SCHOOL EDUCATION & LITERACY DEPARTMENT
JHARKHAND, RANCHI

AND

JHARKHAND ACADEMIC COUNCIL
RANCHI

NATIONAL TALENT SEARCH EXAMINATION (PRELIMINARY) 2015-16

Class X

MENTAL ABILITY AND SCHOLASTIC APTITUDE TEST

8TH NOVEMBER 2015

Roll No *:* ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

JHARKHAND ACADEMIC COUNCIL
R A N C H I ,   J H A R K H A N D
NATIONAL TALENT SEARCH EXAMINATION (PRELIMINARY), 2015-16
Class X
MENTAL ABILITY AND SCHOLASTIC APTITUDE TEST

Part I : Time 45 Minutes	*Max. Marks : 50*
Part II : Time 45 Minutes	*Max. Marks : 50*
Part III : Time 90 Minutes	*Max. Marks : 100*

INSTRUCTIONS TO CANDIDATES

Read the following instructions carefully before you answer the questions. **Answers are to be given on a seperate O.M.R. Answer-Sheet.**

1. Please write your Roll No. very carefully (only one digit in one block) as given on your admission card. Please see that no block is left unfilled and even zeros appearing in the Roll No. are correctly transferred to the appropriate blocks on the booklet and on the answer-sheet. For example, a student appearing from Ranchi and Roll Number 21168899999 will make entries in the boxes as under :

    Roll No.   2   1   1   6   8   8   9   9   9   9   9

    For all subsequent purposes your Roll No. shall remain the same as given on the admission card.

2. This test in three Parts. Part I consists of 50 questions, Part II consists of 50 questions and Part III consists of 100 questions.

3. All questions in Part I, Part II and Part III carry one mark each and are compulsory.

4. Since all questions are compulsory, do not try to read through the whole question-paper before beginning to answer it.

5. Begin with the first question and keep on trying one question after another till you finish both the parts.

6. If you do not know the answer to any question, do not spend much time on it and pass on to the next one. Time permitting, you can come back to the questions which you have left in the first instance and try them again.

7. Since the time allotted to the two parts of this question-paper is very limited, you should make the best use of it by not spending too much time on any question.

8. A blank page has been provided for rough-work at the end of each subject.

9. **Remember you have to mark your answers on a separate O.M.R. Answer-Sheet as per instructions** given below :

10. The answer-sheet has three parts : Part I, Part II and Part IlI corresponding to Part I, Part II and Part III of the test. The answer-sheet comprises three printed columns, one for answering the Mental Ability Test questions, one for answering Language Test and the other for answering the Scholastic Aptitude Test questions. The answers to the Mental Ability Test questions, Language Test questions and Scholastic Aptitude Test questions are to be marked on the respective columns. Marks will not be awarded, if the answers are not entered in proper columns.

11. Answer to each question is to be indicated by darkening the circle by blue or black ball pen only, the number of the correct alternative in the answer-sheet from amongst the ones given for the corresponding question in the test booklet.

12. Now turn to the next page and start answering the questions.

N.B.: *Do no write anything except the Roll Number in the Booklet.*

Part I
Mental Ability Test

Time : 45 Minutes   Max Marks : 50

DIRECTION

1.   All the questions of this part are related to the subjects of Mental Ability Test.

2.   Before answering the questions, read these directions very carefully.

3.   This part contains 50 questions.

4.   Each question carries one mark.

5.   Answer to all the question is essential.

6.   The questions are to be answered on the O.M.R. Answer Sheet supplied in the Examination Hall.

7.   Every question has four alternatives, of which only one is correct.

8.   Answer to each question is to be indicated by darkening the circle, by blue or black ball pen only, the number of the correct alternative in the O.M.R. Answer Sheet from amongst the ones given for the corresponding question in the f est (Question) Booklet.

Please Turn Over the Page and Start Your Work.

MENTAL ABILITY TEST

Q1-5 In each of the following questions, a group of letters is given, which are numbered differently. Below four alternatives are given, containing combination of these numbers. Select that combination of numbers which forms a meaningful word.

1. uteseqoin
    (1) 34512768　　　(2) 51432768　　　(3) 21345678　　　(4) 86527143
Ans: **()　Remark: No of letter given is 9 and no. of digits are only 8.**

2. eeeadrls
    (1) 61234578　　　(2) 81245673　　　(3) 14526378　　　(4) 61724835
Ans: **(4)**

3. reegnl
    (1) 7625341　　　(2) 4253167　　　(3) 1243765　　　(4) 4527361
Ans: **(2)**

4. ceeubas
    (1) 5216473　　　(2) 7243156　　　(3) 6213475　　　(4) 5276314
Ans: **(1)**

5. sgthin
    (1) 156234　　　(2) 156423　　　(3) 345621　　　(4) 453216
Ans: **(3)**

Q6-10 In each of the following questions, find the figure from the answer-set (i.e. 1, 2, 3 and 4) which will continue the series given in the problem –set (i.e. A, B, C, D and E)

6.

CUTE✳	✳CUTΔ	ΔTOC✳	TΔ✳OA	AT◇✳O
A	B	C	D	E

TAZ◇✳	O✳T◇A	O✳◇TZ	OT✳◇Z
1	2	3	4

Ans: **()　Remark: Error in Question.**

7.

Ans: **(4)**

8.

Ans: **(1)**

9.

BLIND	EBLDN	BEDNC	ABECN	BACNO
A	B	C	D	E

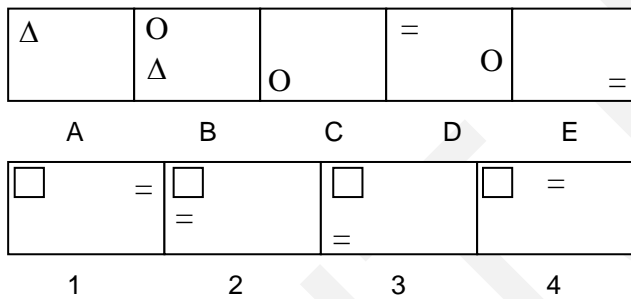| SBAON	CBAON	ABONS	SBANO
1	2	3	4
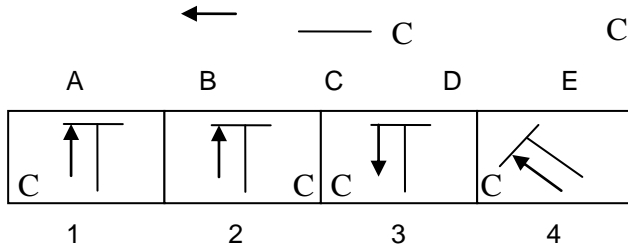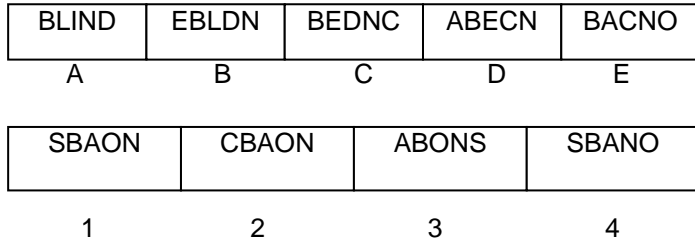
Ans: **(1)**

10.

Ans: **(2)**

Q11-13 Study the pattern of numbers in the following questions and select the missing numbers in the place of questions mark (?). Mark the correct alternative on your answer-sheet as directed.

11.

9	7	8
3	6	7
3	7	?
30	55	31

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

Ans: **(2)**

12.

R **(Lalpur)** :7th Floor Hari Om Towers (Op. men's College, Arts Block), Circular Road, Ranchi, Ph : 0651-2560167/88/89/90.
Ranchi (SOP, Doranda): Samriddhi C ound Floor, Near St. Xavier's Sch Office Para Doranda, Ranchi.
Corp. off. : FIITJEE H 29-A, Kalu Sarai, Sarvapriya Vihar, New Delhi – 16. Ph : 461 /10/ I3/15, Toll Free No. 1800114242.
Fax : 011-26513942, W w.fiitjee.com
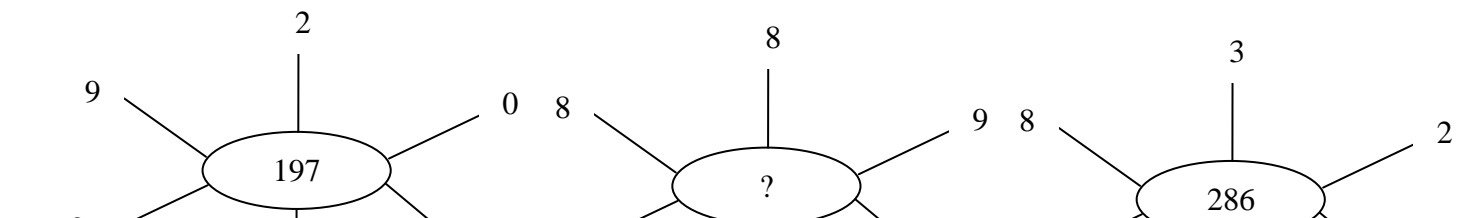
(1) 196 (2) 461 (3) 65 (4) 244

Ans: (2)

13.

(1) 6611 (2) 207 (3) 193 (4) 607

Ans: (3)

Q14-19

14. If 'x' means '+', '÷' means '-', then the value of 39 x 23 ÷ 21 x 5 = ?
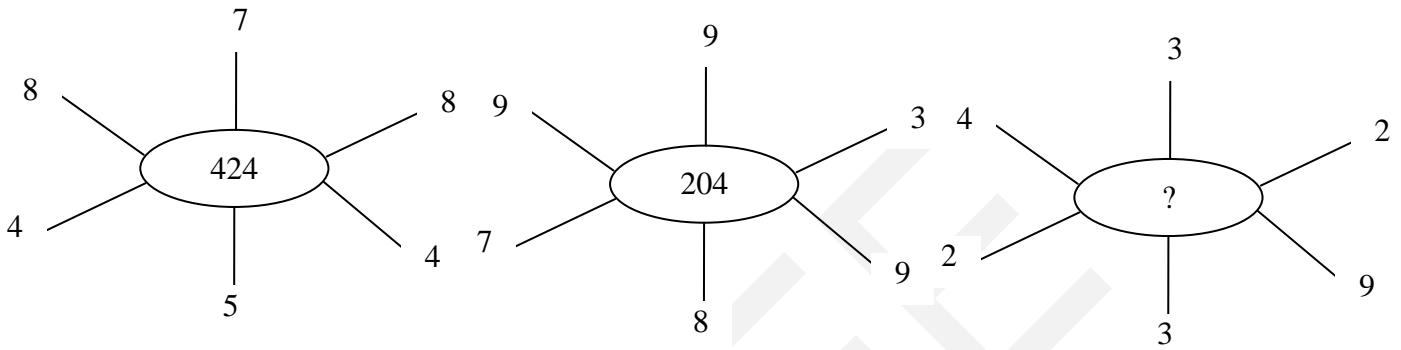(1) 46 (2) 36 (3) 62 (4) 89
Ans: (1)

15. If 'x' means '-', '+' means '÷', '-' means 'x' and '÷' means '+', then,
$$15 – 12 ÷ 900 + 90 x 100 = ?$$

(1) 180 (2) 190 (3) 3/1600 (4) 90
Ans: (4)

16. If '+' means '-', '-' means 'x', 'x' means '÷' and '÷' means '+', then,
$$40 ÷ 360 x 24 – 4 + 18$$
(1) 118 (2) 82 (3) 72 (4) 90

Ans: (2)

17. If '+' means 'x', '-' means '÷', 'x' means '-' and '÷' means '+', then,
$$40 ÷ 360 x 24 – 4 + 18$$
(1) 118 (2) 82 (3) 72 (4) 90
Ans: (4)

18. If 'x' means '+', '+' means '÷', '-' means 'x' and '÷' means '-', then,
$$6 x 4 - 5 + 2 ÷ 1 = ?$$

(1) 10   (2) 11   (3) 12   (4) None

Ans: **(4)**

19. Choose the correct arrangement of mathematical signs at the place of ✳ for equating the given equation.

$$7 ✳ 2 ✳ 3 ✳ 5 ✳ 6$$

(1) -, +, =, x   (2) +, x, =, +   (3) =, x, +, -   (4) x, =, +, +

Ans: **(4)**

Q20-25 In each of the following questions, a series of number is given which follow certain rules. One of the numbers is missing. Choose the missing number from the alternatives given below and mark it on your answer-sheet as directed.

20. 48, 24, 96, 192, ?
    (1) 98   (2) 90   (3) 96   (4) 76
Ans: **(3)**

21. 3, 10, 101, ?
    (1) 10101   (2) 11012   (3) 10202   (4) 10201
Ans: **(3)**

22. 33, 28, 24, ?, 19, 18
    (1) 21   (2) 22   (3) 20   (4) 23
Ans: **(1)**

23. 6, 10, 18, 34, ?
    (1) 46   (2) 56   (3) 66   (4) 76
Ans: **(3)**

24. 4, 8, 12, 24, 36, ?
    (1) 72   (2) 48   (3) 60   (4) 144
Ans: **(1)**

25. 1, 1, 9, 27, 25, ?, 49
    (1) 625   (2) 250   (3) 225   (4) 125
Ans: **(4)**

Q26-30 In the series given below what will come in the place of question mark(?)

26. AEB, FJG, LPM, ?
    (1) NOP   (2) SWT   (3) STW   (4) MNO
Ans: **(2)**

27. NOABOPBCPQCD????
    (1) QRDE   (2)RTEF   (3) QSDE   (4) QRGI
Ans: **(1)**

28. KDW, MGT, OJO, ?
    (1) MNQ   (2) QNM   (3) NMQ   (4) QMN
Ans: **(4)**

29. AE, CG, EI, GK, ?
(1) MI   (2) IM   (3) HM   (4) IL
Ans: **(2)**

30. ADG, GJM, MPS, ?
(1) SVW   (2) SVY   (3) SUW   (4) SWY
Ans: **(2)**

Q31-34 Choose the correct water-image of the given words/numbers from amongst the alternatives.

31. RIVER

(1) ꓤIVEꓤ   (2) ꓤIVEꓤ   (3) ꓤIVƎꓤ   (4) ꓤIVƎꓤ
Ans: **(2)**

32. PR9YA

(1) Aϱ人ꓤꓤ   (2) ꓒꓤϱ人A   (3) ꓒꓤϱ人A   (4) ꓒꓤϱ人A
Ans: **(2)**

33. R1HU7

(1) ꓤIHꓵ⅃   (2) ꓤIHꓵ⅃   (3) ꓤIHꓵ⅃   (4) ꓤIHꓵ⅃
Ans: **(1)**

34. WINER

(1) ʌʌIꓴEꓤ   (2) ʌʌIꓴEꓤ   (3) WINEꓤ   (4) WINEꓤ
Ans: **(1)**

Q35-36 Find the minor-image of x from 1, 2, 3 and 4 amongst the given alternatives.

35.

X   1   2   3   4
Ans: **(2)**

36.
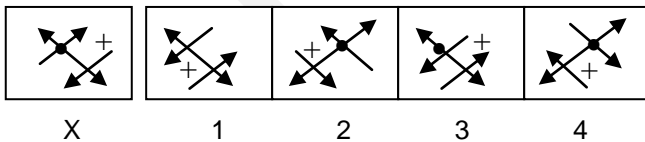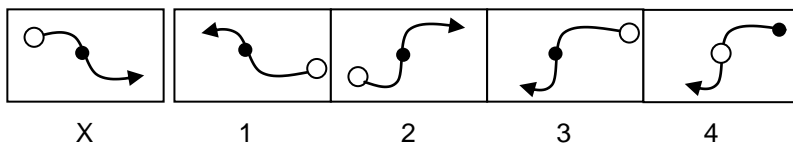
X   1   2   3   4
Ans: **(3)**

Q.37-41 In the diagram given below ∆ big triangle represents writer, ▢ rectangle represents poet, ∆ small triangle represents dramatician and O circle represents essay writer. Study the diagram and choose the correct answers of the given questions.
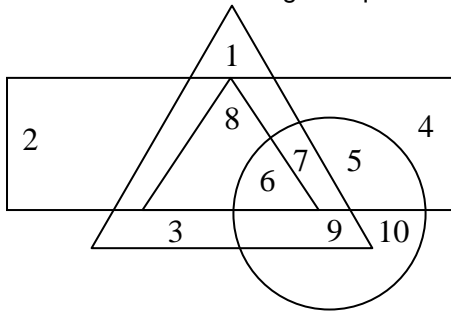

37.   Which number denotes the poets who are essay writer, dramatician and writer also ?
        (1) 7   (2) 5
        (3) 6   (4) 8
Ans: (3)

38.   Which number denotes those dramatician who are not essay writer ?
        (1) 8   (2) 7
        (3) 5   (4) 1
Ans: (1)

39.   Which number denotes those poets who are essay writer also but not writer or dramatician ?
        (1) 5   (2) 6
        (3) 7   (4) 8
Ans: (1)

40.   Which numbers only denotes writers who are not poets neither dramatician nor essay writer ?
        (1) 2 & 3   (2) 1 & 3
        (3) 4 & 5   (4) 8 & 6
Ans: (2)

41.   Which number only denotes poets who are not writers neither essay writer nor dramatician ?
        (1)2 & 4   (2) 8 & 3
        (3) 7 & 9   (4) 5 & 1
Ans: (1)

Q. 42 – 46 In every question a dice has been shown in different faces on which numbers/symbol/colour have been written randomly. Carefully study the faces of the dice and answer the questions based on it.

42.   Which symbol is just opposite to symbol '∆' ?
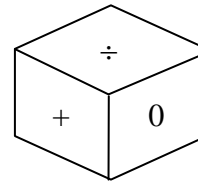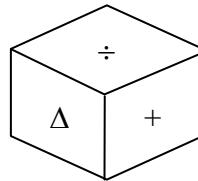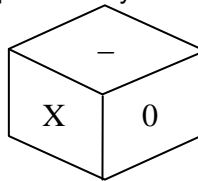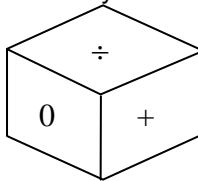
        (1) x   (2) +
        (3) 0   (4) ÷
Ans: (3)

43.   Which symbol is just opposite to symbol '+' ?
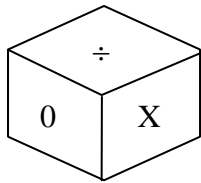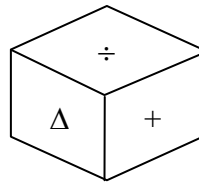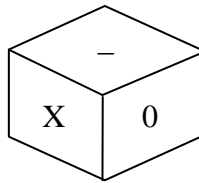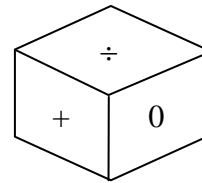
(1) Δ   (2) x
(3) −   (4) ÷
Ans: **(2)**

44.   Which number is opposite to the number 3 ?
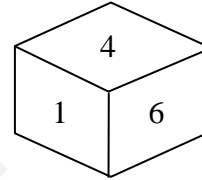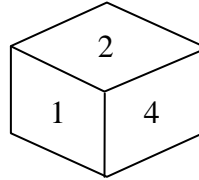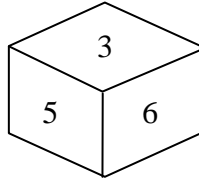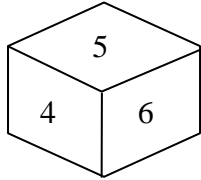
(1) 1   (2) 2
(3) 4   (4) 5
Ans: **(3)**

45.   Which number will come at the bottom of last cube ?
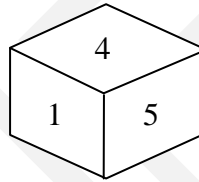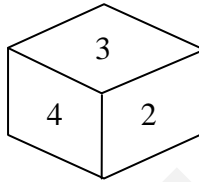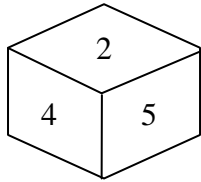
(1) 3   (2) 4
(3) 6   (4) 1

Ans: **(3)**

46.   Which colour will come at the opposite of red colour?
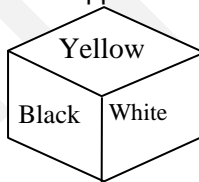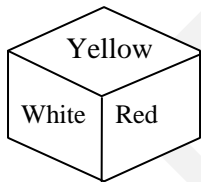
(1) Blue   (2) Black
(3) White   (4) Yellow
Ans: **(2)**

47.   Amongst P, Q, R, S and T, S is bigger than R but not as big as T, only Q is bigger than P. Who is the smallest among them?
(1) Blue   (2) Black   (3) White   (4) Yellow

Ans: **(3)**

48.   M, N, P, R and T, each has got different marks in an exam, R has got more marks than M and T. N has got less marks than P. Who has got the highest marks in third rank?
(1)N   (2) R   (3)M   (4) Data in-sufficient
Ans: **(4)**

49.   Age of A is three times the age of B. Four years earlier, age of C was two times the age of A. After four year A will become 31 years old. What is the present age of B and C?

(1)10, 50   (2)10, 45   (3) 9, 50   (4) 9, 45

Ans: **(3)**

50.   The sum of present age of a father and son is 70 years. After 10 years the age of son will be half the age of his father. What is their present age?

(1) 45 years, 25 years   (2) 50 years, 20 years

(3) 47 years, 23 years   (4) 50 years, 25 years

Ans: **(2)**

Part III
Scholastic Aptitude Test

Time: 90 Minutes   Max Marks: 100

1. All the questions of this part are related to the subjects of Scholastic Ability Test.
2. Before answering the questions, read these directions very carefully.
3. This part contains 100 questions.
4. Each question carries one mark.
5. Answer to all the questions is essential.
6. The subjects of Scholastic Aptitude Test are divided into three groups, as given below:

Sl. No.	Title of the Group	Subjects covered under the group	Full Marks	No. Of Questions	Marks allotted to each Question
(i)	Science Discipline	Physics, Chemistry and Biology	40	40	1 (One)
(ii)	Mathematics	Mathematics	20	20	1 (One)
(iii)	Social Science and Humanities	History, Geography Civics and Economics	40	40	1 (One)

7. **The questions are to be answered on the OMR Answer Sheet supplied in the Examination Hall.**
8. Every question has four alternatives, of which only one is correct.
9. Answer to each question is to be indicated by darkening the circle, by blue or black ball pen only, the number of correct alternative in the OMR Answer Sheet from amongst the ones given for the corresponding question in the Test (Question) Booklet.

Please Turn Over the Page and Start Your Work.

1. A planet has density P, radius R and acceleration due to gravity as g. If the radius of the planet were doubled, keeping the density same, the acceleration due to gravity at the surface will be:
   (1) 4g   (2) 2g
   (3) g   (4) g/2
Ans: (2)

2. If the length of a simple pendulum is increased to 4 times its value, its time period will be
   (1) halved   (2) doubled
   (3) becomes $\sqrt{2}$ times   (4) reduces by $\sqrt{2}$
Ans: (2)

3. At the top of its path a projectile has
   (1) no acceleration   (2) acceleration in the upward
   (3) acceleration in the downward direction   (4) acceleration in the horizontal direction
Ans: (3)

4. A real and enlarged image can be formed by using a
   (1) convex mirror   (2) plane mirror
   (3) concave mirror   (4) either convex or a plane mirror
Ans: (3)

5. For an incident ray directed towards centre of curvature of a spherical mirror the reflected ray
   (1) retraces its path   (2) passes through focus
   (3) passes through the pole   (4) becomes parallel to the principal axis
Ans: (1)

6. A stone is dropped into a well 44.1 m deep. The sound of splash is heard 0.13 seconds after the stone hits the water. What should be the velocity of sound in air?

(1) 319 m/s   (2) 339 m/s

(3) 359 m/s   (4) 369 m/s

Ans: (2)

7. Out of two bulbs 50W – 220V and 100W – 220V, which one will glow brighter if
   (a) connected in series
   (b) when connected in parallel
   (1) (a) 50 W (b) 100 W   (2) (a) 100 W (b) 100 W
   (3) (a) 100 W (b) 50 W   (4) none of the above

Ans: (1)

8. Energy released per fission of a $_{92}U^{238}$ nucleus is nearly equal to
   (1) 931 MeV   (2) 1000 MeV
   (3) 8 MeV   (4) 800 MeV

Ans: (3)

9. How many planets are there in our solar system
   (1) 5   (2) 7
   (3) 9   (4) 8

Ans: (4)

10. In house electrical circuits the fuse wire for safety should be of
    (1) High resistance – high melting point   (2) Low resistance – high melting point
    (3) Low resistance – low melting point   (4) High resistance – low melting point

Ans: (4)

11. Two wires each carrying current *i* are shown. The magnetic field at P (midway between the wires) is described by which statement:
    (1) Magnetic fields are in opposite direction and net filed is equal to zero
    (2) Magnetic fields due to two wires are in the same direction.
    (3) Magnetic fields are in opposite direction but net field is not zero
    (4) Magnetic fields are in the same direction and equal to two times the field due to one wire.
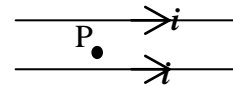
Ans: (1)

12. What is the equivalent resistance of the following arrangement between M and N.
    (1) R/2   (2) R/3
    (3) R/4   (4) R/6

Ans: (2)

13. An electron moving with uniform velocity in x direction enters a region of uniform magnetic field along y direction. Which of the following quantities is (are) non zero and remain constant?
    (I) Speed of the electron
    (II) Momentum of the electron (magnitude)
    (III) Kinetic energy of the electron
    (IV) Force of the electron (magnitude)
    (1) only I and II   (2) only III and IV
    (3) all four   (4) only II and IV

Ans: (3)

Ranchi (Lalpur) :7th Floor, Hari Om Towers, (Opp. Women's College, Arts Block), Circular Road, Ranchi,   Ph : 0651- 2563187/88/89/90.
Ranchi (SOP, Doranda): Samriddhi Complex, Ground Floor, Near St. Xavier's School, South Office Para Doranda, Ranchi.
Corp. off. : FIITJEE House 29-A, Kalu Sarai, Sarvapriya Vihar, New Delhi – 16. Ph : 46106000/10/13/15, Toll Free No. 1800114242.
Fax : 011-26513942, Web:www.fiitjee.com
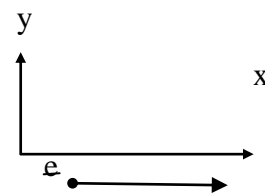
CHEMISTRY

14. In the reaction, $SO_2(g) + 2H_2S(g) \rightarrow 2H_2O(L) + S(s)$ the reducing agent is
    (1) SO_2 (2) H_2O
    (3) H_2S (4) S

Ans. (3)

15. Methane on combustion gives
    (1) CO_2 (2) H_2O
    (3) both CO_2 and H_2O (4) Neither CO_2 nor H_2O

Ans. (3)

16. Which of the following is not an example of single displacement reaction ?
    (1) $CuO + H_2 \rightarrow H_2O + Cu$ (2) $Zn + CuSO_4 \rightarrow ZnSO_4 + Cu$
    (3) $4NH_3 + 5O_2 \rightarrow 4NO + 6H_2O$ (4) $Zn + 2HCl \rightarrow ZnCl_2 + H_2$

Ans. (3)

17. 10 ml of a solution of NaOH is found to be completely neutralised by 8 ml of a given solution of NaOH, the amount of HCl solution (the same solution as before) required to neutralise it will be
    (1) 4 ml   (2) 8 ml
    (3) 12 ml   (4)16 ml

Ans. (1)

18. A milkman added a small pinch of baking soda to fresh milk which had pH close to 6. As a result, pH of the medium
    (1) became close to 2   (2) became close to 4
    (3) did not undergo any change   (4) became close to 8

Ans. (3)

19. Which of the following salts does not contain any water of crystallisation ?
    (1) blue vitriol   (2) washing soda
    (3) baking Soda   (4) gypsum

Ans. (3)

20. Which of the following methods is suitable for preventing an iron frying pan from rusting ?
    (1) Applying grease   (2) Applying paints
    (3) Applying a coating of zinc   (4) All of the above

Ans. (3)

21. When iron filings are heated in a steam of dry hydrogen chloride, the compound formed is FeCl$_x$ where x is
    (1) 1   (2) 2
    (3) 3   (4) 4

Ans. (2)

22. Rusting of Iron takes place in
    (1) ordinary water   (2) distilled water
    (3) both ordinary and distilled water   (4) none of the above

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Ans. (1)

23. Mg dissolves in hot water to form
    (1) MgO
    (2) $Mg(OH)_2$
    (3) MgOH
    (4) $MgOMg(OH)_2$
Ans. (2)

24. While cooking, if the bottom of the vessel is getting blackened on the outside, it means that
    (1) The food is not cooked completely
    (2) The fuel is not burning completely
    (3) The fuel is wet
    (4) The fuel is burning completely
Ans. (2)

25. Identify the functional group present in the following compound

    $$CH_3 - \underset{\underset{Br}{|}}{CH} - CH_2 - \overset{\overset{O}{||}}{C} - OH$$
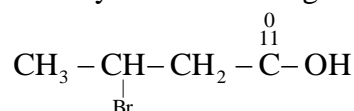
    (1) Aldehyde
    (2) Bromine
    (3) Carboxyl
    (4) both bromine and carboxyl group
Ans. (4)

26. Identify the wrong sequence of the element in a group
    (1) Ca, Sr, Ba
    (2) Cu, Au, Ag
    (3) N, P, As
    (4) Cl, Br, I_0
Ans. (2)

BIOLOGY

27. Increase in the height of the plant is due to
    (1) Auxins
    (2) Cytokinins
    (3) Gibberellins
    (4) Ethylene
Ans: (1)

28. A sexual reproduction takes place through budding in :
    (1) Amoeba
    (2) Yeast
    (3) Plasmodium
    (4) Leishmania
Ans: (2)

29. Ginger is
    (1) Root
    (2) Stem
    (3) Fruit
    (4) None of these
Ans: (2)

30. The liver stores food in the form of
    (1) Glucose
    (2) Glycogen
    (3) Albumen
    (4) ATP
Ans: (2)

31. During photosynthesis, the oxygen gas comes from :
    (1) CO_2
    (2) Water

(3) Both CO_2 and water   (4) Oxygen via air

Ans: **(2)**

32. This is an artificial ecosystem
    (1) Pond   (2) Crop field
    (3) Lake   (4) Forest

Ans: **(2)**

33. Which of the following is a plant harmone ?
    (1) Insulin   (2) Cytokinin
    (3) Thyroxine   (4) Oestrogen

Ans: **(2)**

34. The centre of sense of smell in brain is
    (1) Midbrain   (2) Olfactory lobes
    (3) Cerebellum   (4) Cerebrum

Ans: **(2)**

35. The component of blood responsible for transporting O_2 is
    (1) RBC   (2) WBC
    (3) Platelets   (4) All of these

Ans: **(1)**

36. Concentration of urine depends on the presence of
    (1) Thyroxin   (2) Vasopressin
    (3) ADH   (4) Melatonin

Ans: **(3)**

37. Antioxidant vitamin is
    (1) 'A'   (2) 'E'
    (3) 'C'   (4) All of these

Ans: **(1)**

38. Sardar Sarovar Dam built on river
    (1) Sutlej   (2) Ganga
    (3) Kaveri   (4) Narmada

Ans: **(4)**

39. Where is the cradle of human evolution ?
    (1) Asia   (2) America
    (3) Australia   (4) Africa

Ans: **(4)**

40. Which part of the brain is considered seat of intelligence and memory
    (1) Cerebrum   (2) Cerebellum

(3) Medulla (4) All of these

Ans: **(1)**

MATHEMATICS

41. If α, β be the zeros of the polynomial $2x^2 + 5x + k$ such that $\alpha^2 + \beta^2 + \alpha\beta = \dfrac{21}{4}$, then K = ?

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

Ans: **(4)**

42. The sum of three consecutive terms of an AP is 21 and the sum of the squares of these terms is 165. The middle term of the three terms is
    (1) 10 (2) 4
    (3) 6 (4) 7

Ans: **(4)**

43. If the sum of the first "p" terms of an AP is the same as the sum of its first "q" terms (where p≠q) then sum of (p+q)th term is
    (1) 1 (2) 0
    (3) p+q−1 (4) p+q+1

Ans: **(2)**

44. If $x^2 - 3x + 1 = 0$, then the value of $x^5 + \dfrac{1}{x^5}$?

    (1) 87 (2) 123
    (3) 135 (4) 201

Ans: **(2)**

45. If $\dfrac{xy}{x+y} = a$, $\dfrac{xz}{x+z} = b$ and $\dfrac{yz}{y+z} = c$ Where a, b, c are non-zero numbers, then the value of x ?

    (1) $\dfrac{2abc}{ab+ac-bc}$ (2) $\dfrac{2abc}{ac+bc-ab}$
    (3) $\dfrac{abc}{ab+bc+ac}$ (4) $\dfrac{2abc}{ab+bc-ac}$

Ans: **(2)**

46. If $\tan\theta + \cot\theta = 2$, then the value of $\tan^{23}\theta + \cot^{23}\theta = $ ....
    (1) 23 (2) 4
    (3) 1 (4) 2

Ans: **(4)**

47. The value of $\dfrac{1}{1+\cot^2\alpha} + \dfrac{1}{1+\tan^2\alpha}$ is

(1) 1 (2) $\dfrac{1}{2}$

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

Ans: **(1)**

48. If $\cos 43^\circ = \dfrac{x}{\sqrt{x^2 + y^2}}$, then the value of $\tan 47^\circ$.

(1) $\dfrac{x}{y}$ (2) $\dfrac{y}{x}$

(3) $\dfrac{x}{\sqrt{x^2 + y^2}}$ (4) $\dfrac{y}{\sqrt{x^2 + y^2}}$

Ans: **(1)**

49. If $\sin 7x = \cos 11x$, then the value of $\tan 9x + \cot 9x$.
(1) 4 (2) 2
(3) 1 (4) 3

Ans: **(2)**

50. If $\cos(\alpha + \beta) = 0$, then $\sin(\alpha - \beta) = ?$
(1) $\cos 2\beta$ (2) $\cos \beta$
(3) $\sin \alpha$ (4) $\sin 2\alpha$

Ans: **(1)**

51. In Δ ABC, AD is median and E is the mid-point of AD. If BE is extended, it meets AC in F. AB = 8 cm, BC = 21 cm. and AC = 15 cm. then AF = ?
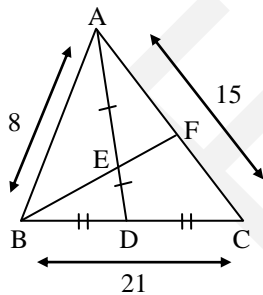
(1) 7cm. (2) 3 cm.
(3) 12 cm. (4) 5 cm.

Ans: **(4)**

52. In the given figure, AD is the bisector of $\angle$BAC. If AB =m10 cm., AC = 6 cm. and BC = 12 cm., find BD

A

10 cm.   6 cm.

B ———— C
      D
   12 cm.

(1) 4.5 cm.   (2) 9 cm.
(3) 7.5 cm.   (4) 3 cm.

Ans: **(3)**

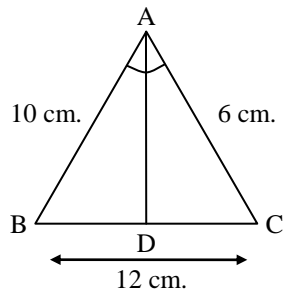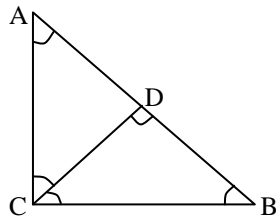53.   In the given figure, $\angle ACB = 90^o$ and $CD \perp AB$. then

A

D

C   B

(1) $CD^2 = BD.AD$ (2) $BC^2 = AD.BD$
(3) $AC^2 = AD.BC$ (4) $AD^2 = CD.BD$

Ans: **(1)**

54. Δ ABC is a right triangle in which $\angle C = 90^o$ and $CD \perp AB$. If $BC = a$, $AC = b$, $AB = c$ and $CD = p$, then

(1) $p^2 = a^2 + b^2$ (2) $\dfrac{1}{p^2} = \dfrac{1}{a^2} + \dfrac{1}{b^2}$

(3) $\dfrac{1}{c^2} = \dfrac{1}{a^2} + \dfrac{1}{b^2}$ (4) None of these

Ans: **(2)**

55.   In the given figure, three circles with centres A, B, C respectively touch each other externally. If AB = 5 cm., BC = 7cm. and CA = 6 cm., then the radius of the circle with centre A is

C
Q
R   P
A   B
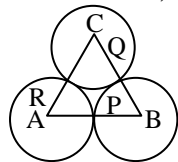
(1) 1.5 cm.   (2) 2 cm.
(3) 2.5 cm.   (4) 3 cm.

Ans: **(2)**

56.   In the given figure ABCD is a square of side 14 cm. Find the area of the shaded region.

(1) 56 cm^2

(2) 48 cm^2

(3) 42 cm^2

(4) 44 cm^2

Ans: **(3)**

57. A metallic spherical shell of internal and external diameters 4 cm. and 8 cm. respectively, is melted and recast into the form of a cone of base diameter 8 cm. The height of the cone is
(1) 12 cm.
(2) 14 cm.
(3) 15 cm. 0
(4) 18 cm.

Ans: **(2)**

58. In what ratio is the line segment joining the points A($-2, -3$) and B($3, 7$) divided by the y-axis.
(1) 3 : 2
(2) 2:3
(3) 1:5
(4) 2:5

Ans: **(2)**

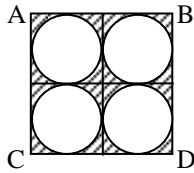59. Two coins are tossed simultaneously. What is the probability or getting at least one head.

(1) $\dfrac{1}{4}$

(2) $\dfrac{1}{2}$

(3) $\dfrac{3}{4}$

(4) 1

Ans: **(3)**

60. The relation between mean, mode and median is
(1) Mode = 3 x Mean – 2 x Median
(2) Mode = 3 x Median -2 x Mean
(3) Mean = 3 x Median – 2 x Mode
(4) Median = 3 x Mean – 2 x Mode

Ans: **(2)**

SST

61. Who was the Governor General of India in 1857 ?
(A) Wellesley
(B) Dalhousie
(C) Canning
(D) Minto

Ans: **(3)**

62. Who was the First Indian Woman President in the Indian National Congress ?
(A) Mrs. Annie Besant
(B) Sucheta Kripalani
(C) Sarojini Naidu
(D) Indira Gandhi

Ans: **(1)**

63. Who penned the following lines ? Sarfaroshi ki tamanna ab hamare dil me hai, Dekhana hai zor kitna baju-e qatil me hai.
(A) Bismil
(B) Raj Guru

(C) Bhagat Singh   (D) Azad
Ans: (1)

64.   The state of Awadh was annexed into British dominion in the year
       (A) 1855   (B) 1854
       (C) 1856   (D) 1853
Ans: (3)

65.   In which of the following countries was "Gadar Party" established ?
       (A) U.S.A   (B) Germany
       (C) Spain   (D) France
Ans: (1)

66.   Chauri Chaura is situated in the District of :
       (A) Deoria   (B) Gorakhpur
       (C) Maharajganj   (D) Kushinagar
Ans: (2)

67.   The British Parliament passed the Regulating Act to improve the administration of the East India
       Company in the year
       (A) 1773   (B) 1775
       (C) 1853   (D) 1855
Ans: (1)

68.   The First English factory in India was established at
       (A) Bombay   (B) Hooghly
       (C) Surat   (D) Calcutta
Ans: (3)

69.   The Asiatic Society of Bengal was founded by
       (A) Raja Ram Mohan Roy   (B) Sir William Jones
       (C) W. W. Hunter   (D) William Bentinck
Ans: (2)

70.   The founder of the autonomous kingdom of Avadh was -
       (A) Ahmad Shah Abdali   (B) Safdarjung
       (C) Saadat Khan Burhan Ul-Mulk   (D) Zulfiqur Khan
Ans: (3)

71.   The Permanent Settlement of 1793 vested ' the ownership of land in :
       (A) Individual peasants   (B) Zamindars
       (C) Village communities   (D) State
Ans: (2)

72.   The year of Great Divide in Indian ' Demographic history is -
       (A) 1921   (B) 1947
       (C) 1951   (D) 1982
Ans: (1)

73.   Who is the first woman Prime Minister of India ?
       (A) Meira Kumar   (B) Sonia Gandhi
       (C) Indira Gandhi   (D) Annie Besant
Ans: (3)

74.   Lenin was born in the year :
       (A) 1870   (B) 1880
       (C) 1885   (D) 1890

Ans: (1)

75.   The My Lai massacre occurred in
       (A) 1964   (B) 1966
       (C) 1968   (D) 1970
Ans: (3)

(Geography)

76.   Assertion (A) : Cotton textile industry is decentralised in India :

       Reason (R) : Cotton textile industry is immensely influenced by market.
       Select the correct option from the given alternatives -

       (A) Both (A) and (R) are true, and (R) explains (A)
       (B) Both (A) and (R) are true but (R) does not explain (A)
       (C) (A) is true and (R) is false
       (D) (A) is false and (R) is-true
Ans: (4)

77.   Assertion (A) : Public transport is given preference over private vehicles in large urban cities.

       Reason (R) : Large number of private vehicles in urban area cause traffic congestion and pollution.
       Select the correct option from the given alternatives -

       (A) Both (A) and (R) are true, and (R) explains (A)
       (B) Both (A) and (R) are true but (R) does not explain (A)
       (C) (A) is true and (R) is false
       (D) (A) is false and (R) is-true
Ans: (4)

78.   Assertion (A) : India is rich in biodiversity.

       Reason (R) : It is situated in tropical area.
       Select the correct option from the given alternatives -

       (A) Both (A) and (R) are true, and (R) explains (A)
       (B) Both (A) and (R) are true but (R) does not explain (A)
       (C) (A) is true and (R) is false
       (D) (A) is false and (R) is-true
Ans: (1)

79.   Assertion (A) : Oil refineries in India are
       mostly along the sea coast.

       Reason (R) : The climate along the sea coast
       is very congenial.
       Select the correct option from the given alternatives -

       (A) Both (A) and (R) are true, and (R) explains (A)
       (B) Both (A) and (R) are true but (R) does not explain (A)
       (C) (A) is true and (R) is false

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(D) (A) is false and (R) is-true

Ans: **(3)**

80. Match the textile centres indicated on the map of India (I, II, III & IV) with their representative names –
    (A) Chennai   (B) Solapur
    (C) Coimbatore   (D) Mumbai

Textile centres
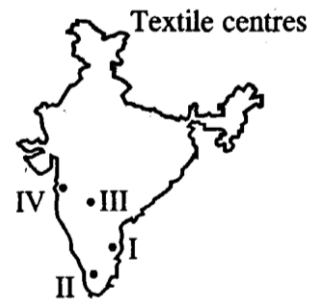
    (1) I C   II B   III A   IV D
    (2) II C   I A   IV D   III B
    (3) III D II C   I A   IV B
    (4) IV C   III A   II B   I D

Ans: **(2)**

81. In South India, which soil is extensively found -
    (A) Laterite   (B) Red soil
    (C) Black cotton soil   (D) Alluvial soil

Ans: **(3)**

82. Which of the following is an example of non-metallic mineral -
    (A) Gold   (B) Bauxite
    (C) Graphite   (D) Tin

Ans: **(3)**

83. Which chemical is affecting fertility in frog community -
    (A) Bengin   (B) Urea
    (C) Andrin   (D) Phosphorus

Ans: **(3)**

84. Which is the first expressway of India -
    (A) Delhi - Kolkata   (B) Mumbai - Pune
    (C) Pune - Chennai   (D) Delhi - Mumbai

Ans: **(2)**

85. Over exploitation of underground water has led to increase in concentration of Fluoride in which state ?
    (A) Bihar   (B) Jharkhand
    (C) Assam   (D) Sikkim

Ans: **(1)**

86. Capital of Lakshdweep is
    (A) Kavaratti   (B) Daman
    (C) Silvassa   (D) Port Blair

Ans: **(1)**

87. Production of wheat is highest in the state of
    (A) Punjab   (B) Haryana
    (C) Uttar Pradesh   (D) Madhya Pradesh

Ans: **(1)**

88. Which mine is found in Khetri ?
(A) Copper Mines
(B) Lignite Mines
(C) Bauxite Mines
(D) Iron Ore Mines
Ans: **(1)**

89. What is the longitudinal extent of India ?
(A) 67o10' East to 96o27' East
(B) 67o05' East to 96o22' East
(C) 69o05' East to 98o22' East
(D) 68o08' East to 97o25' East
Ans: **(4)**

90. Which of the following is the youngest structure of India ?
(A) Greater Himalayas
(B) Shiwalik Range
(C) Middle Himalayas
(D) Peninsular India
Ans: **(1)**

(CIVICS)

91. Panchayati Raj System is based on.
(A) Centralisation of power
(B) Decentralisation of power
(C) Co-operation with people and administrator
(D) All of the above
Ans: **(2)**

92. A member of Rajya Sabha is elected.
(A) For six year
(B) For five year
(C) For four year
(D) No definite period
Ans: **(1)**

93. Who appoints the Chief Election Commissioner of India?
(A) Prime Minister
(B) President
(C) Parliament
(D) Chairman of Lok Sabha
Ans: **(2)**

94. In India the maximum number of Lok Sabha and Rajya Sabha members may be
(A) 500 and 250
(B) 525 and 238
(C) 537 and 275
(D) 552 and 250
Ans: **(4)**

95. The time period of A.P.J Abdul Kalam as President of India is :
(A) 25 July 2000 to 25 July 2005
(B) 25 July 2001 to 25 July 2006
(C) 25 July 2002 to 25 July 2007
(D) 25 July 2003 to 25 July 2008
Ans: **(3)**

96. The most appropriate measure of a country's economic growth is
(A) Gross Domestic product
(B) Net Domestic product
(C) Net national product
(D) Per Capital Product
Ans: **(1)**

97. Finance is distributed between the centre and the states on the recommendations of which of the following ?
(A) Planning commission
(B) Public Accounts Committee
(C) Finance Commission
(D) National Development Council
Ans: **(1)**

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98.   The first Agricultural University of the country is -
(A) J.N.K.V., Jabalpur   (B) G.B.P.A.U., Pant Nagar
(C) P.A.U., Ludhiana   (D) R..A.U., Bikaner
Ans: (2)

99.   Who amongst the following is the current President of the World Bank.
(A) Jim Young Kim   (B) Lewis Preston
(C) Barber Conable   (D) None of these
Ans: (1)

100.   When was the National Development Council formed?
(A) 26th January, 1950   (B) 15th March, 1950
(C) 6th August, 1951   (D) 6th August, 1952
Ans: (4)