dy}{dx} = \frac{x+y+2}{x+y+1}, x+y>2$ passes through the points $\left(\sqrt{2}, \sqrt{2}\right)$ and $(2, \alpha)$, then $2\alpha - \log_e\left(\frac{\alpha^2+4\alpha+2}{6}\right)$ is equal to _____ .

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31. 4 marks

Adobe is a

(1) Type of cement
(2) Type of floor finish
(3) Type of paint
(4) Type of Brick

32. 4 marks

Given below are two statements:

Statement I : Chandigarh is the first planned city of Independent India

Statement II : Chandigarh city was designed by Swiss French architect Le Corbusier

In the light of above statements, choose the **most appropriate** answer form the options given below

(1) Both Statement I and Statement II are correct
(2) Both Statement I and Statement II are incorrect
(3) Statement I is correct but statement II is incorrect
(4) Statement I is incorrect but statement II is correct

33. 4 marks

Given below are two statements:

Statement I : Glass has low thermal conductivity

Statement II : Glass can absorb, refract and transmit light.

In the light of above statements, choose the most appropriate answer form the options given below

(1) Both Statement I and Statement II are correct
(2) Both Statement I and Statement II are incorrect
(3) Statement I is correct but statement II is incorrect
(4) Statement I is incorrect but statement II is correct

34. 4 marks

Match List I with List II

LIST I		LIST II	
A.	PMUY	I.	KAUSHAL VISKAS YOJNA
B.	PMAY	II.	JAN DHAN YOJANA
C.	PMKVY	III.	UJJWALA YOJANA
D.	PMJDY	IV.	AWAS YOJANA

Choose the correct answer from the options given below:

(1) A-I, B-III, C-II, D-IV
(2) A-III, B-IV, C-I, D-II
(3) A-IV, B-II, C-III, D-I
(4) A-IV, B-III, C-I, D-II

35. 4 marks

Match List I with List II

LIST I		LIST II	
A.	CP Kukreja	I.	IIM Ahmedabad
B.	Louis I Kahn	II.	Jawahar Lal Nehru University
C.	B.V Doshi	III.	IIT Kanpur
D.	Achyut Kanvinde	IV.	IIM Bengaluru

Choose the correct answer from the options given below:

(1) A-IV, B-II, C-I, D-III
(2) A-III, B-I, C-II, D-IV
(3) A-II, B-I, C-IV, D-III
(4) A-I, B-IV, C-III, D-II

36. 4 marks

Which one of these is not a complimentary colour?

(1) Blue-Orange
(2) Red-Green
(3) Blue-Green
(4) Violet-Yellow

37. 4 marks

In which State of India, Robbers cave is situated:

(1) Himachal Pradesh
(2) Uttarakhand
(3) Uttar Pradesh
(4) Madhya Pradesh

38. 4 marks

Choose the correct option among the following:

Petronas Tower is situated in:

(1) Paris
(2) Dubai
(3) Kuala Lumpur
(4) New York

39. 4 marks

The Konark Temple is located in which state?

(1) Madhya Pradesh
(2) Odisha
(3) Karnataka
(4) Rajasthan

40. 4 marks

Who is the architect of the Lotus Temple?

(1) Louis I Kahn
(2) Mohse Safdi
(3) Fariborz Sahba
(4) Richard Meyer

41. 4 marks

A small lift for carrying only a small load is known as:

(1) A dead Bearer
(2) A Dumb Waiter
(3) A Jockey Boy
(4) A push upper

42. 4 marks

Which are often referred as 'twin cities' of Odisha?

(1) Bhubaneshwar-Puri
(2) Puri-Cuttack
(3) Bhubaneshwar-Cuttack
(4) Bhubaneshwar-Rourkela

43. 4 marks

Which is the correct chronology of Human Civilizations in terms of their existence?

(1) Mesopotamia-Harappa-Egyptian-Chinese
(2) Mesopotamia-Egyptian-Harappa-Chinese
(3) Mesopotamia-Chinese-Harappa-Egyptian
(4) Egyptian-Mesopotamia-Harappa-Sumerian

44. 4 marks

Qutub-Minar in Delhi was built by:

(1) Shah Jahan
(2) Jahangir
(3) Akbar
(4) Qutub ud-din Aibak

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45. 4 marks

Which direction in the southern hemisphere would you get glare free (diffused) light throughout the year?

(1) North
(2) South
(3) East
(4) West

46. 4 marks

Who is the architect of the famous "Jawaharlal Kala Complex" in Jaipur?

(1) Raj Rewal
(2) Charles Correa
(3) Achyut Kanvinde
(4) Hafeez Contractor

47. 4 marks

Dhajji-Dewari is a construction style popular predominantly in _____.

(1) Coastal Areas
(2) Plains
(3) Mountainous Region
(4) Desert Areas

48. 4 marks

Which stone is used for roofing in mountainous regions?

(1) Marble
(2) Granite
(3) Shale
(4) Sand Stone

49. 4 marks

Chandigarh is an example of which type of city planning.

(1) Radio Centric
(2) Grid-iron
(3) Linear
(4) Organic

50. 4 marks

If you have to build on the seashore in Goa, which rooms would have the best view of the sea?

(1) Those facing North
(2) Those facing South
(3) Those facing East
(4) Those facing West

51. 4 marks

"NIFT" National Institute of Fashion Technology, Delhi is designed by

(1) B.V Doshi
(2) C.P Kukreja
(3) Raj Rewal
(4) Bimal Patel

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52. 4 marks

Match List I with List II

LIST I		LIST II	
A.		I.	Empire state Building
B.		II.	Hagia Sophia
C.		III.	Sydney Opera House
D.		IV.	Colosseum

Choose the correct answer from the options given below:

(1) A-II, B-I, C-IV, D-III

(2) A-I, B-III, C-IV, D-II

(3) A-I, B-II, C-III, D-IV

(4) A-IV, B-III, C-II, D-I

53. 4 marks

Match List I with List II

LIST I		LIST II	
A.		I.	Tesla
B.		II.	Ferrari
C.		III.	Porsche
D.		IV.	Toyota

Choose the correct answer from the options given below:

(1) A-IV, B-I, C-II, D-III

(2) A-II, B-III, C-I, D-IV

(3) A-III, B-II, C-I, D-IV

(4) A-IV, B-III, C-II, D-I

54. 4 marks

Given below are two statements:

Statement I : Red, Blue and Yellow are the primary colours of a colour wheel.

Statement II : The colours which are positioned opposite to each other in a colour wheel are known as complementary colours.

In the light of above statements, choose the correct answer form the options given below

(1) Both Statement I and Statement II are correct

(2) Both Statement I and Statement II are incorrect

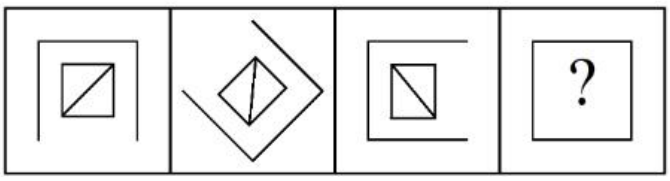
(3) Statement I is correct but statement II is incorrect

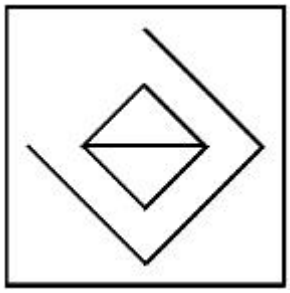
(4) Statement I is incorrect but statement II is correct

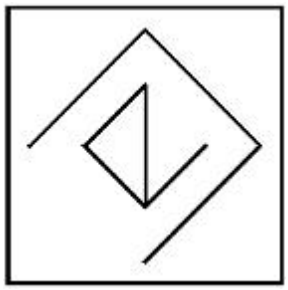
55. 4 marks

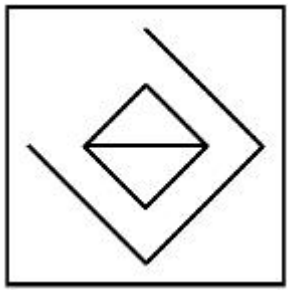
Following question consists of problem figures followed by answer figures. Select a figure from amongst the answer figures which will continue the same series or pattern as established by the problem figures.

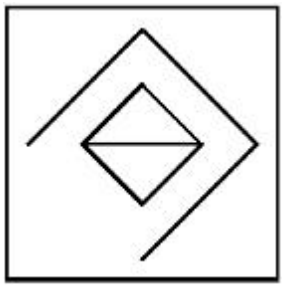
PROBLEM FIGURES



(1) 

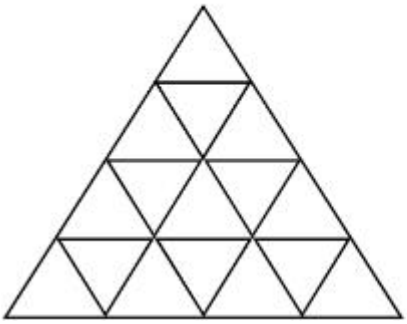
(2) 

(3) 

(4) 

56. 4 marks

How many triangles are there in given figure:-



(1) 26

(2) 25

(3) 27

(4) 24

57. 4 marks

Find the odd one out:-

7, 9, 25, 32, 43, 59

(1) 59
(2) 32
(3) 25
(4) 9

58. 4 marks

A residential building has 15 floors. The height of ground floor is 4.2 meter (including length and slab thickness). Rest all other floors are of 3.3 meter high (including slab thickness). What is the total height of the building (from ground to terrace) in meters?

(1) 45.6 meter
(2) 50 meter
(3) 50.4 meter
(4) 51.6 meter

59. 4 marks

Identify the mirror image of the given word:-

SUCCESS

(1) SSƎƆƆUS
(2) SUƆƆƎSS
(3) SUCCESS
(4) SSECCUS

60. 4 marks

The scale of a map is 1:1000. If a car travels 7 cm from point 'A' to point 'B' on the Map. Then how much the car has travelled in original:-

(1) 0.7 km
(2) 7000 mm
(3) 7 km
(4) 70 meter

61. 4 marks

A land size of 80 meter × 40 meter for a house design is drawn on paper at a scale of 1:100, then what size is drawn on paper to represent the land?

(1) 8 meter × 4 meter
(2) 80 meter × 40 meter
(3) 8 centimeter × 4 centimeter
(4) 4 meter × 2 meter

62. 4 marks

Find the missing number in given series.

16, 33, 65, 131, 261, (.....)

(1) 523
(2) 521
(3) 524
(4) 520

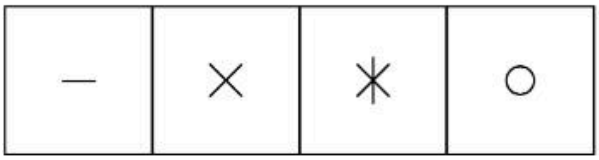
63. 4 marks

In a code language if ROMAN is written as TQOCP: then ITALY is.....

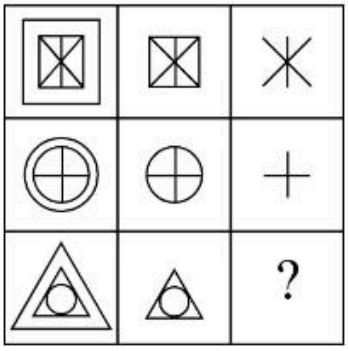
(1) KVCMA
(2) KWCNB
(3) KUCLA
(4) KVCNA

64. 4 marks

Select a suitable figure from the four alternatives which will come in the empty box.



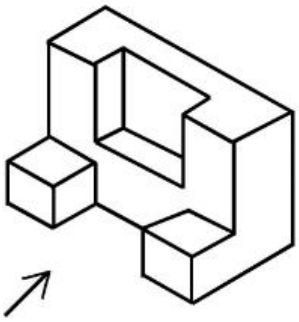
(A) (B) (C) (D)



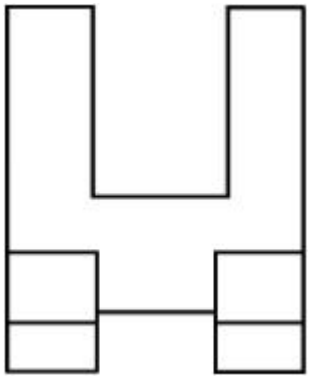
(1) D
(2) C
(3) B
(4) A

65. 4 marks

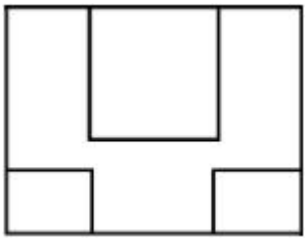
The 3D figure shows the view of an object. Looking in the direction of arrow, identify the most appropriate elevation from the given answer figures.



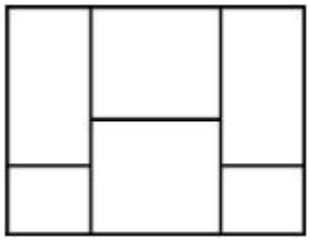
(1)



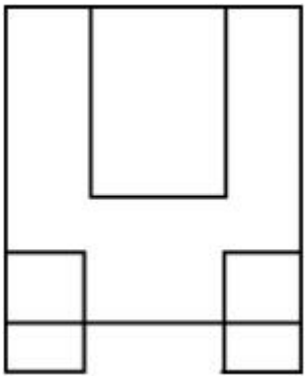
(2)



(3)

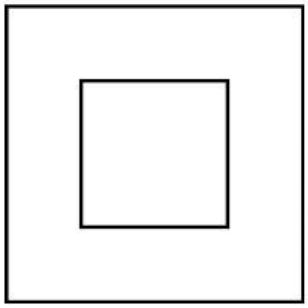


(4)

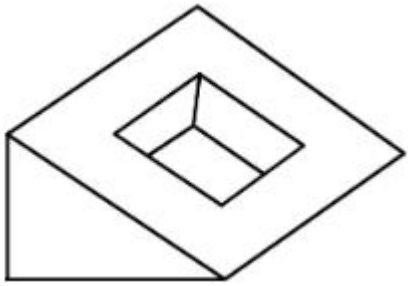


66. 4 marks

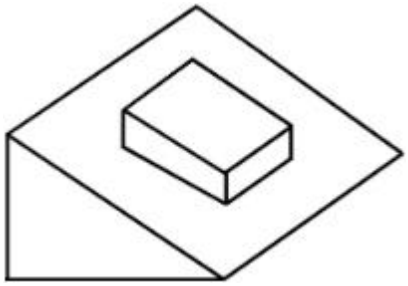
Question figure shows top view/ plan of an object. Identify the INCORRECT 3D view from the given answers figure.



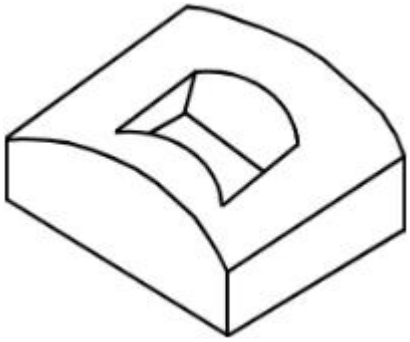
(1)



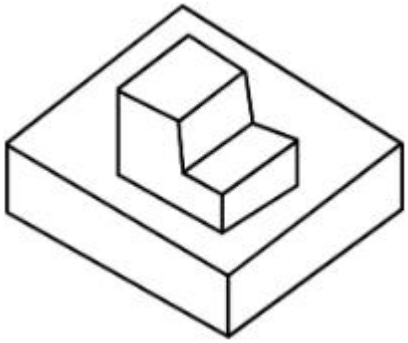
(2)



(3)

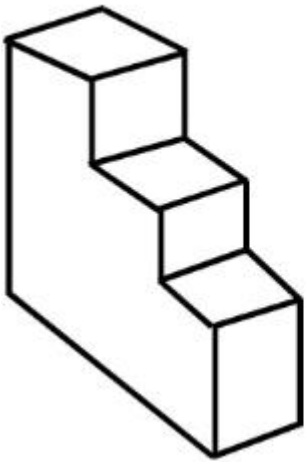


(4)



67. 4 marks

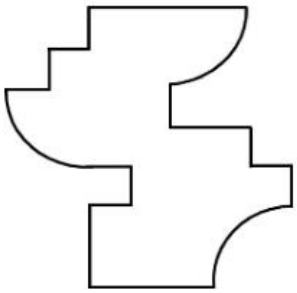
How many surfaces does the object have?



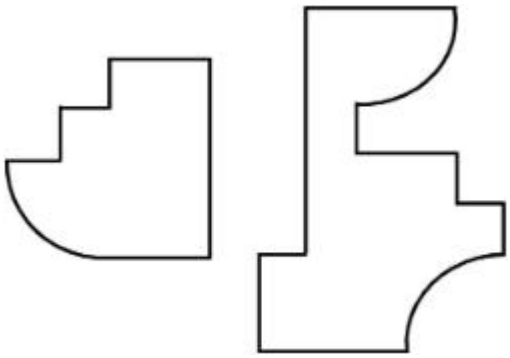
(1) 9
(2) 10
(3) 8
(4) 11

68. 4 marks

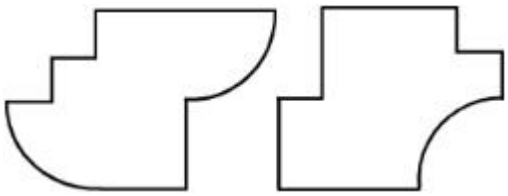
If the question figure is cut into two parts, which of the answer figures complete the question figure without any overlappings?



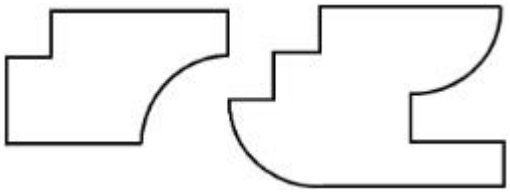
(1)



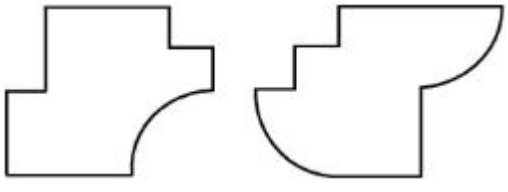
(2)



(3)

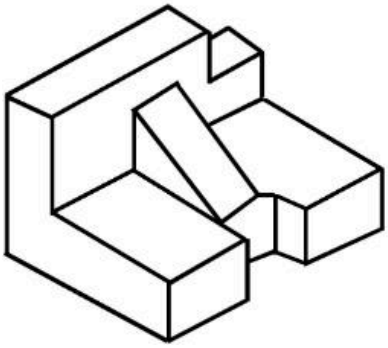


(4)

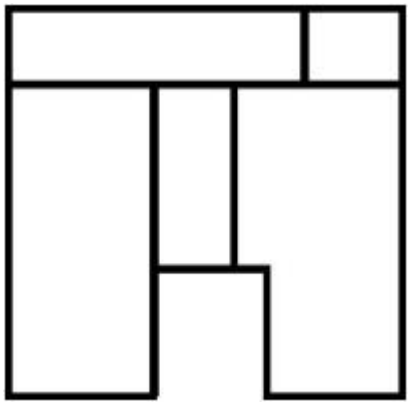


69. 4 marks

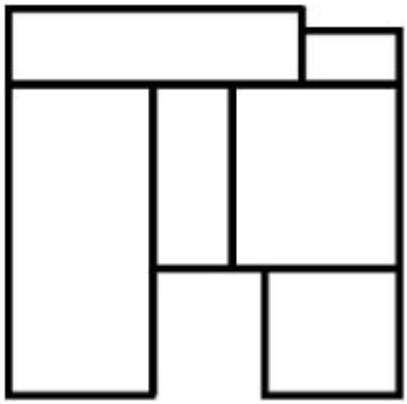
The 3D problem figure shows the view of an object. Identify its appropriate top view from the answer figures.



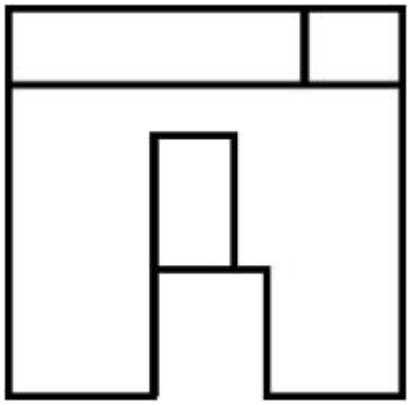
(1)



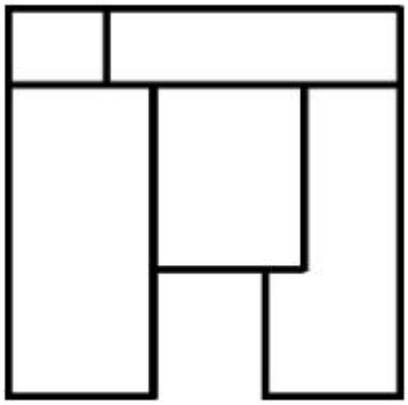
(2)



(3)

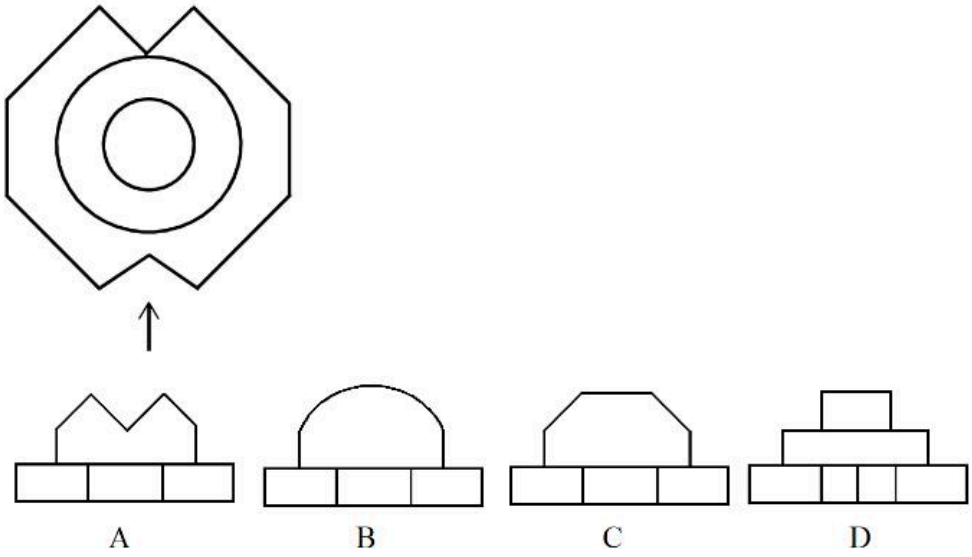


(4)



70. 4 marks

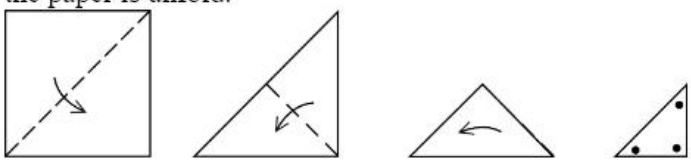
Identify the correct elevation when you look into the object from the marked arrow side of the plan of the object.

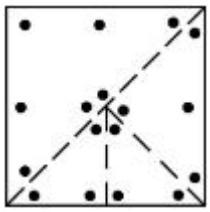
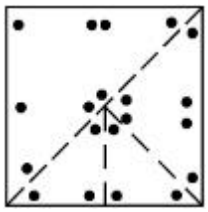
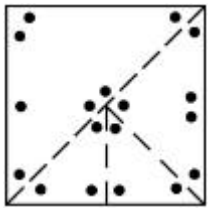
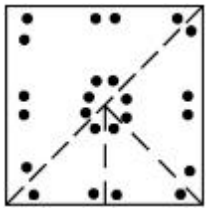


(1) D
(2) A
(3) B
(4) C

71. 4 marks

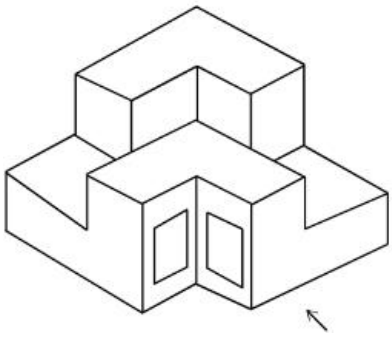
A paper is folded in a given pattern and it is cut at the end. Identify which pattern is formed when the paper is unfold.



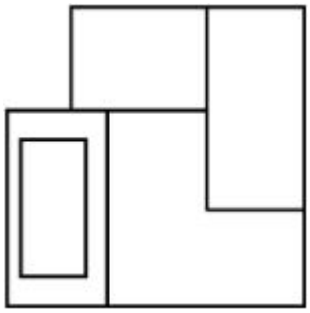
(1) 
(2) 
(3) 
(4) 

72. 4 marks

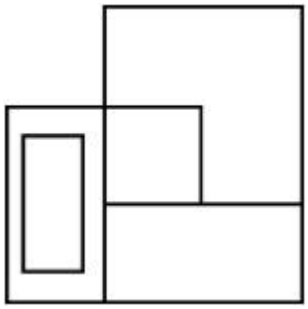
The question figure shows the 3-D view of an object. Identify the correct view, looking in the direction of arrow.



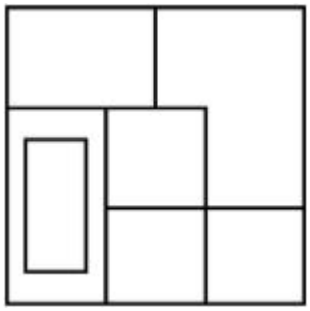
(1)



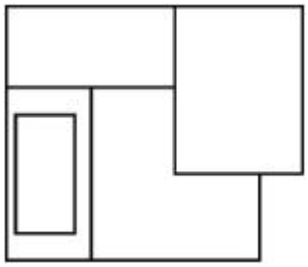
(2)



(3)

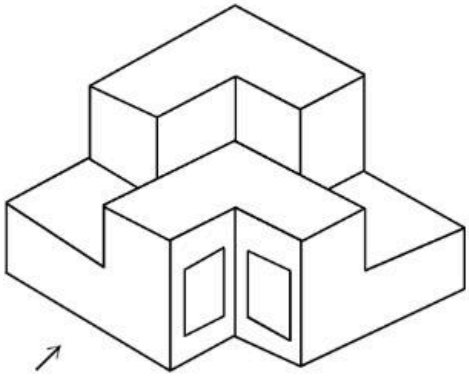


(4)

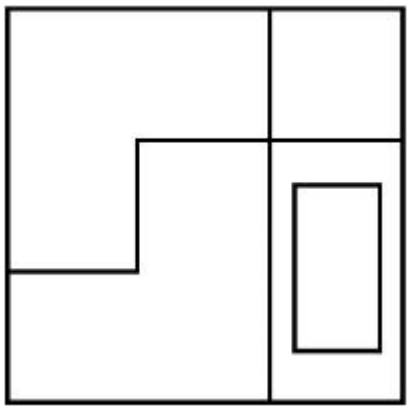


73. 4 marks

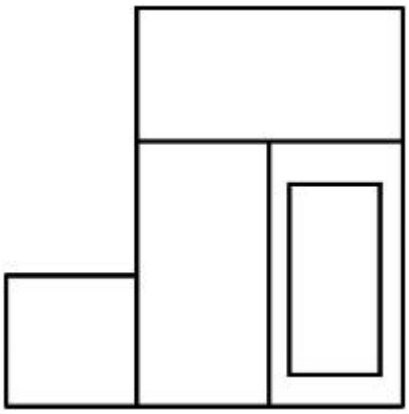
The question figure shows the 3-D view of an object. Identify the correct view, looking in the direction of arrow.



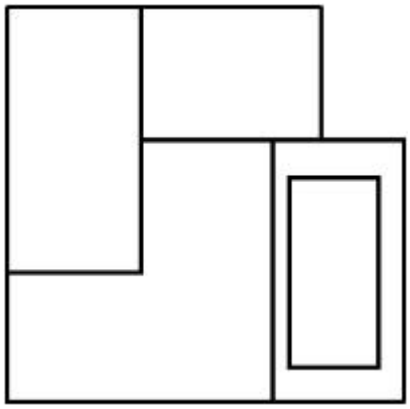
(1)



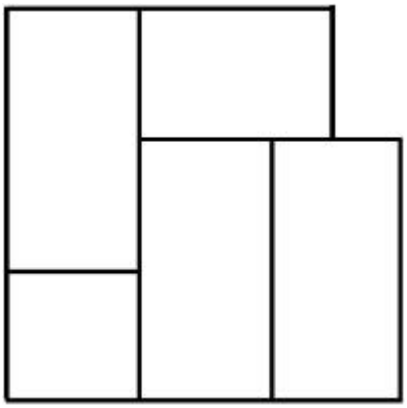
(2)



(3)

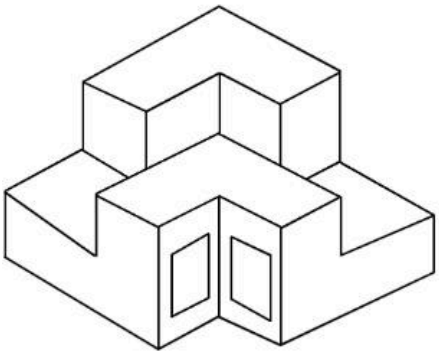


(4)

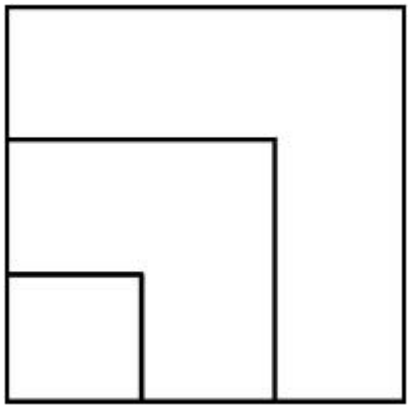


74. 4 marks

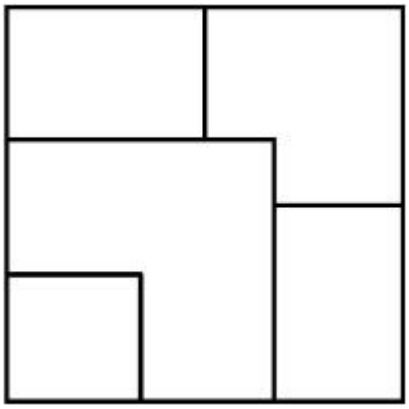
From the given options below, choose the correct plan of the 3-D object, when viewed from the top.



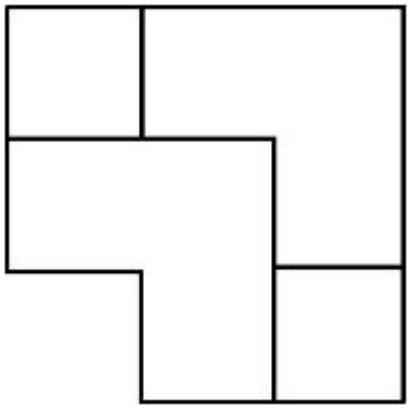
(1)



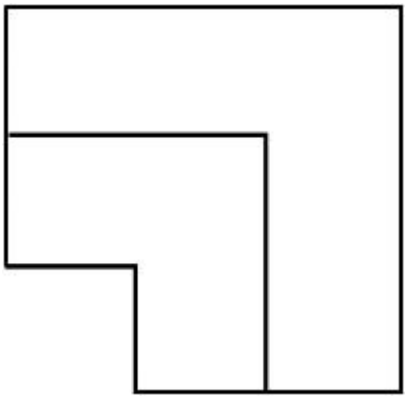
(2)



(3)

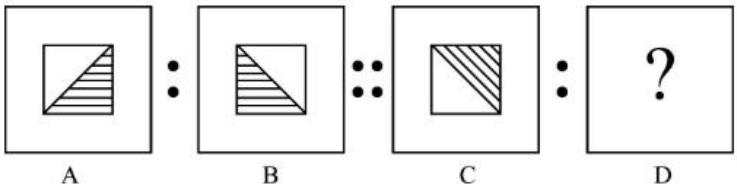


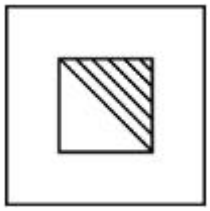
(4)

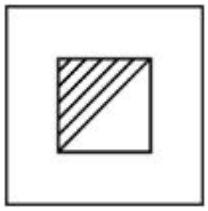


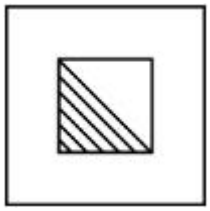
75. 4 marks

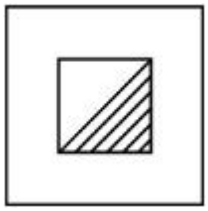
The second figure in the first part of the problem figures bears certain relationship to the first figure. Similarly, one of the figures of answer figures bears the same relationship to the first figure of the second part. Identify the correct option from the given answer figures.



(1) 

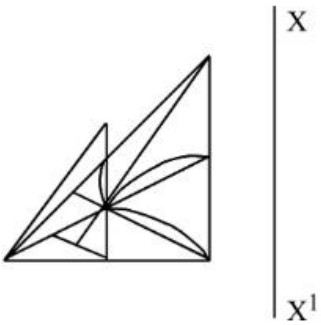
(2) 

(3) 

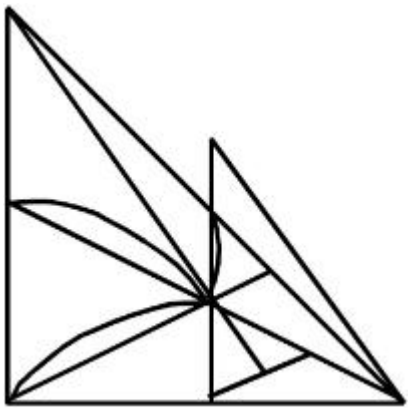
(4) 

76. 4 marks

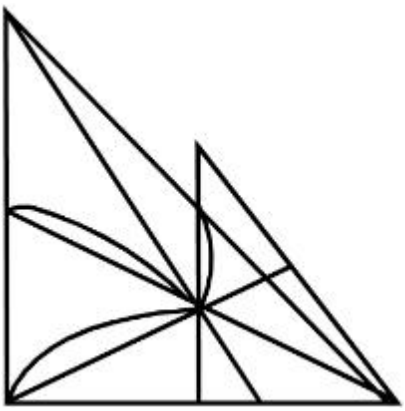
Identify the true mirror image of the figure amongst the answer figures with respect to X-X



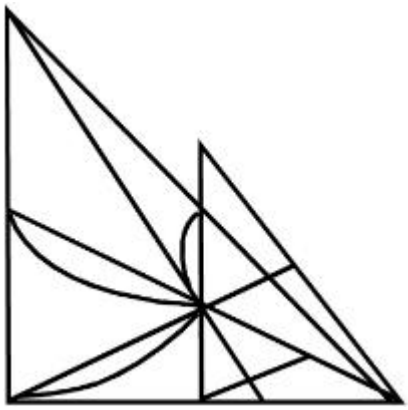
(1)



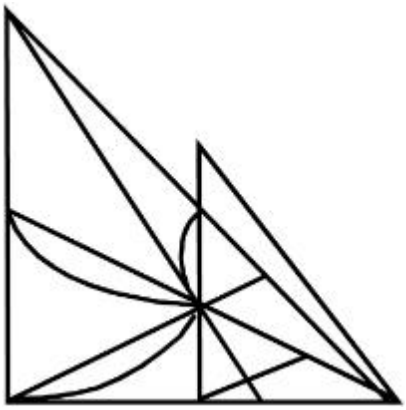
(2)



(3)

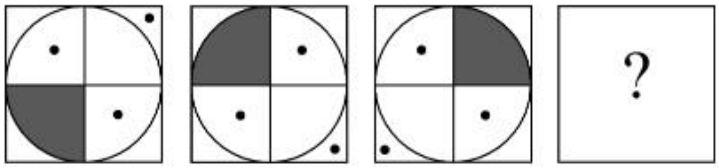


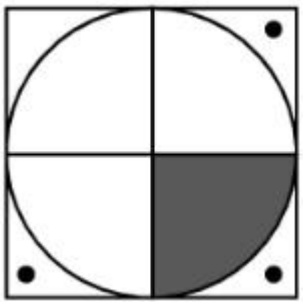
(4)

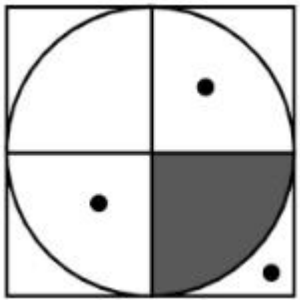


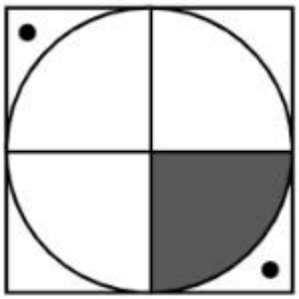
77. 4 marks

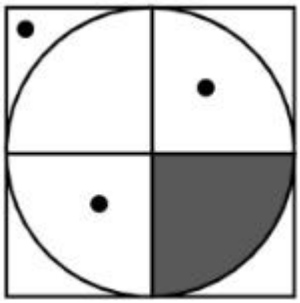
Choose the correct option amongst the answer figures which complete the series.



(1) 

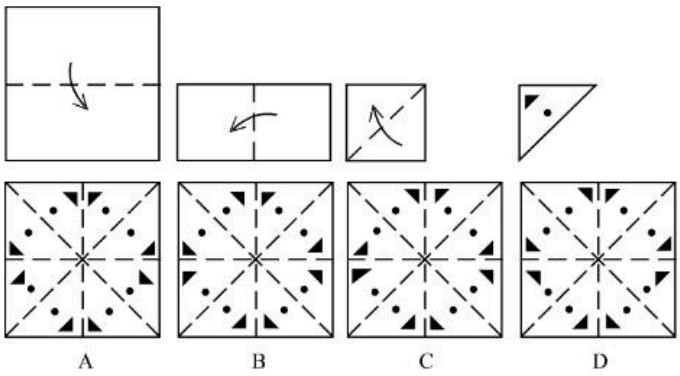
(2) 

(3) 

(4) 

78. 4 marks

Sheet is folded in marked format and cut led at last as shown. Identify from the options below, how the pattern will be made when it's fully unfold?



(1) B

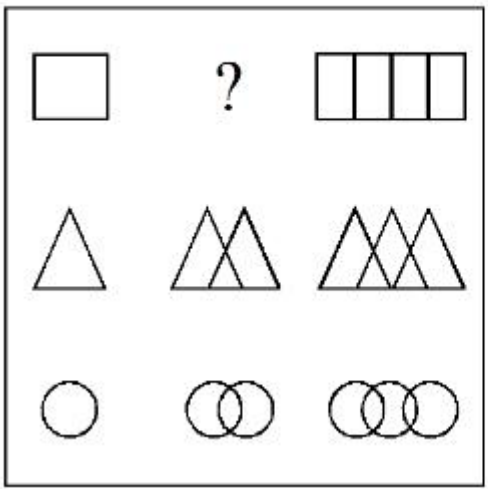
(2) A

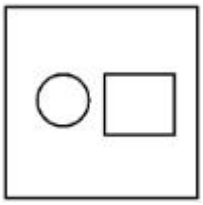
(3) D

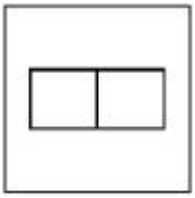
(4) C

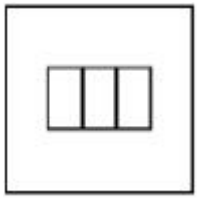
79. 4 marks

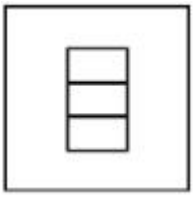
In the figure mentioned below find the missing series:-



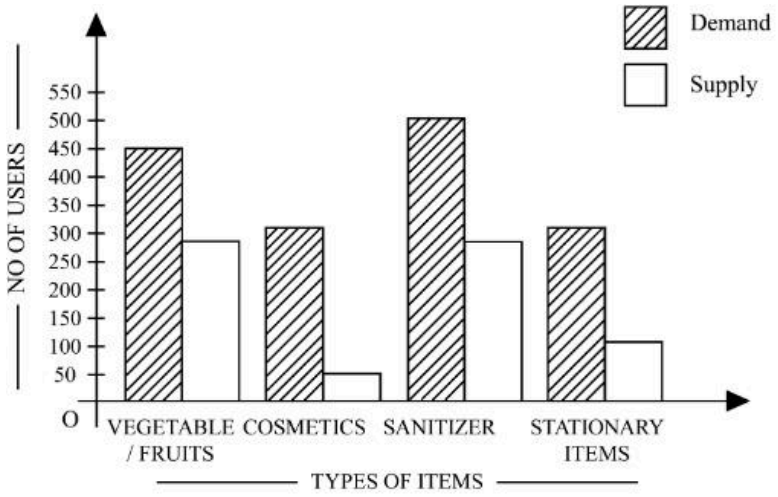
(1) 

(2) 

(3) 

(4) 

80. 4 marks



The diagram shows the supply and demand of different users for different items. Which of the following is/are correct?

A. Sanitizer only meet 50% of the demand
B. Cosmetics has the least supply among all.
C. Among all, two items have equal demand but difference in supply
D. Among all, two items have equal supply and two items have equal demand.

Choose the correct answer from the options given below:-

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

Drawing

81. 50 marks

Draw a proportionate sketch of given reference image. Use black and white rendering techniques of your choice.



82. 50 marks

Use the basic 2D shapes found in a motor cycle and create an interesting 2D composition of your choice, colour with any three colours of your choice.