DATE : 04/11/2018

UTTARAKHAND

Aakash
Medical | IIT-JEE | Foundations
(Divisions of Aakash Educational Services Limited)

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Answers & Solutions

for

NTSE (Stage-I) 2018-19

INSTRUCTIONS TO CANDIDATES

1. Use blue/black ball point pen only. There is no negative marking.
2. All the questions are compulsory. This test booklet contains 200 questions (Paper-I : 100 & Paper-II : 100) of one mark each.
3. Paper-I : MAT : 1 - 100 questions

   Paper-II : SAT : 1 - 100 questions
4. Answer each question by darkening the one correct alternative among the four choices on the OMR Sheet with blue/black ball point pen.
5. Students are not allowed to scratch/alter/change out an answer once marked on OMR Sheet, by using white fluid/eraser/blade/tearing/wearing or in any other form.
6. Separate sheet has been provided for rough work in this test booklet.
7. Please handover the OMR sheet to the invigilator before leaving the Examination Hall.
8. Darken completely the ovals of your answers on OMR Sheet in the time limit allotted for that particular paper.
9. Your OMR Sheet will be evaluated through electronic scanning process. Incomplete and incorrect entries may render your OMR sheet invalid.
10. Use of electronic gadgets, calculator, mobile etc., is strictly prohibited.

PART-I : MENTAL ABILITY TEST (MAT)

Directions (1-10) : In the following questions there is a relationship between the two words/letters/ numbers and figures given to the left of the proportionality (: :) sign. The same relationship exists between the words/letters/numbers/figures given to the right of the sign (: :), of which one is missing. Find the missing one from the given altenatives.

1. 64 : 100 :: 16 : ?

(A) 25 (B) 36

(C) 50 (D) 55

Answer (B)

Sol. $8^2 : (8+2)^2 :: (4)^2 : (4+2)^2$

2. ADBC : EHFG : : ILJK :?

(A) MPNO (B) RTZV

(C) RTVZ (D) TVXZ

Answer (A)

Sol. ADBC : EHFG : : ILJK

3. Bihu : Assam :: Garba : ?

(A) Bengal

(B) Gujrat

(C) Bihar

(D) Punjab

Answer (B)

Sol. Dance form of Assam is Bihu

Dance form of Gujrat is Garba

4. 85 : 40 :: 77 : ?

(A) 14

(B) 49

(C) 48

(D) 50

Answer (B)

Sol. (8×5) : 40, (7×7) : 49

5. MRPL : OTRN : : ? : EJID

(A) CFHB

(B) GIKF

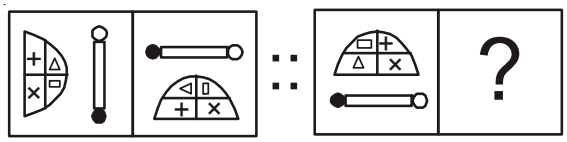
(C) CHGB

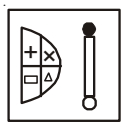
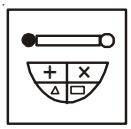
(D) CHFB

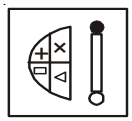
Answer (C)

Sol. +2

M R P L : O T R N

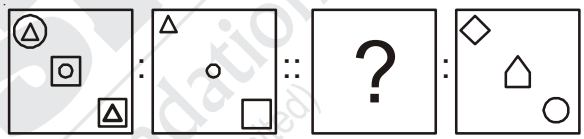
6. 

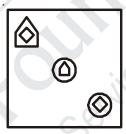
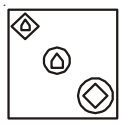
(A)  (B) 

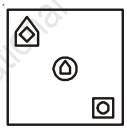
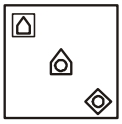
(C)  (D) 

Answer (D)

Sol. Whole figure rotated Anti clock wise & the two circle are interchanged.

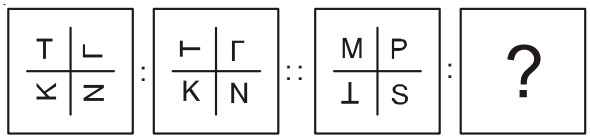
7. 

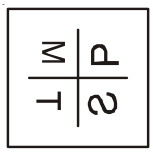
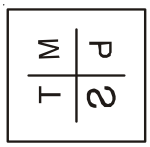
(A)  (B) 

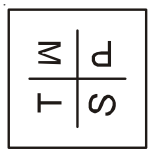
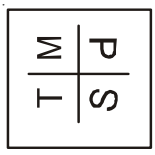
(C)  (D) 

Answer (A)

Sol. (A)

8. 

(A)  (B) 

(C)  (D) 

Answer (D)

Sol. Rotate

T → Anticlock wise 90°

L → Anticlock wise 90°

K → Clockwise 90°

N → Anticlock wise 90°

9. BDAC : FHEG : : NPMO : ?

(A) RQTS (B) QTRS

(C) TRQS (D) RTQS

Answer (D)

Sol. $\overset{2\ 4\ 1\ 3}{BDAC} : \overset{6\ 8\ 5\ 7}{FHEG}$ ::

10. F : 216 : : L : ?

(A) 1728 (B) 1700

(C) 1600 (D) 1723

Answer (A)

Sol. $6 : 6^3 : : 12 : 12^3$

Directions (11-20) : In the following questions numbers/ letters/figures are arranged on the basis of some logic. Find out the logic and select the correct answer and fill in the missing term/figure from the given alternatives.

11. ST 39, UV43, WX47, ?

(A) YZ47

(B) YZ52

(C) YZ51

(D) YX50

Answer (C)

Sol. $^{19}S + T^{20} = 39$

$\overset{21}{U} + \overset{22}{V} = 43$

$\overset{23}{W} + \overset{24}{X} = 47$

$\overset{25}{Y} + \overset{26}{Z} = 51$

12. aa___aaa___aaaa___aaaa___b

(A) b,a,a,a

(B) b,b,a,a

(C) b,b,b,b

(D) b,b,b,a

Answer (D)

Sol. aab | aaab | aaaab | aaaaab

13. ABILITY, BILITY, BILIT, ?

(A) BAILT

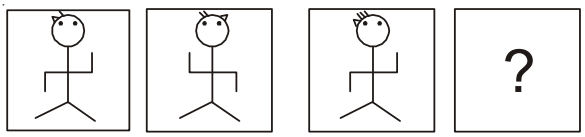
(B) ILLIT

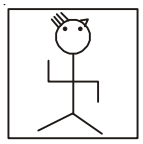
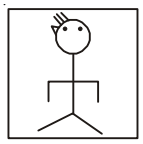
(C) ILIT

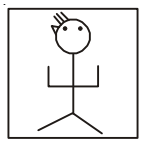
(D) LITY

Answer (C)

Sol. $\overset{\text{Removed}}{\boxed{A}}BILITY, BILIT\overset{\text{Removed}}{\boxed{Y}}, \overset{\text{Removed}}{\boxed{B}}ILIT, ILIT$

14. 

(A)  (B) 

(C)  (D) 

Answer (A)

Sol. Count lines on top of the circle

15. 180, 179, 171, 144, ?

(A) 70

(B) 72

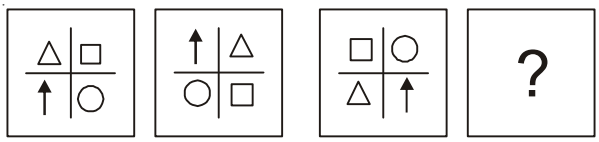
(C) 64

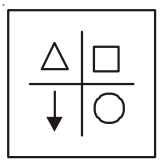
(D) 80

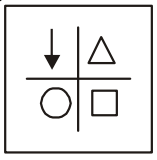
Answer (D)

Sol. 180, 179, 171, 144

$-1^3 \quad -2^3 \quad -3^3 \quad -4^3$

16. 

(A)  (B) 

(C)  (D) 

Answer (A)

Sol. All figure rotated Clockwise

↑ & □ → Interchanged

○ & △ → Interchanged

17. 3, 15, 35, ?, 99, 143

(A) 69 (B) 63

(C) 77 (D) 81

Answer (B)

Sol. 3, 15, 35, ?, 99, 143

+12 +20 +28 +36 +44

+8 +8 +8 +8

18. X 78, T 92, P 106, ?

(A) L 120 (B) K 120

(C) M 120 (D) L 118

Answer (A)

Sol. X 78, T 92, P106,

–4 –4

+14 +14

19. 7, 12, 22, 42, 82, ?

(A) 143 (B) 173

(C) 162 (D) 183

Answer (C)

Sol. 7, 12, 22, 42, 82

+5 +10 +20 +40 +80

20. X W A, V T C, S P F, O K J, ?

(A) J D N (B) J E O

(C) J D P (D) P S U

Answer (B)

Sol.

–2	24 X	–3	23 W	+2	A 1
	22 V		20 T		C 3
–3	19 S	–4	16 P	+3	F 6
–4	15 O	–5	11 K	+4	J 10

Directions(21-27): In the following questions four items/ figures are given. Find the odd one out.

21. (A) AGHB (B) EIJF

(C) ZAZB (D) CKLD

Answer (C)

22. (A) Gold (B) Silver

(C) Copper (D) Carbon

Answer (D)

23. (A) Moscow

(B) Paris

(C) Athens

(D) Egypt

Answer (D)

Sol. All are capitals of countries except option D

24. (A) 121 (B) 145

(C) 153 (D) 177

Answer (C)

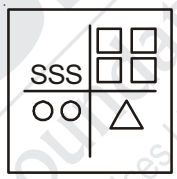
Sol. 121 = 11 × 11

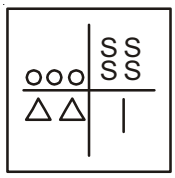
145 = 5 × 29

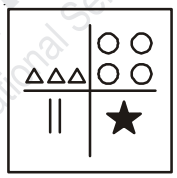
153 = 3 × (51) not prime

177 = 3 × 59

Rest all are product of prime numbers.

25. (A) 

(B) 

(C) 
(D) 

Answer (D)

26. (A) 120 (B) 257

(C) 224 (D) 168

Answer (B)

Sol. All are divisible by 4 except option 'B'.

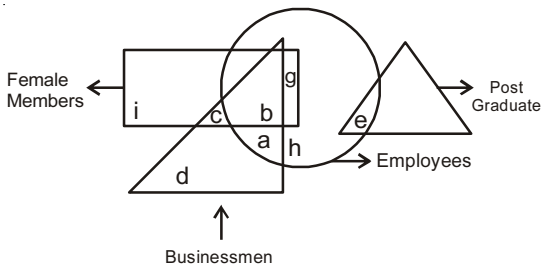
27. (A) Veena (B) Sitar

(C) Drum (D) Guitar

Answer (C)

Sol. All instruments have strings except drum.

Directions (28 - 32) : Study the following diagram and answer the questions



28. Which of the following employees are not businessmen?

(A) e, g, h (B) a, g, h

(C) b, g, e (D) a, e, g, h

Answer (A)

29. Which of the following persons are either employees or businessmen but not female members?

(A) a, b, d (B) a, e, h

(C) a, g, h (D) a, d, e, h

Answer (D)

30. Who among the following persons are female members as well as businessmen?

(A) a, h (B) b, g

(C) b, c (D) b, h

Answer (C)

31. Who among the following are businessmen but are neither post graduates nor employees?

(A) b, d, g (B) a, d, h

(C) c, d (D) b, c

Answer (C)

32. Who among the following female members are neigher businessmen nor employees?

(A) i, g (B) b, c, i g

(C) b, i, c (D) i

Answer (D)

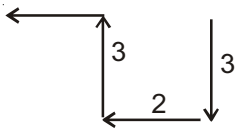
33. Asha walks 3 km. southward and then turns right and walks 2 km. She again turns right and walks 3 km. and turns towards her left and starts walking straight. In which direction is she walking now?

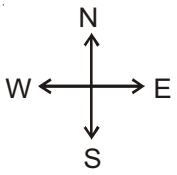
(A) East (B) North

(C) South (D) West

Answer (D)

Sol.





34. If in a certain code language 'THEN' is written as 'RLBS', then in that code language, how will 'CASE' be written as?

(A) PAEP

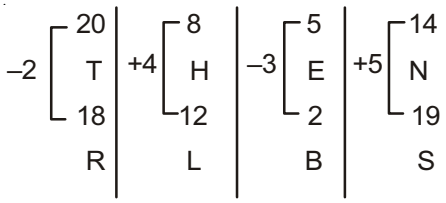
(B) AEPJ

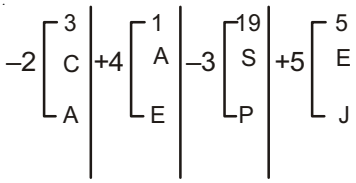
(C) EPAP

(D) APEP

Answer (B)

Sol.





35. Surbhi is facing east. She turns 100° in the clockwise direction and then 145° in the anti clockwise direction. Which direction is she facing now?

(A) West (B) North East

(C) East (D) South West

Answer (B)

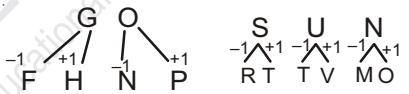
36. If in a certain code language 'GO' is written as 'FHNP' then how will 'SUN' be written in that language?

(A) RTTOMY (B) RTTOVM

(C) RTTVOM (D) RTTVMO

Answer (D)

Sol.



Directions (Q.No. 37-38) In a certain code language-

(A) 'pit dar na' means 'you are good'.

(B) 'dar tok pa' means 'good and bad'.

(C) 'tim na tok' means 'they are bad'.

37. In that language which word stands for 'they'?

(A) na (B) tok

(C) tim (D) pit

Answer (C)

Sol. dar = good

na = are

pit = you

tok = bad

pa = and

tim = they

38. The word 'bad', stands for

(A) na (B) tok

(C) dar (D) tim

Answer (B)

39. In a certain code language '157' means 'Mother always lovable', '619' means 'Always happy future' and '952' means 'Mother very happy'. In the same code language, what is the code for the word 'future'?

(A) 9 (B) 6

(C) 1 (D) None of the above

Answer (B)

Sol. Always = 1

Mother = 5

Lovable = 7

Happy = 9

Future = 6

Very = 2

40. Deepak said to Nitin, "that boy playing with the football is the younger of two brothers of the daughter of my father's wife." How is the boy playing football related to Deepak?

(A) Son (B) Brother

(C) Cousin (D) Brother in law

Answer (B)

41. If January 1 is a Friday, then what is the first day of the month of March in a leap year?

(A) Tuesday

(B) Wednesday

(C) Thursday

(D) Friday

Answer (A)

42. X and Y are children of A. A is the father of X but Y is not the son of A. What is the relation of Y with A?

(A) Sister

(B) Brother

(C) Daughter

(D) Son

Answer (C)

43. Pointing to a man on the stage, Rashi said, "He is the brother of the daughter of the wife of my husband." How is the man on the stage related to Rashi?

(A) Son

(B) Husband

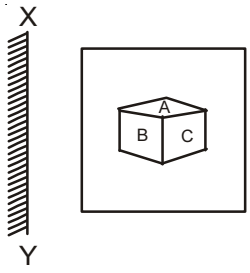
(C) Brother in law

(D) Nephew

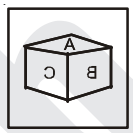
Answer (A)

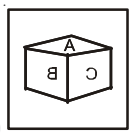
Directions (Q. No. 44 to 48)- If a mirror is placed at XY position then which of the answer figure is exactly a mirror image of the problem figure?

44. Problem Figure

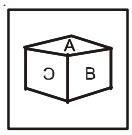


Answer Figure

(A) 

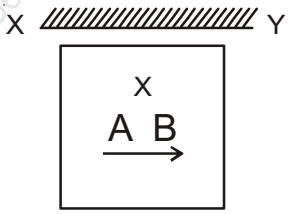
(B) 

(C) 

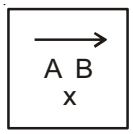
(D) 

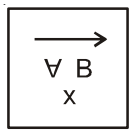
Answer (A)

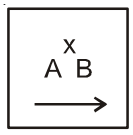
45. Problem figure

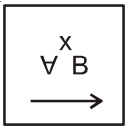


Answer Figure

(A) 

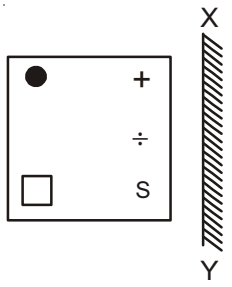
(B) 

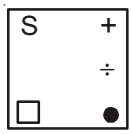
(C) 

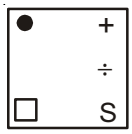
(D) 

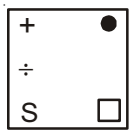
Answer (B)

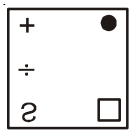
46. Problem figure



(A) 

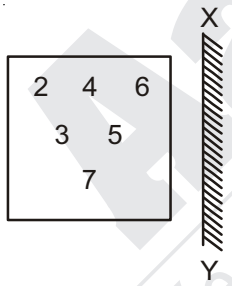
(B) 

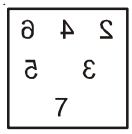
(C) 

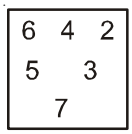
(D) 

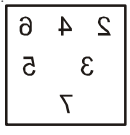
Answer (D)

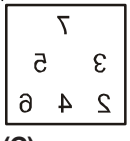
47. Problem figure



(A) 

(B) 

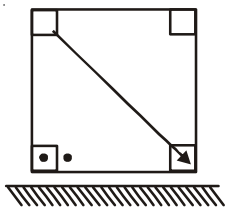
(C) 

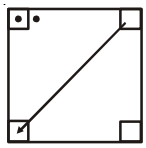
(D) 

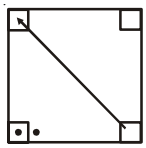
Answer (C)

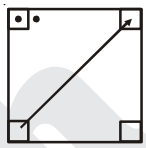
48. The water image of the following figure will be

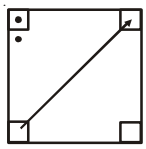
Problem figure



(A) 

(B) 

(C) 

(D) 

Answer (C)

49. Choose the correct option so as to balance the equation when symbol is replaced by arithmetic symbols?

2*4*3*4*9

(A) + – = ÷ (B) + × = –

(C) × ÷ – = (D) × – + =

Answer (D)

Sol. 2 × 4 – 3 + 4 = 9

50. If Z stands for '+', Y stands for '÷', X stands for '×' and W stands for '–' then what is the value of the given equation?

– 3 Y 3 Z 3 X 3 W 3

(A) 2 (B) 3

(C) 4 (D) 5

Answer (D)

Sol. – 3 ÷ 3 + 3 × 3 – 3

= – 1 + 9 – 3

= 5

51. If 'when' means 'X', 'you' means '÷', 'come' means '–' and 'will' means '+' then the value of the given equation will be

8 when 12 will 16 you 2 come 10 = ?

(A) 112 (B) 45

(C) 94 (D) 96

Answer (C)

Sol. 8 × 12 + 16 ÷ 2 – 10

= 8 × 12 + 8 – 10

= 96 + 8 – 10

= 104 – 10

= 94

52. If 526 = 9 and 834 = 9, then 716 = ?

(A) 20 (B) 15

(C) 9 (D) 12

Answer (D)

Sol. 5 – 2 = 3 + 6 = 9

8 – 3 = 5 + 4 = 9

7 – 1 = 6 + 6 = 12

53. Present age of Anupam and Raju are in the ratio of 5 : 4 respectively. After 3 years from today the ratio of their ages will become 11.9 respectively. What is Raju's present age?

(A) 24 Years (B) 27 Years

(C) 40 Years (D) 36 Years

Answer (A)

Sol. $\frac{5x+3}{4x+3}=\frac{11}{9}$

45x + 27 = 44x + 33

x = 6

hence, present age of Raju = 4x = 4 × 6 = 24

54. How many letters are there in the word 'MONKEY' which remain in the same position if the letters are arranged in descending order alphabetically?

(A) None (B) One

(C) Two (D) Three

Answer (C)

Sol. Y<u>ON</u>MKE

55. If the seventh day of a month is three days earlier than Friday, then what day will it be on the nineteenth day of that month?

(A) Sunday (B) Thursday

(C) Wednesday (D) Friday

Answer (A)

Sol. Seventh day = Tuesday

= Nineteenth day = Sunday

56. If 27 March, 1995 was a Monday, then what day of the week was 1 November, 1994?

(A) Sunday (B) Monday

(C) Tuesday (D) Wednesday

Answer (C)

Sol. $\frac{27+4+95+23+1}{7}=\frac{150}{7}$

= 21 Weeks + 3 Extra days (Odd days)

= Monday

Hence, $\frac{1+4+94+23+1}{7}=\frac{123}{7}$

= 17 Weeks + 4 Extra days (Odd days)

= Tuesday

57. How many degrees does the minute hand cover in the same time in which the second hand covers 180°?

(A) 18°

(B) 6°

(C) 10°

(D) 3°

Answer (D)

Sol. Minute hand makes 6° angle in one minute.

(For 180° angle formation second hand move 30 second)

Hence, in 30 seconds minute hand make 3° angle.

58. If in a given year, the 25th August falls on Thursday then the number of Mondays in the month will be?

(A) 3 (B) 4

(C) 5 (D) 6

Answer (C)

Sol. On 29th August on same month = Monday

Hence, 29 – 7 = 22 = Monday

22 – 7 = 15 = Monday

15 – 7 = 8 = Monday

8 – 7 = 1 = Monday

1st, 8th, 15th, 22nd, 29th = 5 (Monday)

59. In the given number series, how many 6 are there which are preceded by odd number and followed by even number.

3 6 2 5 6 3 2 6 2 7 6 4 6 5 8 6 7 6 4 2 6 8

(A) 2 (B) 4

(C) 3 (D) 1

Answer (C)

Sol. <u>3 6 2</u> 5 6 3 2 6 2 <u>7 6 4</u> 6 5 8 6 <u>7 6 4</u> 2 6 8

= 3

Directions (Q. No. 60 to 61) Study the following arrangement carefully and answer the questions given below-

EGGBDM4NKHZACZSV3F1JLOQ5PR

60. In the given series every alternate letter/number is dropped (dropping starts from E) then which letter/number will be the second to the left of the tenth letter/number from the left end?

(A) V

(B) J

(C) Q

(D) A

Answer (A)

Sol. V

61. If the letters/digits only from M to L are written in reverse order and other letters/numbers are kept unaltered, then which letter will be third to the right of the 17th letter/number from the right end?

(A) A (B) C

(C) Z (D) S

Answer (C)

Sol. Z

62. If Shaloo is taller than Rakhi but shorter than Prerna. Rakhi is as tall as Meghna but taller than Komal, then Meghna is

(A) Shorter than Rakhi (B) Shorter than Komal

(C) Taller than Prerna (D) Shorter than Shaloo

Answer (D)

Sol. Prerna → Shaloo → Rakhi

Meghna → Komal

= Meghna is shorter than Shaloo

Directions: Read the following information carefully and answer the questions (63-65) given below-

A, B, C, D, E, F and G are sitting in a circle facing towards the centre.

(i) F is 2nd to the right of G.

(ii) B is neighbour of F but not of E

(iii) E is 4th to the right of G and E is the neighbour of C.

(iv) D is sitting between E and A.

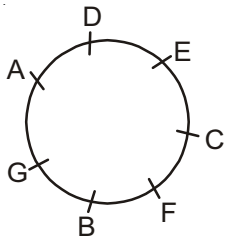
63. Who is fourth to the left of G?

(A) D (B) E

(C) C (D) Cannot be determined

Answer (C)

Sol.



Fourth to the left of G = C

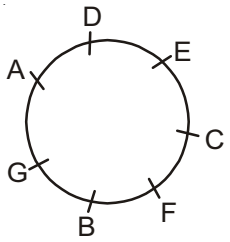
64. Who is sitting to the lefrt of G?

(A) A (B) C

(C) B (D) None of these

Answer (A)

Sol.



Left of G = A

65. Who are the neighbours of F?

(A) E and C

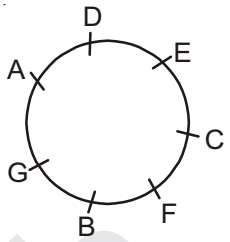
(B) F and B

(C) A and B

(D) C and B

Answer (D)

Sol.



Neighbours of F = B and C

66. Five books are lying in a pile. E is lying on A. C is lying under B. A is lying above B. D is lying under C. Which book is lying at the bottom of the pile?

(A) A

(B) B

(C) C

(D) D

Answer (D)

Sol. E
A
B
C
D

Book lying at the bottom of the pile = D

Directions: (Q. 67 to 74) Study the pattern of numbers/figures in the matrix and find out the missing figure/number which will replace the question mark(?)

67.

2	14	21	28
3	21	28	35
4	28	35	?

(A) 35 (B) 42

(C) 21 (D) 28

Answer (B)

Sol. 14 = 2 × 7, 21 = 3 × 7, 28 = 4 × 7

21 = 3 × 7, 28 = 4 × 7, 35 = 5 × 7

28 = 4 × 7, 35 = 5 × 7, 42 = 6 × 7

68.

4	1	2
13	11	6
153	120	?

(A) 32

(B) 45

(C) 16

(D) 48

Answer (A)

Sol. $13^2 - 4^2 = 169 - 16 = 153$

$11^2 - 1^2 = 121 - 1 = 120$

$6^2 - 2^2 = 36 - 4 = 32$

69.

	8			14			5	
3	15	5	6	18	5	?	8	5
	9			3			6	

(A) 9

(B) 3

(C) 6

(D) 2

Answer (D)

Sol. $(3 + 9) + (8 - 5) = 15$

$(6 + 3) + (14 - 5) = 18$

$(2 + 6) + (5 - 5) = 8$

$= 2$

70.

5	45			8	22			
	5				?			
40	25			16	48			

(A) 5

(B) 6

(C) 12

(D) 9

Answer (B)

Sol. $25 \div 5 = 5 + 40 = 45$

$48 \div 8 = 6 + 16 = 22$

71.

	2			1			2	
1	24	3	5	30	2	4	?	1
	4			3			3	

(A) 64

(B) 39

(C) 24

(D) 26

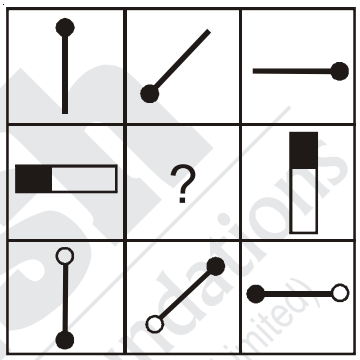
Answer (C)

Sol. $1 \times 2 \times 3 \times 4 = 24$

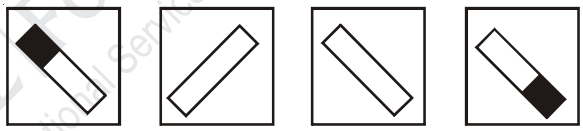
$1 \times 2 \times 3 \times 5 = 30$

$1 \times 2 \times 3 \times 4 = 24$

72. Problem figure



Answer figure

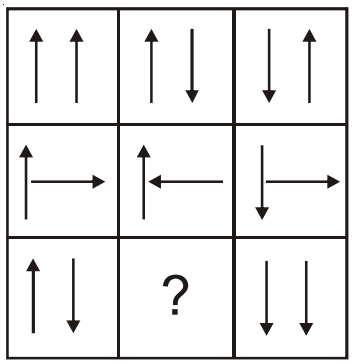


(A) (B) (C) (D)

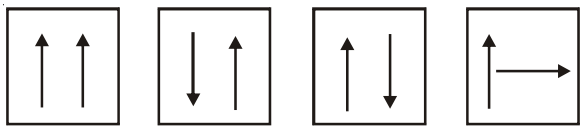
Answer (D)

Sol. Move 135° in anticlockwise direction

73. Problem figure



Answer figure

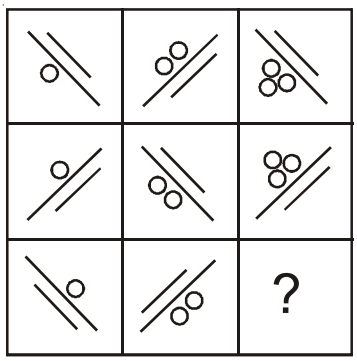


(A) (B) (C) (D)

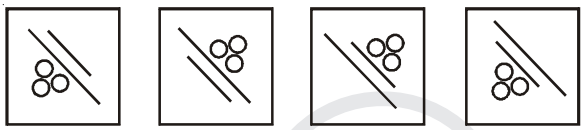
Answer (A)

Sol. Move second arrow 90° in clockwise direction.

74. Problem figure

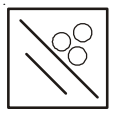


Answer figure



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

Answer (B)

Sol. 

Directions (Q. No 75 to 79) : Study the following information carefully and answer the given questions.

(i) B and E are good in Dramatics and Computer Science.

(ii) A and B are good in Computer Science and Physics.

(iii) A, D and C are good in Physics and History.

(iv) C and A are good in Physics and Mathematics.

(v) D and E are good in History and Dramatics.

75. Who is good in Physics, History and Dramtics?

(A) A (B) B

(C) D (D) E

Answer (C)

Sol. B, E → Dramatics, Computer Science

A, B → Computer Science, Physics

A, D, C → Physics, History

C, A → Physics, Mathematics

D, E → History, Dramatics

76. Who is good in Physics, History and Mathematics but not in Computer Science?

(A) A (B) B

(C) C (D) D

Answer (C)

Sol. B, E → Dramatics, Computer Science

A, B → Computer Science, Physics

A, D, C → Physics, History

C, A → Physics, Mathematics

D, E → History, Dramatics

77. Who is good in Computer Science, History and Dramatics?

(A) A

(B) B

(C) C

(D) E

Answer (D)

Sol. B, E → Dramatics, Computer Science

A, B → Computer Science, Physics

A, D, C → Physics, History

C, A → Physics, Mathematics

D, E → History, Dramatics

78. Who is good in History, Physics, Computer Science and Mathematics?

(A) A

(B) B

(C) C

(D) D

Answer (A)

Sol. B, E → Dramatics, Computer Science

A, B → Computer Science, Physics

A, D, C → Physics, History

C, A → Physics, Mathematics

D, E → History, Dramatics

79. Who is good in Physics, Dramatics and Computer Science?

(A) A

(B) B

(C) D

(D) E

Answer (B)

Sol. B, E → Dramatics, Computer Science

A, B → Computer Science, Physics

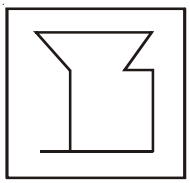
A, D, C → Physics, History

C, A → Physics, Mathematics

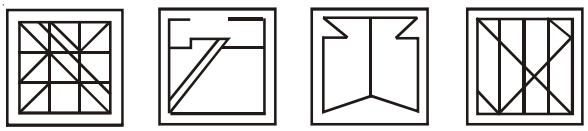
D, E → History, Dramatics

Directions (Q. No. 80 - 84) Find the answer figure in which the problem figure is hidden.

80. Problem figure

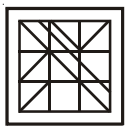


Answer figure

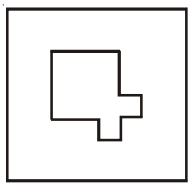


(A) (B) (C) (D)

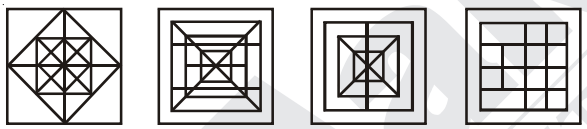
Answer (A)

Sol. 

81. Problem figure

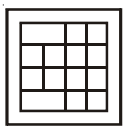


Answer figure

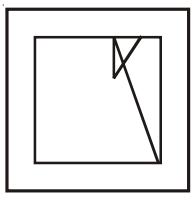


(A) (B) (C) (D)

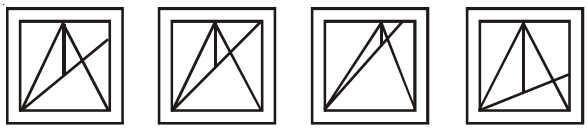
Answer (D)

Sol. 

82. Problem figure



Answer figure

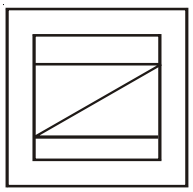


(A) (B) (C) (D)

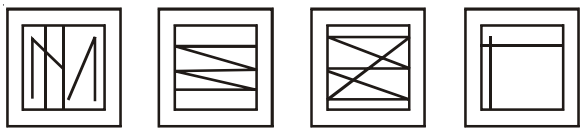
Answer (C)

Sol. 

83. Problem figure



Answer figure

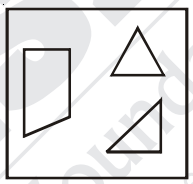


(A) (B) (C) (D)

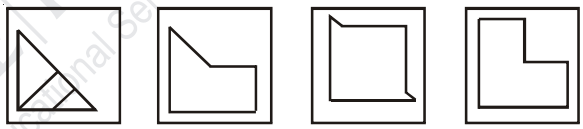
Answer (C)

Sol. 

84. Problem figure



Answer figure

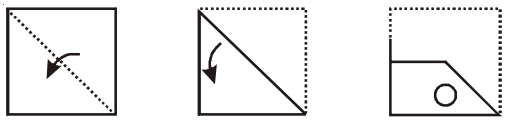


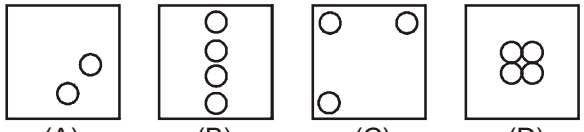
(A) (B) (C) (D)

Answer (A)

Sol. 

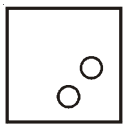
Directions (Q. No. 85 - 86) Choose the figure from the given answer figures which will be formed by folding, punching and opening the page.

85. 

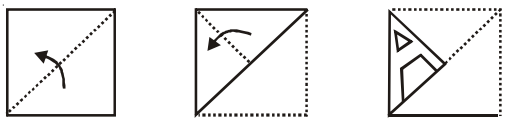


(A) (B) (C) (D)

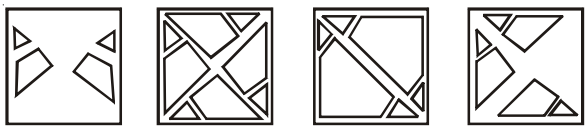
Answer (A)

Sol. 

86. Problem figure



Answer figure



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

Answer (C)

Sol. 

Directions (Q. No. 87-88) In the given question, jumbled letters of a meaningful word are given. You have to arrange these letters and select the word from the given alternatives which is almost similar in meaning to the rearranged word.

87. E T G N D L I I

(A) INTELLIGENT

(B) DIFFICULT

(C) LABORIOUS

(D) QUICK

Answer (C)

Sol. DILIGENT = LABORIOUS

88. T R P E T Y

(A) CHARMING

(B) FRAIL

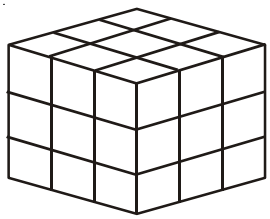
(C) SINCERE

(D) AUDACIOUS

Answer (A)

Sol. PRETTY = CHARMING

89. Count the number of similar sized cubes in the given figure.



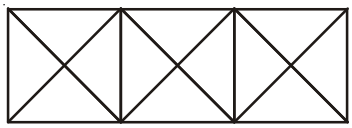
(A) 18 (B) 27

(C) 20 (D) 30

Answer (B)

Sol. Number of similar sized cubes = 27

90. Count the number of triangles and squares in the given figure.



(A) 28 triangles, 3 Squares

(B) 24 triangles, 5 Squares

(C) 28 triangles, 5 Squares

(D) 24 triangles, 3 Squares

Answer (C)

Sol. Number of triangles = 28

Number of squares = 5

91. In the following question, five words are given. Which of them will come in the middle, if all of them are arranged alphabetically as in a dictionary?

Hobby, Holiday, Hoarse, Hollow, Hobble

(A) Hoarse

(B) Hobble

(C) Hobby

(D) Holiday

Answer (C)

Sol. 1. Hoarse

2. Hobble

3. Hobby

4. Holiday

5. Hollow

92. In the following question, arrange the given words in the sequence in which they occur in English dictionary and then choose the correct option

1. Select

2. Seldom

3. Send

4. Selfish

5. Seller

(A) 1, 2, 4, 5, 3 (B) 2, 1, 5, 4, 3

(C) 2, 1, 4, 5, 3 (D) 2, 5, 4, 1, 3

Answer (C)

Sol. 2. Select

1. Seldom

5. Send

3. Selfish

4. Seller

= 2, 1, 4, 5, 3

93. Make a meaningful word from the given letters and find the Odd one out.

(A) UPJM (B) WKLA

(C) EELSP (D) UNR

Answer (C)

Sol. JUMP, WALK, SLEEP, RUN

Odd = SLEEP

94. In a class of 45 students, a boy is ranked 20th. When two new boys joined in, his rank was dropped by one. What is the new rank of the boy from the bottom end?

(A) 25th (B) 25th

(C) 27th (D) 28th

Answer (C)

Sol. Out of 45 students rank = 20

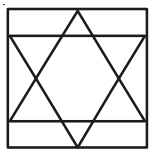
After adding 2 students

Total number of student = 47

New rank = 21

Then new rank from bottom end = 27

95. How many triangles are there in the given squares?



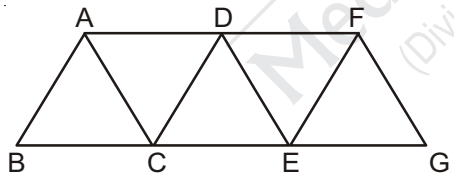
(A) 18 (B) 16

(C) 12 (D) 14

Answer (A)

Sol. Number of triangles = 18

96. How many parallelograms are there in the following figure?



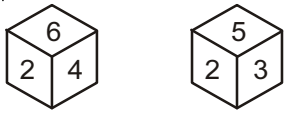
(A) 4 (B) 5

(C) 6 (D) 8

Answer (C)

Sol. Number of parallelograms = 6

97. Two positions of the same dice have been shown. If number 2 is marked on the bottom of the dice, which number will be on the top?

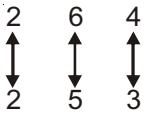


(A) 1 (B) 3

(C) 4 (D) 5

Answer (A)

Sol. Take common point and rotate clockwise direction.



4 opposite to 3

6 opposite to 5

2 opposite to 1

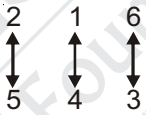
98. Three positions of a dice are given below. Which number is opposite to face 3?

(A) 1 (B) 6

(C) 5 (D) 4

Answer (B)

Sol.

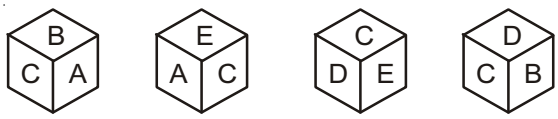


2 opposite to 5

1 opposite to 4

6 opposite to 3

99. Four positions of dice are given below. Which letter will be opposite to D?

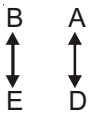


(A) D (B) B

(C) A (D) C

Answer (C)

Sol.



B opposite to E

A opposite to D

100. A is the sister of B but B is not the sister of A. What is the relation between a and B?

(A) Sister and Brother (B) Brotgher and Brother

(C) Sister and Sister (D) None of the above

Answer (A)

Sol. Sister and Brother

PAPER-II : SCHOLASTIC APTITUDE TEST (SAT)

1. 'Kolkhoz' were-
   (A) Collective Farms (B) War Ships
   (C) Confiscated land (D) Quarters for workers

Answer (A)

Sol. Stalin advocated collective farms in Russia by the end of 1920.

2. The Nuremberg tribunal was set up to-
   (A) Prosecute the Bolsheviks
   (B) Prosecute Tsar Nicholas II
   (C) Prosecute Nazi War Criminals
   (D) Prosecute the Jews

Answer (C)

Sol. Held for the purpuse of bringing Nazi war criminals to justice between 1945-1949.

3. "Dawes Plan" was introduced by-
   (A) France (B) Italy
   (C) Russia (D) U.S.A

Answer (D)

Sol. By Charles Dawes, to Germany of 800 Million gold mark.

4. Who used to live in 'Ghettos'-
   (A) The Nazis (B) The Jews
   (C) The Landlords (D) The Workers

Answer (B)

Sol. It was a key step in the Nazi process of seprating Jews.

5. Who followed the 'Scorched Earth policy' -
   (A) The Japanese (B) The French
   (C) The Dutch (D) The Kalangs

Answer (C)

Sol. It was a Military Strategy

6. Who once remarked, "When France Sneezes, the rest of Europe catches cold."
   (A) Bismark (B) Napoleon
   (C) Metternich (D) Hitler

Answer (C)

Sol. Austrian Pollitician and diplomat

7. Who Led the famous 'Expedition of the Thousand'-
   (A) Mazzini (B) Garibaldi
   (C) Cavour (D) Victor Emmanuel II

Answer (B)

Sol. It took place in 1880

8. Who was instrumental in setting up of 'Awadh Kisan Sabha'-
   (A) Jawahar Lal Nehru
   (B) Deen Bandhu Andrews
   (C) Govind Ballabh Pant
   (D) Rajendra Prasad

Answer (A)

Sol. Established in *1918 along with Baba Ram Chandra*

9. Who Painted the famous painting of Bharat Mata-
   (A) Dwarka Nath Tagore
   (B) Ravindra Nath Tagore
   (C) Abanindra Nath Tagore
   (D) Raja Ravi Verma

Answer (C)

Sol. A Famous painter also contributed to create nationalism.

10. The Bretton Woods twins are called-
    (A) The WTO and The UNESCO
    (B) The UNO and the UNICEF
    (C) The IMF and the World Bank
    (D) The Who and The UNICEF

Answer (C)

Sol. In 1944

11. Match the column A with Column B and choose the correct option-

Column-A	**Column-B**
I) Rousseau	(a) Two Treratises of Government
II) Montesquieu	(b) Marseillaise
III) Locke	(c) The Social Contract
IV) Roget de L'Isle	(d) The Spirit of the Laws

	(I)	(II)	(III)	(IV)
(A)	d	c	b	a
(B)	b	a	d	c
(C)	c	d	a	b
(D)	d	a	c	b

Answer (C)

Sol. All Influenced French revolution

12. Match the column A with Column B and choose the correct option

Column-A		Column-B
I)	Zollverein	(a) Dynasty
II)	Germania	(b) Secret Society
III)	Carbonari	(c) Allegory
IV)	Bourbon	(d) Customs Union

	(I)	(II)	(III)	(IV)
(A)	c	b	d	a
(B)	b	a	d	c
(C)	c	a	d	b
(D)	d	c	b	a

Answer (D)

Sol. (I) It is to remove trade barriers

13. Who appoints Chief Election Commissioner of India-
(A) The Chief Justice of India
(B) The Governor
(C) The President
(D) The Prime Minister

Answer (C)

Sol. Based on recommendation from incumbent govt. of India

14. Which Country is not a permanent member of the UN Security Council-
(A) China
(B) Japan
(C) Russia
(D) France

Answer (B)

Sol. Permanent Members are china, France Russia, UK, US.

15. Community Government is in-
(A) India (B) Sri Lanka
(C) Britain (D) Belgium

Answer (D)

Sol. Started in 1831

16. Match the column A with Column B and choose the correct option

Column-A		Column-B
I)	Seven Party Alliance	(a) Bolivia
II)	Water War	(b) Kenya
III)	The Green Belt Movement	(c) Indonesia
IV)	No Land, No Vote	(d) Nepal

	(I)	(II)	(III)	(IV)
(A)	c	d	b	a
(B)	b	a	d	c
(C)	c	b	a	d
(D)	d	a	b	c

Answer (D)

Sol. (I) It is loose umbrella organisation in Nepal

17. Which team was defeated in semifinal by winner of FIFA world cup 2018, France-
(A) Croatia (B) England
(C) Belgium (D) Russia

Answer (C)

Sol. 10th July 2018

18. Match the column 'A' with Column 'B' and choose the correct option

Column-A		Column-B
I)	Augusto Pinochet	(a) Poland
II)	Lech Walesa	(b) Ghana
III)	Aung San Suu Kyi	(c) Chile
IV)	Kwame Nkrumah	(d) Myanmar

	(I)	(II)	(III)	(IV)
(A)	d	c	b	a
(B)	a	b	c	d
(C)	c	a	d	b
(D)	b	a	d	c

Answer (C)

Sol. Famous Leaders to establish Democracy

19. One basic principle of democracy is that
(A) Pople are the source of all political power
(B) Religious community is the source of all political power
(C) Nation is the source of political power
(D) Head of the state is the source of political power

Answer (A)

Sol. In democracy power lies in the hand of people

20. In a way, the federal from of government is in contrast to
(A) Parliamentary from of government
(B) Presidential from of government
(C) Republican from of govermnet
(D) Unitary from of government

Answer (D)

Sol. It has only one level of govt.

21. Neeraj Chopra has won gold medal in whcih event of Asian games 2018

(A) Judo (B) Wrestling

(C) Javelin Throw (D) Shot Put

Answer (C)

Sol. Neeraj threw 88.06 meters in his III attempt

22. The highest point of the Eastern Ghat is

(A) Anaimudi (B) Doddabetta

(C) Mahendragiri (D) Guru Shikhar

Answer (C)

Sol. It lies in Tirunelveli District

23. World's largest river island 'Majuli' is located in

(A) Brahmputra River (B) Ganga River

(C) Yamuna River (D) Satluj River

Answer (A)

Sol. In Asom

24. 'Asiatic Lion' is found in which state of Inida

(A) Assam (B) West Bengal

(C) Uttarkhand (D) Gujrat

Answer (D)

Sol. Fact

25. Which state of India does not have 'Jhoom agriculture'

(A) Mizoram (B) Nagaland

(C) Assam (D) Gujrat

Answer (D)

Sol. To Save the Shrinking forest

26. The coast between Mumbai and Goa is knows as

(A) Coromandel coast (B) Malabar Coast

(C) Konkan Coast (D) Kannad Coast

Answer (C)

Sol. It is 720 km long

27. Match the column I with Column II and choose the correct option

Column-I	**Column-II**
a) Evergreen Forest	(I) Acacia, Palm
b) Deciduous Forest	(II) Ebony, Mahogany
c) Thorn Forest	(III) Bamboos, Sal
d) Mountain Forest	(IV) Pine, Deodar

	(a)	(b)	(c)	(d)
(A)	I	IV	III	II
(B)	IV	III	II	I
(C)	II	III	I	IV
(D)	I	II	III	IV

Answer (C)

Sol. (a) Evergreen above 200 cm. rainfall

28. Match the column I with Column II and choose the correct option

Column-I	**Column-II**
a) Corbett Park	(I) West Bangal
b) Sundarban Park	(II) Uttarakhand
c) Bandhavgarh Park	(III) Assam
d) Manas Tiger Reserve	(IV) Madhya Pradesh

	(a)	(b)	(c)	(d)
(A)	I	II	III	IV
(B)	II	I	IV	III
(C)	IV	III	II	I
(D)	III	II	I	IV

Answer (B)

Sol. (A) First Park in India

29. Match the Column I with Colum II and choose the correct option

Column I (Mine/Field)	Column II Minerals
a) Khetri	(I) Coal
b) Jharia	(II) Copper
c) Kudremukh	(III) Mica
d) Koderma	(IV) Iron

	(a)	(b)	(c)	(d)
(A)	I	II	III	IV
(B)	II	I	IV	III
(C)	III	IV	I	II
(D)	IV	III	II	I

Answer (B)

Sol. (A) In Rajesthan non Metallic Mineral

30. The Indian Standard time is determined by which longitude

(A) 80° 30' East longitude

(B) 0° 7' East longitude

(C) 23° 30' East longitude

(D) 82° 30' East longitude

Answer (D)

Sol. As it lies almost in the mid of the country

31. Jet Stream flows between the latitudes-

(A) 27° – 30° N

(B) 20° – 23° N

(C) 17° – 20° S

(D) 14° – 17° S

Answer (A)

Sol. It is upper air circulation

32. Which of the following is not correctly matched-
(A) karakoram - Jummu Kashmir
(B) Nanda Devi - Uttarakhand
(C) Kanchanjunga - Sikkim
(D) Garo, Khasi - Tripura

Answer (D)

Sol. As it lies in Meghalaya

33. Which one of the following is formal sector of credit-
(A) Bank
(B) Relatives
(C) Trader
(D) Money lenders

Answer (A)

Sol. As fromal sector includes Banks and cooperatives

34. Which one is accepted as a money in modern economy -
(A) Currency
(B) Demand deposits
(C) Currency and demand deposits
(D) None of the above

Answer (C)

Sol. Approved by Indian Govt.

35. Making of Sugar from Sugarcane is associated with-
(A) Primary Sector
(B) Secondary Sector
(C) Tertiary Sector
(D) All of the above

Answer (B)

Sol. As manufacturing falls in secondary sector

36. Minimum Support Price is declared by the Government of India
(A) Before the sowing season
(B) Before the harvesting of crop
(C) After the harvesting of crop
(D) Any time

Answer (B)

Sol. As sowing season in India of crops varries from state to state

37. Which of the following activity is not rerlated to the primary sector-
(A) Forestry (B) Animal Husbandry
(C) Mining and Quarrying (D) Tourism

Answer (D)

Sol. As it deals with services

38. Under which act a three tier quasi-Judical machinery has been set up for redressal of consumer disputes-
(A) RTE (B) COPRA
(C) RTI (D) None of the above

Answer (B)

Sol. 24 Dec. 1986

39. Match the Column I with Colum II and choose the correct option

	Column I		Column II
a)	Revised Public Distribution System	(I)	Indigent Senior Citizen
b)	Antyodaya Anna Yojana	(II)	Poorest of the Poor
c)	Annapurna Yojana	(III)	Priority hosue hold
d)	National Food Security Act	(IV)	Backward Blocks

	(a)	(b)	(c)	(d)
(A)	I	III	II	IV
(B)	I	II	III	IV
(C)	IV	II	I	III
(D)	III	I	II	IV

Answer (C)

Sol. All the schemes interoduced by govt. to maintain food Security.

40. A Payment that a government makes to a producer to supplement the market price of a commodity is-
(A) Subsidy (B) Shares
(C) Donation (D) None of the above

Answer (A)

Sol. To help an industry allowing to prodvide more and more goods. To help the consumer to avail goods and services at better price

41. If $\sin\theta - \cos\theta = 0$, then the value of $\sin^4\theta + \cos^4\theta$ will be
(A) 1 (B) $\frac{3}{4}$
(C) $\frac{1}{2}$ (D) $\frac{1}{4}$

Answer (C)

Sol. $\sin\theta - \cos\theta = 0$

$\theta = 45°$

$\sin^4\theta + \cos^4\theta = (\sin45°)^4 + (\cos45°)^4$

$\left(\frac{1}{\sqrt{2}}\right)^4 + \left(\frac{1}{\sqrt{2}}\right)^4$

$= \frac{1}{4} + \frac{1}{4} = \frac{2}{4} = \frac{1}{2}$

42. If A(0, –1), B(2, 1) and C(0, 3) are the vertices of ΔABC then the length of median drawn from A will be

(A) 10

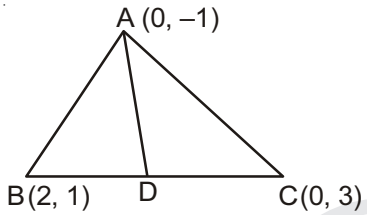
(B) $\sqrt{10}$

(C) $\sqrt{5}$

(D) None of these

Answer (B)

Sol.



$D = \left(\frac{2+0}{2}, \frac{1+3}{2}\right)$

$D = (1, 2)$

$AD = \sqrt{(1-0)^2 + (2+1)^2}$

$\sqrt{1+9}$

$\sqrt{10}$

43. If the roots of the equation

$(a - b)x^2 + (b - c)x + (c - a) = 0$ are equal then the value of b + c will be

(A) 6 a (B) – 6 a

(C) 2 a (D) – 2 a

Answer (C)

Sol. $(a - b)x^2 + (b - c)x + (c - a) = 0$

for equal roots $b^2 - 4ac = 0$

$(b - c)^2 - 4(a - b)(c - a) = 0$

from here

$b + c = 2a$

44. How many numbers lie between 10 to 300 which when divided by 4 leave a remainder 3

(A) 71 (B) 73

(C) 72 (D) 74

Answer (B)

Sol. 11, 15, 19, 23, ..., 299

$a_n = a + (n - 1)d$

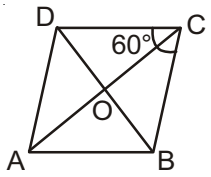
$299 = 11 + (n - 1)4$

$\frac{288}{4} = (n-1)$

$72 = (n - 1)$

$n = 73$

45. In the given figure ABCD is a rhombus in which ∠c = 60° then AC : BD will be

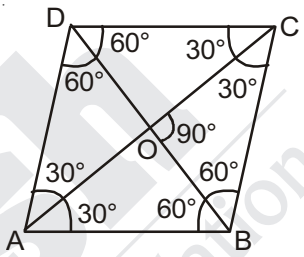


(A) $\sqrt{3} : 1$ (B) $\sqrt{3} : \sqrt{2}$

(C) $3 : 1$ (D) $3 : 2$

Answer (A)

Sol.



apply tan30° in ΔOCB AC : BD = $\sqrt{3} : 1$

46. If cos (α + β) = 0, then sin (α – β) is equal to

(A) cos β (B) cos 2 β

(C) sin α (D) sin 2 α

Answer (B)

Sol. cos (α + β) = 0

cos(α + β) =cos90°

α + β = 90°

α = 90 – β°

sin (α – β) = sin (90 – β – β)

= sin (90 – 2β) = cos2β.

47. In a frequency distribution, the mid value of a class is 10 and its width is 6 then the lower limit of the class will be

(A) 6 (B) 7

(C) 8 (D) 12

Answer (B)

Sol. mid value = 10

$\frac{x_1 + x_2}{2} = 10$

$x_1 + x_2 = 20$

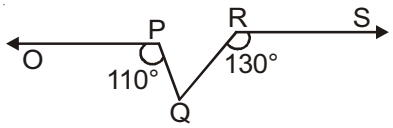
$x_2 - x_1 = 6$

from here

$2x_2 = 26$

$x_2 = 13, x_1 = 7$

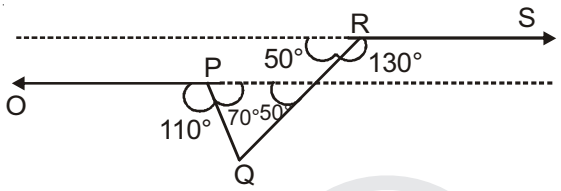
48. In figure If OP||RS, ∠OPQ = 110° and ∠QRS = 130° then ∠PQR is equal to



(A) 40° (B) 50°
(C) 60° (D) 70°

Answer (C)

Sol.



70 + 50 + ∠PQR = 180°

= ∠PQR = 60°

49. Value of $(125)^{\frac{1}{3}}.(32)^{\frac{1}{5}}$

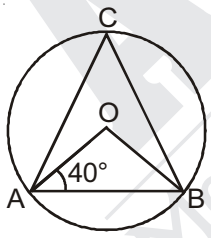
(A) 5 (B) 10
(C) 15 (D) 25

Answer (B)

Sol. $(5^3)^{\frac{1}{3}}.(2^5)^{\frac{1}{5}}$

5 × 2 = 10

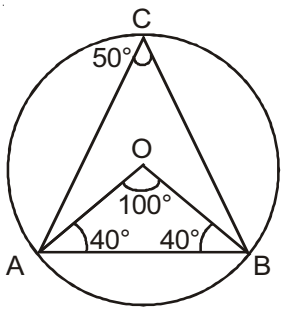
50. In figure if ∠OAB = 40° then ∠ACB is equal to



(A) 50° (B) 40°
(C) 60° (D) 70°

Answer (A)

Sol.



∠ACB = 50°

51. Polynomial $x^4 + x^3 - 2x^2 + x + 1$ is divided by x – 1, the remainder will be

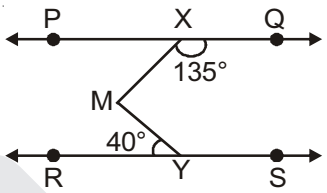
(A) 2 (B) 1
(C) 0 (D) 3

Answer (A)

Sol. Put x = 1

$(1)^4 + (1)^3 - 2(1)^2 + 1 + 1 = 2$

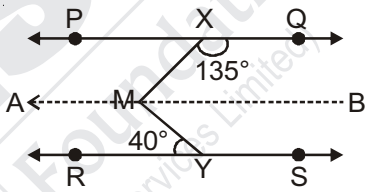
52. In the given figure if PQIIRS, ∠MXQ = 135° and ∠MYR = 40° then value of ∠XMY will be



(A) 95° (B) 45°
(C) 140° (D) 85°

Answer (D)

Sol.



Draw a line AB parallel to PQ and RS

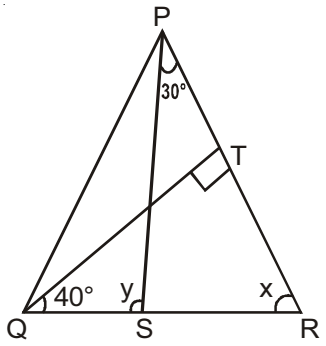
∠PXM = 45°

Hence ∠XMB = 45° (alternate interior angle

∠BMY = 40°

∠XMY = 40° + 45° = 85°

53. In the figure if QT ⊥ PR, ∠TQR = 40° and ∠SPR = 30°. Then the value of x and y will be



(A) x = 50°, y = 80° (B) x = 80°, y = 50°
(C) x = 30°, y = 60° (D) x = 60°, y = 30°

Answer (A)

Sol. In ΔQTR 40° + 90° + x = 180°

x = 50°

∠PSQ is the exterior angle

y = 30° + 50 ° = 80°

54. The dimensions of a cuboid are in the ratio of 1 : 2 : 3 and its total surface area is 88 m^2 then the dimensions will be

(A) 1m, 2m and 3m

(B) 1m, 4m and 6m

(C) 2m, 4m and 6m

(D) 2m, 4m and 9m

Answer (C)

Sol. Total surface area of a cuboid

2(lb + bh + hl)

Hence, length = x, breadth = 2x and height = 3x

$2(x \times 2x + 2x \times 3x + 3x \times x) = 88$

$2(2x^2 + 6x^2 + 3x^2) = 88$

$11x^2 = 44$

$x = 2$

Hence, length = 2m, breadth = 4m and height = 6m

55. If $x^2 + \frac{1}{x^2} = 83$ then the value of $x^3 - \frac{1}{x^3}$ will be

(A) 729 (B) 756

(C) 709 (D) None of these

Answer (B)

Sol. $x^2 + \frac{1}{x^2} - 2 = 83 - 2$

$\left(x - \frac{1}{x}\right)^2 = (9)^2$

$x - \frac{1}{x} = 9$

$x^3 - \frac{1}{x^3} = \left(x - \frac{1}{x}\right)\left(x^2 + \frac{1}{x^2} + 1\right)$

$9 \times 84 = 756$

56. The diameter of 120 cm. long roller is 84 cm. If it takes 500 revolutions to level a playground, find the cost of levelling it at the rate of Rs. 5 per square metre

(A) Rs. 1584 (B) Rs. 7920

(C) Rs. 3500 (D) None of these

Answer (B)

Sol. Curved surface area = $2\pi rh$

$2 \times \frac{22}{7} \times 42 \times 120 = 31680\ cm^2 = 3.168\ m^2$

Total number of revolutions = 500

$500 \times 3.168 = 1584 m^2$

Cost of levelling/m^2 = Rs. 5

1584×5 = Rs. 7920

57. In equation $4^{1+x} + 4^{1-x} = 10$, the value of x will be

(A) $\frac{1}{2}, -\frac{1}{2}$

(B) $-\frac{1}{2}, -\frac{1}{2}$

(C) $\frac{1}{2}, \frac{1}{4}$

(D) None of these

Answer (A)

Sol. $4\left(4^x + \frac{1}{4^x}\right) = 10$

$4^x + \frac{1}{4^x} = \frac{5}{2}$

Let, $4^x = y$

$y + \frac{1}{y} = \frac{5}{2}$

$2y^2 - 5y + 2 = 0$

$2y^2 - 4y - y + 2 = 0$

$2y(y-2) - 1(y-2) = 0$

$(y - 2)(2y - 1) = 0$

$y = 2, \frac{1}{2}$

$4^x = 2,\ 4^x = \frac{1}{2}$

$x = \frac{1}{2}, \frac{-1}{2}$

58. If $x = a \cos\theta$ and $y = b \sin\theta$ then the value of $(b^2x^2 + a^2y^2)$ will be

(A) $x^2 + y^2$

(B) $a^2 + b^2$

(C) a^2b^2

(D) ab

Answer (C)

Sol. $x^2 = a^2\cos^2\theta$

$b^2x^2 = b^2a^2\cos^2\theta.$

$y^2 = b^2\sin^2\theta$

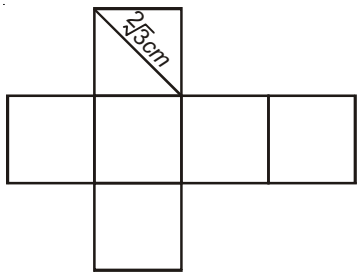
$a^2y^2 = a^2b^2\sin^2\theta.$

$b^2x^2 + a^2y^2 = b^2a^2\cos^2\theta + a^2b^2\sin^2\theta$

$= b^2a^2(\cos^2\theta + \sin^2\theta)$

$= b^2a^2$

59. In the following figure each quadrilateral is a square. The value of surface area of following figure will be

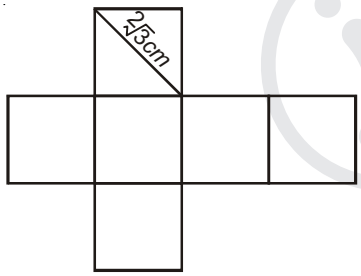


(A) $4\sqrt{3}$ cm^2 (B) $24\sqrt{3}$ cm^2

(C) 36cm^2 (D) $8\sqrt{3}$ cm^2

Answer (C)

Sol.



Let side of square = 'a'

$a^2 + a^2 = \left(2\sqrt{3}\right)^2$

$2a^2 = 12$, $a^2 = 6$, $a = \sqrt{6}$

Hence, area of one square = 6 cm^2

So area of six square = 6 × 6 = 36 cm^2

60. Which of the following statements is true for the values of central tendency

(A) 2 median = mode + 2 mean

(B) mode = mean – median

(C) 3 median = mode + 2 mean

(D) None of the above

Answer (C)

Sol. Emperical formula

mode = 3median – 2mean

61. Match Column A with Column B and Choose the correct option

	Column A		Column B
a)	Epsom salt	(I)	$Na_2SO_4.10H_2O$
b)	Glauber's salt	(II)	KNO_3
c)	White Vitriol	(III)	$MgSO_4$
d)	Nitre	(IV)	$ZnSO_4$

	(a)	(b)	(c)	(d)
(A)	III	I	IV	II
(B)	I	III	IV	II
(C)	IV	III	II	I
(D)	I	II	III	IV

Answer (A)

62. The nature of calcium phosphate present in tooth enamel is

(A) Basic (B) Amphoteric

(C) Acidic (D) Neutral

Answer (A)

Sol. Enamel is a Calcium Hydroxy pactite

$Ca_5(PO_4)_3OH$

As it contains $\ominus_{OH}$ ions so it is basic in nature.

63. Match Column A with Column B

	Column A		Column B
a)	Butyric Acid	(I)	Tomatoes
b)	Malic Acid	(II)	Rancid Butter
c)	Oxalic Acid	(III)	Apple
d)	Stearic Acid	(IV)	Fats

	(a)	(b)	(c)	(d)
(A)	I	II	III	IV
(B)	III	I	IV	II
(C)	II	III	I	IV
(D)	IV	III	II	I

Answer (C)

64. If 110 g of a salt is present in 550 g of solution then the concentration of solution will be

(A) 50% (50 Percent) (B) 40% (40 Percent)

(C) 20% (20 Percent) (D) 10% (10 Percent)

Answer (C)

Sol. $\%\frac{w}{w} = \frac{\text{mass of solute}}{\text{mass of solution}} \times 100$

$= \frac{110}{550} \times 100$

= 20%

65. Mass of 56 cc of CO (Carbon monooxide) at STP will be

(A) 28 g (B) 0.04 g

(C) 0.07 g (D) 0.05 g

Answer (C)

Sol. 22400 cc of CO $\rightarrow$ 28 g CO

56 cc of CO $\rightarrow \left(\frac{56 \times 28}{22400}\right)$ g CO

= 0.07 g

66. Hydrogen contains three types of atoms ($_1H^1$ Protium, $_1H^2$ deuterium and $_1H^3$ tritium) these atoms are

(A) Isotopic

(B) Isobaric

(C) Isotopic and Isobaric

(D) None of these

Answer (A)

67. Number of moles present in 9.033×10^{24} atoms of Helium are

(A) 1 mole (B) 5 mole

(C) 10 mole (D) 15 mole

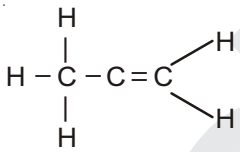
Answer (D)

Sol. Moles = $\frac{\text{no. of particles}}{\text{Avogadro number}}$

$= \frac{9.033 \times 10^{24}}{6.022 \times 10^{23}}$

$= 15$

68. According to IUPAC system which type of compound is shown by the given structure-



(A) Ketone (B) Alkene

(C) Alkyne (D) Aldehyde

Answer (B)

69. Five elements A, B, C, D and E have atomic numbers 2, 3, 7, 10 and 18 respectively. The elements which belong to the same period of the periodic table are

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

(C) A, D, E (D) B, D, E

Answer (B)

Sol. A $\rightarrow$ Z = 2 it is He = 2 (first period)

B $\rightarrow$ Z = 3 it is Li = 2, 1 (second period)

C $\rightarrow$ Z = 7 it is N = 2, 5 (second period)

D $\rightarrow$ Z = 10 it is Ne = 2, 8 (second period)

E $\rightarrow$ Z = 18 it is Ar = 2, 8, 8 (third period)

70. The number of covalent bonds present in pentane are

(A) 5 (B) 12

(C) 17 (D) 16

Answer (D)

Sol. C – H = 12, C – C = 4

Total covalent bond = 16

71. Which method is used to separate cream from milk

(A) Crystallization (B) Distillation

(C) Centrifugation (D) Vapourisation

Answer (C)

72. Which group of compounds shows correct increasing order of boiling points

(A) CH_3COOH, CH_3CH_2OH, CH_4, $CHCl_3$

(B) CH_3CH_2OH, $CHCl_3$, CH_4, CH_3COOH

(C) CH_4, CH_3CH_2OH, $CHCl_3$, CH_3COOH

(D) CH_4, $CHCl_3$, CH_3CH_2OH, CH_3COOH

Answer (D)

Sol. $CHCl_3$ having high molecular mass than CH_4. Ethanol has H-Bond CH_3COOH has dimeric H-bonding

73. What is the mass of the oxygen required to react completely with 15 g of H_2 gas to form water

(A) 140 g (B) 115 g

(C) 107.5 g (D) 120 g

Answer (D)

Sol. $2H_2 + O_2 \rightarrow 2H_2O$

4g hydrogen combine with 32 g oxygen

$\therefore$ 15 g hydrogen combine with $\left(\frac{15 \times 32}{4}\right)$ g oxygen

= 120 g

74. Percentage purity of a sample of gold is 85%. How many atoms of gold are present in 1 g sample (Atomic mass of Gold = 197u)

(A) 2.6×10^{21} (B) 2.6×10^{23}

(C) 3.0×10^{21} (D) 4.5×10^{20}

Answer (A)

Sol. In 100 g sample $\rightarrow$ 85 g gold

In 1 g sample $\rightarrow$ 0.85 g gold

In 197 g sample $\rightarrow 0.85 \times 6.022 \times 10^{23}$ gold atoms

$\therefore$ 0.85 g sample $\rightarrow \left(\frac{0.85 \times 6.022 \times 10^{23}}{197}\right)$ gold atoms

$= 2.6 \times 10^{21}$ gold atoms

75. Tendon is a structure which connects

(A) One bone to another bone

(B) Muscle to bone

(C) Neuron to Muscle

(D) Muscle to muscle

Answer (B)

Sol. Tendon is a tough fibrous connective tissue that connects muscle to bone and is capable of withstanding tension

76. Platyhelminthes are
(A) Coelomates
(B) Pseudocoelomates
(C) Homocoelomates
(D) Acoelomates

Answer (D)

Sol. Triploblastic but have solid mesoderm which do not split to form coelom. Hence, Acoelomates

77. Bone tissue becomes hard due to presence of phosphate and carbonates of the following
(A) Calcium and Sodium
(B) Calcium and Magnesium
(C) Magnesium and Sodium
(D) Magnesium and Potassium

Answer (B)

Sol. Calcium - Calcium Chloride, Calcium Phosphate Magnesium - Magnesium Phosphate, Magnesium Carbonate.

78. What is Zoological name of National Bird of India?
(A) *Psittacula Eupatria*
(B) *Passer Domesticus*
(C) *Pavo Cristatus*
(D) *Corvus Splendens*

Answer (C)

Sol. Peacock (*Pavo cristatus)*

79. Which of the following is known as the "energy currency of cells" in Biology?
(A) DTP (B) PDP
(C) ATP (D) DDT

Answer (C)

Sol. ATP have high energy bond.

80. Which of the following plant hormone inhibits plant growth?
(A) Abscisic asid (B) Ascorbic acid
(C) Ethene (D) Cytokinins

Answer (A)

Sol. Abscisic acid (Stress hormone, that inhibit growth of plant when environmental condition is unfavourable)

81. Excretory unit of the human excretory system is
(A) Nephron
(B) Nephridia
(C) Neuron
(D) Ureter

Answer (A)

Sol. Nephron- Structural and functional unit of kidney.

82. Match **Column I** with **Column II** and choose the correct option

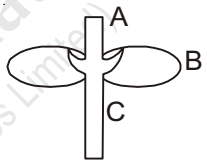
	Column I		**Column II**
I)	Arteries and veins	(a)	Clotting of blood
II)	Xylem Vessels	(b)	Carrier of Oxygen
III)	RBC	(c)	Water Transport in Plants
IV)	Platelets	(d)	Blood transport in humans

	(I)	(II)	(III)	(IV)
(A)	a	b	c	d
(B)	d	c	b	a
(C)	b	c	d	a
(D)	d	c	a	b

Answer (B)

Sol. Fact

83. In the given figure parts marked A, B and C subsequently are -



(A) Cotyledon, Plumule and radicle
(B) Plumule, cotyledon and Radicle
(C) Plumule, Radicle and Cotyledon
(D) Radicle, Plumule and Cotyledon

Answer (B)

Sol. A - Plumule - form future shoot (negative Geotropism)
B - Cotyledon - store food for growing embryo
C - Radicle - form future root (positive geotropism)

84. Lipid molecule in the cell are synthesized by -
(A) Smooth endoplasmic Reticulum
(B) Rough endoplasmic Reticulum
(C) Golgi Apparatus
(D) Plastid

Answer (A)

Sol. Smooth endoplasmic reticulum - lipid formation
Rough endoplasmic reticulum - associated with ribosome so form protein.

85. The plant cell become turgid due to -
(A) Plasmolysis (B) Exosmosis
(C) Endosmosis (D) Electrolysis

Answer (C)

Sol. Endosmosis - Inward movement of water, so cell get swollen and become turgid due to turgor pressure (protoplast exert force on cell wall)

86. Bile Juice is produced by -

(A) Gall bladder (B) Liver

(C) Pancreas (D) Stomach

Answer (B)

Sol. Liver cell (hepatocyte) secrete bile juice

Gall bladder - Store and concentrate bile juice

87. The right path of energy flow in a eco system is-

(A) Producer → Herbivorous → Carnivorous → Decomposer

(B) Producer → Carnivorous → Herbivorous → Decomposer

(C) Herbivorous → Carnivorous → Producer → Decomposer

(D) Herbivorous → Producer → Carnivorous → Decomposer

Answer (A)

Sol. Energy flow is from 1st trophic level to last trophic level.

88. Mechanical advantage (MA), Load(L) and effort(E) are related as

(A) MA = L × E

(B) MA × E = L

(C) MA × L = E

(D) None of these

Answer (B)

Sol. Mechanical advantage (MA)

$$MA = \frac{\text{Load}(L)}{\text{Effort}(E)}$$

MA × E = L

89. When light enters from air to glass its wave length

(A) Decreases

(B) Increases

(C) Remain the same

(D) None of these

Answer (A)

Sol. μ increases v decreases so that λ decreases.

90. The magnetic field inside a long straight current carrying solenoid -

(A) is zero

(B) dereases as we move towards its end

(C) Increases as we move towards its end

(D) is same at all points

Answer (D)

Sol. The magnetic field inside a long solenoid current carrying is same.

91. Which of the following is correct -

(A) λblue > λyellow > λgreen

(B) λyellow > λgreen > λblue

(C) λyellow > λblue > λgreen

(D) λgreen > λblue > λyellow

Answer (B)

Sol. VIBGYOR (from the left to right λ increases)

92. The magnification produced by a spherical mirror and a spherical lens is +0.8-

(A) The mirror and lens both are concave

(B) The mirror and lens both are concave

(C) The mirror is concave but the lens is convex

(D) The mirror is convex but the lens is convave

Answer (D)

Sol. If magnification is positive then image form by mirror is always virtual.

93. Two bulbs A and B are rated 100 W, 120 V and 10 W, 120 V respectively. They are connected across a 120 V source in series. Which bulb will consume more power

(A) A (B) B

(C) Both equally (D) Nothing can be said

Answer (B)

Sol. Power is directly proportional to resistance.

Resistance of B is more as that of A

94. Coin kept inside water $\left(\mu = \frac{4}{3}\right)$ when viewed from air in a vertical direction, appears to be raised by 2.0 mm. The depth of the coin in water is -

(A) 8.00 mm (B) 6.00 mm

(C) 8.00 cm (D) 6.00 cm

Answer (A)

Sol. shift = $\left(1-\frac{1}{\mu}\right)d$

$d = 8 \times 10^{-3}$ m = 8mm

95. Select the correct statement in the following and choose the correct option -

(i) An Ammeter is connected in series in a circuit and a Voltmeter is connected in parallel.

(ii) An Ammeter has a high resstance.

(iii) A Voltmeter has a low resistance.

(A) i, ii and iii (B) i and ii

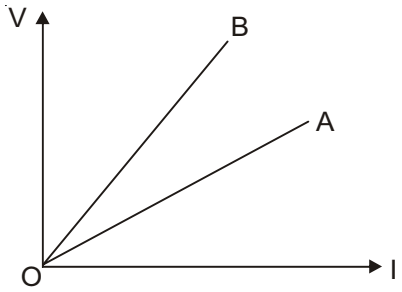
(C) ii and iii (D) only i

Answer (D)

Sol. (i) True (ii) False

(iii) False

96. V-I graph for parallel and series combinations for two identical resistors are as shown in figure. Which graph represents parallel combination -



(A) A (B) B

(C) A and B both (D) None of the above

Answer (A)

Sol. Slope of A < slope of B.

97. The velocity time graph of a ball of mass 20 g moving along a straight line on a long table is given in figure. The force exerted by the table on the ball to bring it to rest is -

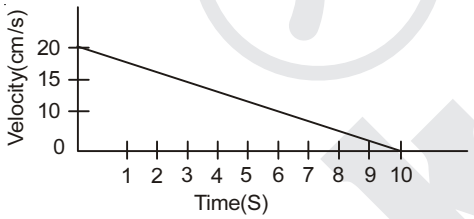


Diagram Corrected in Examination Hall

(A) -4×10^{-4} N (B) 8×10^{8} N

(C) -2×10^{4} N (D) 6×10^{8} N

Answer (A)

Sol. Slope of this graph is a = $\frac{-20}{10} \times 10^{-2}$

Force = -4×10^{-4} N

98. How fast should a man weighing 600N run to achieve a kinetic energy of 750 J (g=10 m/s^2)

(A) 5 m/s (B) 7 m/s

(C) 10 m/s (D) 7.5 m/s

Answer (A)

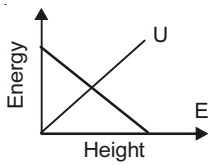
Sol. W = 600 N

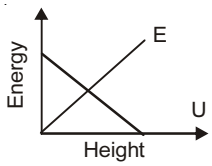
m = 60 kg

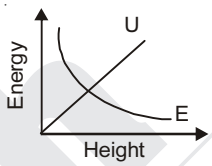
K.E. = $\frac{1}{2} m \times v^2$

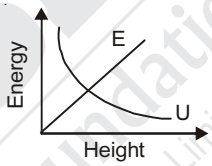
v = 5 m/s

99. Which of the following graphs show correct relation of kinetic energy (E) potential Energy (U) and height (h) from the ground of a particle -

(A)


(B)


(C)


(D)


Answer (A)

Sol. From the point of projection velocity is maximum so that kinetic energy is maximum after attending a hight h kinetic energy become 0.

Potential energy directly proportional to height.

100. A person has a hearing range from 20 Hz to 20 KHz. The typical wavelengths of sound waves in air corresponding to these two frequencies are (speed of sound in air = 344 m/s)

(A) 1.72 m, 1.72 mm (B) 17.2m, 17.2 mm

(C) 17.2 m, 1.72 mm (D) None of these

Answer (B)

Sol. $\lambda_1 = \frac{344}{20} = \frac{172}{10} = 17.2\,\text{m}$

$\lambda_2 = \frac{344}{20 \times 10^3}$

$= 17.2 \times 10^{-3}$ m

= 17.2 mm.

❑ ❑ ❑