

प्रश्न पत्र क्रमांक :

परीक्षा कोड : SENT - 10
वर्ष 2016-2017

3953.

उत्तर पत्रक पर छापा क्रमांक

Printed No. on Answer Sheet

परीक्षा केन्द्र की सील

Seal of Examination Centre

परीक्षार्थी का अनुक्रमांक

ROLL No. OF CANDIDATE

निरीक्षक के हस्ताक्षर
एवं दिनांक

नोट : उपर्युक्त को परीक्षार्थी भरेंगे तथा निरीक्षक जांच कर हस्ताक्षर करेंगे।

भाग - I - मानसिक योग्यता

समय - 45 मिनट (11.00 से 11.45 बजे तक)

पूर्णांक - 50

भाग - II - भाषा बोध परीक्षा

समय - 45 मिनट (12.00 से 12.45 बजे तक)

पूर्णांक - 50

भाग - III - शैक्षिक योग्यता परीक्षा

समय - 1.30 घंटा दोपहर 1.00 से 2.30 बजे तक

पूर्णांक - 100

PART - I - MENTAL ABILITY

Time - 45 Minutes (11.00 to 11.45 P.M.)

Max. Marks - 50

PART - II - LANGUAGE TEST

Time - 45 Minutes (12.00 to 12.45 P.M.)

Max. Marks - 50

PART - III - SCHOLASTIC ABILITY TEST

Time - 1 hour 30 minutes 1.00 to 2.30 P.M.

Max. Marks - 100

INSTRUCTIONS TO CANDIDATES

Read the following instructions carefully before you answer the questions on Answer Sheet :-

नीचे लिखे हुए निर्देशों को सावधानीपूर्वक पढ़ें, इसके बाद प्रश्नों के उत्तर चिह्नित करना प्रारम्भ करें :-

1. प्रथम, द्वितीय एवं तृतीय भाग के लिए अलग-अलग उत्तर पत्रक दिए हैं, याद रखें आपको अपने उत्तर संबंधित भाग के उत्तर-पत्रक पर ही चिह्नित करने हैं।
2. प्रश्नपत्र एवं प्रत्येक उत्तर पत्रक पर अपना अनुक्रमांक प्रवेश-पत्र में दिए गए अनुक्रमांक के अनुसार ही लिखें।
3. सभ्य अंक अंग्रेजी में ही लिखें। एक चौखाने में एक ही अंक लिखें।
4. यह परीक्षा तीन भागों में ली जा रही है। प्रथम भाग में 1 से 50 तक मानसिक योग्यता के प्रश्न हैं। द्वितीय भाग में

1. The answer sheets for Part-I, Part-II & Part-III are different. Remember you have to mark you answer on related answer sheet.
2. Write Roll No. as given in admission card on this Question paper as well as on the Answer sheet.
3. Write all the Nos. in English numbers only. Write only one digit in one block.
4. This question paper contains three parts. I-Part contains 1-50 questions of mental ability. II-part contains 1-50 questions in Hindi language and

P.T.O.

- 1 से 50 प्रश्न हिन्दी भाषा के हैं एवं 1 से 50 प्रश्न अंग्रेजी भाषा के हैं। विद्यार्थियों को इनमें से केवल एक भाषा का चयन करना है अर्थात् या तो हिन्दी या अंग्रेजी। चुनी हुई भाषा को सावधानी से उत्तर पत्रक पर दिये गए निर्धारित स्थान पर अंकित करना है। तीसरे भाग में शैक्षिक योग्यता परीक्षा के 1 से 100 प्रश्न हैं। सभी प्रश्न अनिवार्य हैं। प्रत्येक प्रश्न के लिए 1 अंक निर्धारित है।
5. प्रत्येक सही उत्तर का एक अंक प्रदान किया जाएगा।
 6. इस परीक्षा के प्रत्येक भाग के लिए निश्चित समय का निर्धारण किया गया है। आप किसी एक प्रश्न के लिये ज्यादा समय न गंवाते हुए निर्धारित समय का सदुपयोग करें।
 7. भाग - I (मानसिक योग्यता) के प्रश्न-पत्र को 11.45 बजे तक समाप्त कर लें व उत्तर-पत्रक पर्यवेक्षक को तुरंत वापस करेंगे। भाग - II - (भाषा बोध परीक्षा) के प्रश्न-पत्र को 12.45 बजे तक समाप्त कर उसके उत्तर पत्रक पर्यवेक्षक को तुरंत वापस करेंगे। भाग-III (शैक्षिक योग्यता परीक्षा) के प्रश्नपत्र को 2.30 बजे तक समाप्त करके उत्तर-पत्रक पर्यवेक्षक को वापस करेंगे।
 8. इस प्रश्न-पत्र का अंतिम पेज रफ कार्य करने के लिये दिया गया है।
 9. उत्तर देने का तरीका :
उत्तर देने के लिए ओ.एम.आर. उत्तर पत्रक में संबंधित प्रश्न के बाजू में दिये गये चार गोले में से केवल एक गोले को पूरा काला कीजिए।
 10. उत्तर अंकित करने के लिए केवल काला/नीला बॉल - पाइंट पेन का प्रयोग करें।
 11. किसी प्रकार के कैलकुलेटर, लॉग टेबिल या अन्य इलेक्ट्रॉनिक उपकरणों, मोबाइल फोन आदि का प्रयोग वर्जित है।
 12. मूल्यांकन पद्धति -
प्रत्येक प्रश्न के चार संभावित उत्तर हैं, उनमें से एक उत्तर सही है। प्रश्न का सही उत्तर अंकित करने से एक अंक प्राप्त होगा। यदि एक से ज्यादा गोले काले किये जाते हैं तो यह माना जायेगा कि परीक्षार्थी को प्रश्न का सही उत्तर नहीं मालूम है और उसे कोई अंक नहीं दिये जायेंगे।
 13. उत्तर शीट वीक्षक को सौंपना -
वीक्षक को उत्तर शीट सौंपने के पहले सुनिश्चित कर लें कि उत्तर शीट के दोनों पृष्ठों पर सही पूर्तियां जैसे- नाम, रोल नम्बर, हस्ताक्षर, प्रश्न पुस्तिका का नम्बर आदि निर्धारित स्थान पर ठीक-ठीक भरे गये हैं।
 14. उत्तर शीट के उपयोग में सावधानी -
उत्तरशीट का प्रयोग करते समय पूरी तरह से सावधानी बरतें। इसे फटने, मोड़ने या सलवट पड़ने से खराब न होने दें।
 15. कृपया परीक्षा के बाद उत्तर पत्रक निरीक्षक को लौटा दीजिए।
 16. अनुवादित विवरण में अंतर से उठे किसी भी विवाद की स्थिति में प्रश्न पत्र के अंग्रेजी विवरण को निर्णायक माना जाएगा।

- 1-50 questions in English Language. The candidate has to attempt this test only in one language i.e. either in Hindi or in English. Mark the language opted by you very carefully on the answer sheet. III part contains 1-100 Questions. All the questions are compulsory. Each Question carry one mark.
5. Every correct answer will be awarded one mark.
 6. Since the time allotted to the two parts of this Question Paper is limited, you should make the best use of it by not spending too much time on any one question.
 7. Solve the Part-I (Mental Ability) of the Question Paper by 11.45 am and related Answer sheet quickly submit to the invigilator. Part-II (Language) paper should be solved by 12.45 pm and Answer sheet submit to the invigilator Answer sheet Part-III (Scholastic ability) should be by 2.30 pm. and answer sheet should be submitted on previous manner.
 8. The last page of this Question booklet is meant for Rough work.
 9. Method of marking Answer -
To answer a question, please darken one bubble out of the given four, in the OMR Answer Sheet against that question.
 10. Use only Black / Blue Ball-point Pen to mark the answer.
 11. Use of any calculator, log tables or any other electronic Gadgets, Mobile phones is prohibited.
 12. Valuation procedure -
There are four alternative answer to a question, only one of them is correct answer. If more then one bubble are darkened for a question, it will be presumed that the candidate does not know the correct answer; hence, no mark shall be awarded.
 13. Handing over of Answer Sheet to Invigilator -
Please ensure that all entries in the answer sheet are filled up properly i.e. Name, Roll No., Signature, Question Booklet No. language, etc.
 14. Care in Handling the answer sheet -
While using answer sheet adequate care should be taken not to tear or spoil due to folds or wrinkles.
 15. Please return Answer-Sheet to the invigilator after the test.
 16. English version of the question paper will be considered as final in case of any dispute arising out of variation on translated version.

NTSE STAGE – 1 (2016) (STATE OF M.P.)

SENT - 10

PART - 1 MENTAL ABILITY

Direction : In question nos 1 to 5 there is a number series with one term missing shown by question mark (?) This term is one of the alternative given. Choose that number.

1. 36, ?, 24, 18, 12
(A) 22 (B) 28 (C) 38 (D) 30
2. 1, 1, 4, 8, 9, 27, 16, 64, 25, ?
(A) 81 (B) 100 (C) 125 (D) 121
3. 3, 5, 8, 13, 21, ?, 55
(A) 25 (B) 49 (C) 36 (D) 34
4. 80, 78, 75, 71, ?, 60
(A) 76 (B) 73 (C) 65 (D) 66
5. 2, 7, 17, 32, 52, ?
(A) 77 (B) 64 (C) 72 (D) 81

Direction: In Question no. 6-10, there is a question mark in the blank space and it is only one of the four alternatives given under the question which satisfies the same relation as is found between the two pat terns to the left of the sign :: given in the question. Find the correct alternatives.

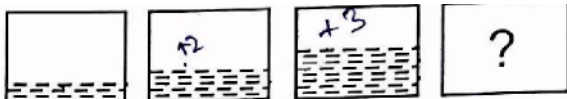
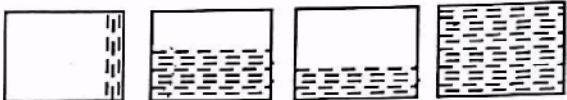
6. BEGK: ADFJ :: PSVY : ?
(A) LOQT (B) ROUX (C) OTUZ (D) ORUX
7. A B C D : N P R T :: F G H I : ?
(A) K L M N (B) O Q R T (C) R T U W (D) S U W Y
8. BLOCKED : YOLXPVW :: ? : OZFMXS
(A) LAUNCH (B) DEBATE (C) LABOUR (D) RESULT
9. aCE : bdF :: fhJ : ?
(A) ghk (B) gik (C) dfH (D) fhL
10. Menu: Food:: Catalogue: ?
(A) Rack (B) Newspaper (C) Library (D) Books

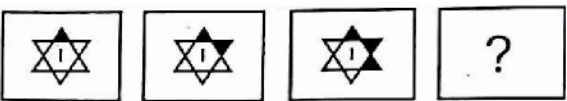
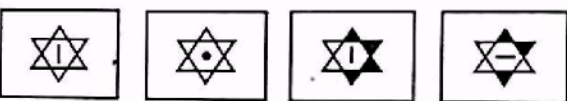
Direction : In Question no. 11 to 15, there are four terms in each question. The terms left to the symbol: : have the same relationship as the two terms to the right of symbol:: out of four terms one is missing which is one of the four alternative given, select and write the correct one in the answer sheet.

11. Teacher: Student:: Doctor: ?
(A) Hospital (B) Nurse (C) Patient (D) Pathology
12. Feather: Soft:: Glass:?
(A) Black (B) White (C) Light (D) Hard
13. Sky: Cloud:: Water:?
(A) River (B) Steam (C) Ice (D) Hot
14. Bird: Flying:: Animal: ?
(A) Running (B) Flying (C) Walking (D) Crying
15. Court: Justice:: School:?
(A) Teacher (B) Education (C) Ignorance (D) Student

16. Satyajit Ray is related to films in the same way as Picasso is related to
 (A) Literature (B) Drama (C) Poetry (D) Painting
17. Find the relationship -
 Lucknow: Patna: Bhopal: Jaipur: ?
 (A) Indore (B) Mysore (C) Pune (D) Shimla
18. Which of the following does not belong to others?
 (A) Tomato (B) Mango (C) Guava (D) Papaya
19. If today is Sunday, after 90 days it will be....
 (A) Friday (B) Saturday (C) Sunday (D) Monday
20. Pointing to a lady, a man said "The son of her only brother is the brother of my wife". How is the lady related to the man?
 (A) Mother's sister (B) Grandmother
 (C) Sister of father-in-law (D) Maternal aunt
21. Raza said "This girl is the wife of the grandson of my mother". Who is Raza to the girl?
 (A) Father (B) Grandfather (C) Husband (D) Father-in-law
22. If the 2nd September 2016 was Friday. How many Friday were there in the month?
 (A) 3 (B) 4 (C) 5 (D) None of these
23. Sara is older than Mala. Gopal is older than Mala but younger than Sara. Kapil is younger than Ram and Mala. Mala is older than Ram. Who is the eldest?
 (A) Sara (B) Mala (C) Kapil (D) Gopal
24. You go north, turn right, then right again and then go the left. In which direction are you now?
 (A) North (B) South (C) East (D) West
25. In the given words find the odd one out
 (A) Winter (B) Summer (C) Spring (D) Cloud

Question no. 26 to 30 have a series with three figures. Bearing series in mind, pickup the fourth correct figure from the answer figure.

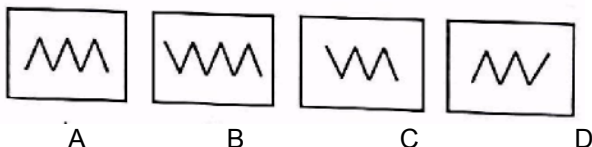
26. 
- Answer shapes
- 
- A B C D

27. 
- Answer shapes
- 
- A B C D

28.



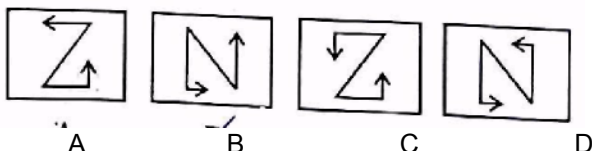
Answer figures



29.



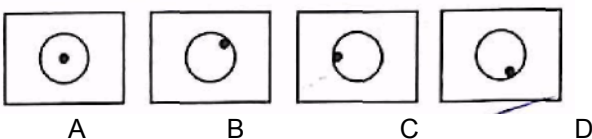
Answer figures



30.



Answer figures



Direction: On the basis of following arrangement give answer of Question no. 31 and 32.
 7, 8, 9, 7, 6, 5, 3, 4, 2, 8, 9, 7, 2, 4, 5, 9, 2, 9, 7, 6, 4, 7

31.

How many 7s are preceded by 9 and followed by 6

(A) 2

(B) 3

(C) 4

(D) 5

32.

Which figure has equal frequency?

(A) 2, 5, 3

(B) 2, 4, 5

(C) 3, 7, 5

(D) 8, 6, 5

33.

Which is correct missing letter?

F	I	O
A	J	K
E	M	?

(A) P

(B) R

(C) S

(D) V

34.

What is (?) missing number



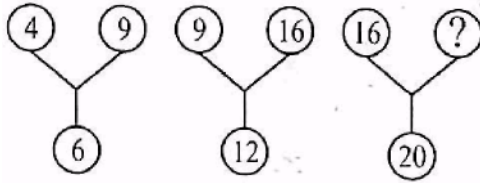
(A) 38

(B) 39

(C) 40

(D) 44

35. Find the missing character.



- (A) 21 (B) 25 (C) 35 (D) 45

Direction: Question no. 36 to 38 each form a group with similar except one. Find the different one.

- 36.



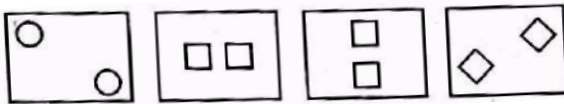
- A B C D

- 37.



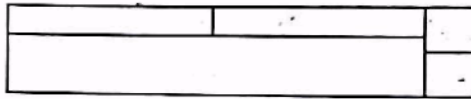
- A B C D

- 38.



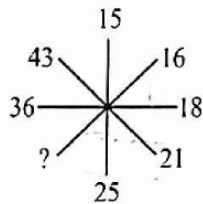
- A B C D

39. What is the number of rectangles in the following figure?



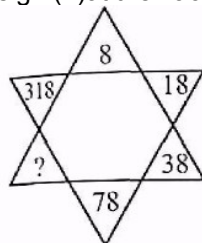
- (A) 6 (B) 7 (C) 9 (D) 11

40. In the following question there is a sign (?) at the vacant place. Find out the missing number.



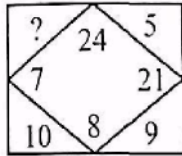
- (A) 28 (B) 32 (C) 30 (D) 35

41. In the following question there is a sign (?) at the vacant place. Find out the missing number.



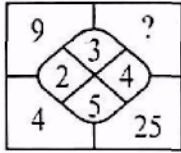
- (A) 68 (B) 140 (C) 156 (D) 158

42. In the following question, find out the missing number at the vacant place.



- (A) 12 (B) 14 (C) 4 (D) 13

43.



- (A) 10 (B) 12 (C) 20 (D) 16

44. A family consisted of a man, his wife, his three sons, their wives and three children in each son's family. How many members are there in the family?

- (A) 12 (B) 14 (C) 17 (D) 19

45. A 26 feet long piece of wood is cut to make three pieces of equal length, the length of each piece is -

- (A) 8 feet 8 inches (B) 8 feet 2 inches (C) 8 feet 6 inches (D) 8 feet 4 inches

Direction: In questions (46-48). Eight friends A, B, C, D, E, F, G and H are sitting around a circular table facing the centre, not necessarily in the same order. C is third to the left of E, B is not an immediate neighbour of either E or C. H is not an immediate neighbour of E, D is third to the right of B, H is second to the left of A. F is not immediate neighbour of H.

46. Who is sitting third to the left of B?

- (A) E (B) A (C) G (D) B

47. Which of the following pairs of people correctly represents the pair of people who are immediate neighbour of H?

- (A) DC (B) GA (C) AD (D) BG

48. Who is sitting between B and C?

- (A) H (B) F (C) A (D) G

49. If farmer LC' has two daughters - A and B as well as one son ;D" so what is the relation between D to A?

- (A) Sister (B) Bhabhi (sister-in-law)
(C) Uncle (D) Brother

50. If Ajay is taller than Tara, but shorter than Atul, Atul is shorter than Sharad then who is tallest

- (A) Ajay (B) Tara (C) Sharad (D) Atul

ENGLISH

Choose the correct word from the options to fill in the blanks-

1. Priya _____ her teacher for not submitting the assignment on due date,
(A) apologised to (B) annoyed (C) argue (D) complained
2. A wise enemy is _____ than a foolish friend.
(A) good (B) better (C) best (D) None of the above
3. The teacher scolded the students _____ were naughty.
(A) who (B) what (C) whom (D) why
4. Time is precious, do not it.
(A) Avaist (B) west (C) waste (D) vest
5. After a week's rain, the _____, was at its highest.
(A) humid (B) humidity (C) humidness (D) None of the above
6. Charity begins at _____
(A) hotel (B) home (C) theater (D) abroad

Direction: Questions 7 to 10 choose the correct meaning of the phrases / idioms given below

7. To give away
(A) to distribute (B) to sell (C) to share (D) to take care of
8. To hold one's tongue
(A) to keep quiet (B) to talk loosely (C) to examine (D) to speak loudly
9. Pull somebody's leg
(A) to throw someone out (B) to trip a person
(C) to tease someone (D) to stretch one's legs
10. Once in a blue moon
(A) Happens everyday (B) Happen very often
(C) Never happens (D) Happens very rarely

Direction: Questions 11 to 14 Select the word that is opposite in meaning to the word given.

11. Disclose
(A) to close (B) conceal (C) to reveal (D) to cover
12. Inferior
(A) mean (B) secondary (C) superior (D) grand
13. Innocent
(A) ignorance (B) simple (C) recent (D) cunning
14. Solitary
(A) isolated (B) accompanied (C) detached (D) lonesome

Direction: Questions 15 to 18

Select the most appropriate option to fill in the blanks from the given alternatives.

15. Medicines should not be placed the reach of small children.
(A) against (B) within (C) behind (D) None of the above
16. Neeraj is _____ than Pankaj.
(A) oldest (B) as old as (C) older (D) more older

17. He _____ that he was on the wrong floor.
 (A) reprimanded (B) realized (C) asked (D) None of the above
18. A group of stars that forms a pattern is called a _____.
 (A) constellation (B) fleet (C) bunch (D) crew

Direction: Questions 19 to 23

The following passage contains numbered blank spaces. Fill in the blanks with the appropriate word given in each case.

With a culture that has for centuries _____ (19) deep respect to its natural environment _____ (20) it as the _____ (21) of the gods, it comes as no surprise that the government of Bhutan has _____ (22) a controlled tourism policy. The only means of _____ (23) to this gorgeous but land-locked mountain Kingdom is by road through the tiny border town Phuntsholing near the Doars region of West Bengal.

19. (A) accorded (B) subjected (C) anticipated (D) abided
20. (A) generating (B) accepting (C) guiding (D) trying
21. (A) assylum (B) alter (C) abode (D) forbade
22. (A) allowed (B) assigned (C) adopted (D) administered
23. (A) access (B) attack (C) adjust (D) control

Direction: Questions 24 to 27

Read the following passage and answer the questions given after it.

Advertisements have almost become an integral part of our lives. Even small children watch TV advertisements with a great deal of interest attracted by its visuals, though, they may not understand its message.

Advertisements can be termed as the backbone of the commercial world. If a company or a firm has to popularise its products, it has to advertise through various means such as handbills, posters, printmedia and the television. Advertisements on the TV make an instant appeal to people because of interesting visuals dramatizing the products or services. Today advertisement has become a very powerful factor in our everyday life. Hence, we should be watchful lest we are misled or misinformed by the deceptive advertisements. Those who prepare the matter for advertisement and publicity are called copywriters. They are experts in conveying the message in short, crisp sentences, slogans and eye-catching visuals.

24. Short visuals shown on the TV publicising some products are
 (A) items (B) fillers (C) advertisements (D) one-act plays
25. Advertisements on the TV make an instant
 (A) appeal (B) approach (C) approval (D) agreement
26. Those who prepare the matter for advertisements are called.
 (A) dramatists (B) playwrights (C) scriptwriters (D) copywriters
27. A message in an advertisement should be
 (A) detailed (B) lengthy (C) boring (D) short and crisp

Direction: Questions 28 to 39

Read the passage and answer the questions given below it.

When I fell asleep, I dreamt about what it would be like to have a rocket ship. If I had a rocket ship my fast destination would be Earth's moon which is called Luna. When I will go to Luna I would jump all around because there is little gravity. I would be able to jump very high. After this, I would fly to Saturn and travel around its beautiful rings. On my way to Saturn, I would try to avoid Asteroids. Asteroids are large pieces of rock and minerals.

In my science class I learnt that it would take me almost my entire life to travel to Pluto which is the last planet in our solar system. Pluto is so far from our Sun that it is super cold. I wish I could see Pluto UP close.

28. What is the name of Earth's moon?
(A) Moona (B) Muna (C) Loona (D) Luna
29. Which of the following is true
(A) You wouldn't be able to jump on Moon
(B) The Moon's gravity will allow you to jump high
(C) The Earth has less gravity than its Moon
(D) Pluto is super hot
30. What is the unique feature of Saturn?
(A) It's a moon (B) It has lots of water
(C) It is bright pink in colour (D) It has rings
31. Asteroids are
(A) large piece of rock & mineral (B) reservoirs of water
(C) mountain peaks (D) None of the above
32. Which is the last planet in our solar system?
(A) Sun (B) Moon (C) Pluto (D) Saturn

Direction: Questions 33 to 43

Choose the word which best fills the blank from the four options given

33. They always _____ him for his accent.
(A) pull (B) tease (C) chase (D) None of the above
34. Our gardner went to the _____ to buy a few pots of the flowering plants.
(A) orchard (B) nursery (C) estate (D) plantation
35. _____ is a paper written in one's own handwriting.
(A) Manuscript (B) Transcript (C) Typescript (D) None of the above
36. The students get a monthly _____ which usually consists of writing a report.
(A) grade (B) assignment (C) point (D) register
37. The donkey _____ when a heavy load was put on its back.
(A) brayed (B) trumpeted (C) grunted (D) bellowed
38. The hardworking farmer tilled their farms from dawn to _____.
(A) midnight (B) dusk (C) twilight (D) sunrise
39. The police has captured the entire _____ of thieves.
(A) troupe (B) crew (C) gang (D) party
40. The previous owner of our factory _____ a burglar alarm system in the factory.
(A) installed (B) established (C) executed (D) implemented

41. Everyone was _____ by a device small enough to fit on a desk.
 (A) interested (B) fascinated (C) satisfied (D) scrutinized
42. I'll think _____ your idea carefully before I take a final decision
 (A) over (B) in (C) to (D) under
43. He died _____ cholera.
 (A) to (B) upon (C) of (D) in
44. The captain _____ his brave soldiers.
 (A) ordered (B) requested (C) said that (D) pleaded

Direction : Questions 45 to 50

Fill in the blanks with the right form of the verb.

45. These _____ no mystery so great as misery.
 (A) are (B) is (C) am (D) none of these
46. You _____ me of marvellous things
 (A) tell (B) writes (C) tells (D) speaks
47. The Happy Prince _____ sad.
 (A) look (B) looked (C) say (D) none of these
48. Kalids _____ Shakuntalam.
 (A) read (B) wrote (C) write (D) written
49. They have _____ a project.
 (A) prepare (B) prepares (C) prepared (D) been prepared
50. You must _____ before you speak.
 (A) jump (B) laugh (C) hurry (D) think

PHYSICS

1. A $4\ \Omega$ resistance wire is doubled by folding it, the new resistance is
(A) $1\ \Omega$ (B) $2\ \Omega$
(C) $3\ \Omega$ (D) None of these
2. Which of the following terms does not represent electrical power in a circuit:
(A) I^2R (B) IR^2
(C) VI (D) V^2/R
3. In a vernier calliper if 10 vernier scale divisions is equal to 8 main scale divisions (m.m.), then what is the least count of vernier calliper?
(A) 0.2mm (B) 0.1 mm
(C) 0.8mm (D) 0.01 mm
4. If initial velocity of an object is 'u' and acceleration is 'a' then find the distance travelled in n^{th} second.
(A) $S_n = un + \frac{an^2}{2}$ (B) $S_n = un + an^2$
(C) $S_n = u + \frac{a}{2}(2n+1)$ (D) $S_n = \left(u + \frac{a}{2}\right)n^2$
5. What is the temperature which is identical in both Celsius and Fahrenheit temperature scale?
(A) -40° (B) -4°
(C) 0° (D) none of the above
6. If a person goes from town A to town B by a speed of 50 km/h and comes back with a speed of 150 km/h then average speed of the person is
(A) 100 km/h (B) 75 km/h
(C) 0 km/h (D) 200 km/h
7. Angle of elevation of pole star observed from any where on the Earth is approximately equal to
(A) longitude of the place (B) latitude of that place
(C) constant (D) both longitude and latitude
8. If 3 resistances R_1 , R_2 and R_3 are connected in series and is parallel then their equivalent resistances are R_s and R_p respectively then correct relationship is ($R_1 > R_2 > R_3$)
(A) $R_s < R_3, R_p > R_1$ (B) $R_s = R_1 + R_2 + R_3, R_p = \frac{R_1^2 + R_2^2 + R_3^2}{R_1 + R_2 + R_3}$
(C) $R_s < R_p$ (D) $R_s > R_1, R_p < R_3$
9. Between which 2 planets the orbit of Seres lies
(A) Earth-Mars (B) Venus-Earth
(C) Mars-Jupiter (D) Jupiter-Saturn
10. Dentists use to see large image of the teeth of patients using
(A) Convex mirror (B) Convex lens
(C) Concave lens (D) Concave mirror
11. A human being has a horizontal field of view of about _____ with one eye and of about _____ with both eyes
(A) $120^\circ, 150^\circ$ (B) $150^\circ, 180^\circ$
(C) $180^\circ, 210^\circ$ (D) $210^\circ, 240^\circ$
12. To prevent electrical circuits from damage we use fuse wire of
(A) high resistance and low melting point (B) high resistance and high melting point
(C) low resistance and low melting point (D) low resistance and high melting point
13. Biggest planet of the solar system is
(A) Mercury (B) Saturn
(C) Jupiter (D) Uranus

CHEMISTRY

14. All the elements in a group have the -
(A) Same valency (B) Different valency
(C) Variable valency (D) None of these
15. The atomic number of E, F, G, H are given below, which element belongs to zero group -
Element Atomic number
(A) E 5
(B) F 7
(C) G 10
(D) H 16
16. Which of the following compounds is bad conductor of electricity?
(A) Ionic compound (B) Electrovalent compound
(C) Covalent compound (D) None of these
17. The addition of oxygen to a substance is called -
(A) Redox (B) Oxidation
(C) Reduction (D) None of these
18. The molecular formula of Sucrose is -
(A) CH_2O (B) $\text{C}_6\text{H}_{12}\text{O}_6$
(C) $\text{C}_{12}\text{H}_{22}\text{O}_{11}$ (D) CH_3COOH
19. Coal is a fuel-
(A) Fossil fuel (B) Nuclear fuel
(C) Bio fuel (D) None of these
20. Strong electrolytes is -
(A) NH_4OH (B) $\text{Ca}(\text{OH})_2$
(C) H_2CO_3 (D) NaCl
21. Chemical formula of Teflon is -
(A) $(-\text{CF}_2 - \text{CF}_2-)_n$ (B) $\left(\begin{array}{c} \text{CH} \\ \text{.....CH}_2 - | \\ \text{Cl} \end{array} \right)_n$
(C) $(-\text{CH}_2 - \text{CH}_2-)_n$ (D) None of these
22. The properties of the product are different from those of the constituents is called -
(A) Mixture (B) Element
(C) Compound (D) Acid
23. Which Vitamin is found in abundance in Amla?
(A) Vitamin-A (B) Vitamin-C
(C) Vitamin-B (D) Vitamin-D
24. Dilute solution of alkaline potassium permanganate is known as -
(A) Bayer's reagent (B) Tollen's reagent
(C) Fehling solution (D) Benedict solution
25. The chemical formula of Plaster of Paris is -
(A) Calcium Sulphate $[\text{CaSO}_4]$ (B) Calcium Sulphate Hemihydrate
 $[\text{CaSO}_4 \cdot \frac{1}{2}\text{H}_2\text{O}]$
(C) Barium Sulphate $[\text{BaSO}_4]$ (D) None of these
26. Bromine is a -
(A) Non-metal (B) Metal
(C) Metalloids (D) None of these

BIOLOGY

27. The study of interaction between living organism and environment called -
(A) Ecology (B) Phytogeography (C) Psychology (D) Mycology
28. In how many parts human brain is divided -
(A) 4 (B) 5 (C) 3 (D) 2
29. Chromosome number in the daughter cells after meiosis is -
(A) $1/2$ (B) $1/3$ (C) $1/4$ (D) $1/5$
30. The instrument for measuring blood pressure is called -
(A) Manometer (C) Sphygmomanometer
(C) Barometer (D) Potentiometer
31. The anther contains -
(A) Sepal (B) Carpel (C) Petal (D) Pollen grains
32. The largest gland in human body is -
(A) Pituitary gland (B) Liver (C) Adrenal gland (D) Thyroid gland
33. Which cell organelle is known as suicidal bag
(A) Ribosome (B) Centrosome (C) Lysosome (D) Peroxisome
34. Plant part used as medicine of Terminalia arjuna-
(A) Leaves (B) Fruits (C) Bark (D) Roots
35. Energy flow in an Ecosystem is -
(A) Unidirectional (B) Bidirectional (C) Multidirectional (D) None of these
36. World Environment Day is celebrated on -
(A) 5 June (B) 11 July (C) 16 October (D) 26 December
37. C_4 cycle mechanism is given by -
(A) Hill (B) Arnan (C) Hatch & Slack (D) Calvin
38. Which pollutant is dangerous for Taj Mahal?
(A) Sulphur dioxide SO_2 , (B) Carbon dioxide CO_2 ,
(C) Carbon monoxide CO (D) All of these
39. Which of the following is an example of Insectivorous plant -
(A) Amla (B) Baheda (C) Utricularia (D) Isoetes
40. Which is prokaryotic cell amongst the following?
(A) Amoeba (B) Bacteria (C) Yeast (D) Volvox

HISTORY

41. Big Bath has been found in which of the Indus valley site?
(A) Harappa (B) Mohenjodaro (C) Lothal (D) Chahnudaro
42. Which statement about the position of women in the Rig Vedic society is not true?
(A) They enjoyed high status in the society.
(B) Parada system and child marriages were prevalent.
(C) They had right to higher education,
(D) Dowry was not known.
43. When did the first urbanization take place?
(A) In the new stone age (B) In the Indus Valley civilization
(C) During the Mauryan period (D) During the Gupta period
44. Which ruler of ancient India is known as Devanam Priyadasi?
(A) Bindusar (B) Chandra Gupta Maurya
(C) Ashoka (D) Brihadatta
45. What are tripitakas?
(A) Vedic Literature
(B) Compilation of Buddha's sermons
(C) Main principles of Lord Mahavira
(D) Compilation of account of Alexander's invasion into India
46. Which ruler followed the policy of 'Blood and Iron' for strengthening administration?
(A) Balban (B) Rajiya
(C) Htutmish (D) Feroze-Shah-Tughlaq
47. Which king of the sultanate period is known as the mad sultan'?
(A) Mohd-bin-Tughlaq (B) Feroze-Shah-Tughlaq
(C) Jalal-ud-din-Khilji (D) Alauddin-Khilji
48. To which place of Madhya Pradesh is Jungle Satyagraha related?
(A) Rewa (B) Indore (C) Chhatarpur (D) Seoni
49. Who was the Governor General of India in 1857?
(A) Dalhousie (B) William Bentick (C) Canning (D) Rippon
50. Who gave the slogan of 'Do or Die' during the Indian freedom struggle?
(A) Vipin Chandra Pal (B) Lala Lajpat Rai
(C) Mahatma Gandhi (D) Bal Gangadhar Tilak
51. What was the main objective of British in dividing Bengal?
(A) To strengthen administrative system in Bengal
(B) To suppress nationalist feelings
(C) To promote nationalist feelings
(D) To help in promotion of language and culture
52. Through which newspaper did Lala Lajpat Rai inspire the people of India to struggle for independence?
(A) Kesari (B) Samvad Kaumudi
(C) Hindustan (D) Kayastha Samachar
53. Communal electorate was first introduced through which Act?
(A) 1773 Act (B) 1861 Act (C) 1909 Act (D) 1919 Act
54. Which Article of the Indian constitution gives a special status to the state of Jammu & Kashmir?
(A) 370 (B) 395 (C) 368 (D) 384
55. How many times has National emergency been declared in India?
(A) One (B) Two (C) three (D) Four

GEOGRAPHY

56. Oldest mountain in India is:
(A) Himalaya (B) Vindhya (C) Satpura (D) Aravali
57. Where is Bharat Heavy Electricals Limited (BHEL) situated?
(A) Sagar (B) Bhopal (C) Indore (D) Jabalpur
58. Which of the following is the most important factor to determine the type of forest?
(A) Climate (B) Type of soil (C) Productivity of soil (D) Wind direction
59. Which of the following is everlasting physical resource for power generation in India?
(A) Uranium (B) Coal (C) Petroleum (D) Water
60. Madhya Pradesh is _____ largest state of India in term of area.
(A) Second (B) Third (C) First (D) Fourth
61. The leading producer of coal in India.
(A) Jharkhand (B) Bihar (C) Rajasthan (D) Andhra Pradesh
62. The highest rainfall in the world is received at
(A) Cherrapunji (B) Mawsynram (C) Shilong (D) Calicut
63. Which of the following river does not fall in the Bay of Bengal-
(A) Narmada (B) Ganga (C) Mahanadi (D) Krishna
64. Blue revolution is related to -
(A) Fruit Production (B) Fish Production (C) Sheep rearing (D) Milk Production
65. How many railway zones are there in India?
(A) 9 (B) 6 (C) 14 (D) 15
66. Tropic of cancer does not pass through which of the following States?
(A) Gujarat (B) Rajasthan (C) West Bengal (D) Orissa
67. The Nagarjun Sagar Dam is located on the river-
(A) Godavari (B) Krishna (C) Kaveri (D) Narmada
68. Topographical Maps of India are prepared by-
(A) Geological Survey of India (B) Archaeological Survey of India
(C) Survey of India (D) National Geographical Survey of India
69. What is Bailadila famous for?
(A) Bauxite (B) Iron Ore (C) Copper (D) Coal
70. In which region is the method of making contour bands used for soil conservation?
(A) Delta region (B) Plateau region (C) Hills (D) Plains

CIVICS

71. In a parliamentary form of Government, real powers of the State are vested in which body?
(A) President (B) Chief Justice of Supreme Court
(C) Prime-Minister (D) Parliament
72. Which fundamental right of Indian Constitution has been deleted by the 44th Amendment Act?
(A) Right against exploitation (B) Right to property
(C) Right to liberty (D) Right to equality
73. When is 'Human Right Day' celebrated?
(A) 10th November (B) 10th December
(C) 10th January (D) 10th October
74. Who is known as the father of Indian Constitution?
(A) Dr. B. R. Ambedkar (B) Mahatma Gandhi
(C) Jawaharlal Nehru (D) Sardar Patel
75. The term of member of the Rajya Sabha is
(A) 5 years (B) 2 years
(C) 6 years (D) Same as that of the Lok Sabha

ECONOMICS

76. What is Barter System?
(A) Exchange of goods for dollars (B) Exchange of goods for rupees
(C) Exchange of goods for coins (D) Exchange of goods for goods
77. On what basis the enterprises are classified in 'Public' and 'Private' sectors?
(A) Employment conditions (B) Nature of Economic activities
(C) Ownership of Enterprise (D) Number of workers employed
78. In ancient times, which country was known as 'Golden Sparrow'?
(A) France (B) New Zealand
(C) J & K India (D) China
79. In India, the first five-year plan started from which year?
(A) 1947 (B) 1951 (C) 1948 (D) 1950
80. In which of the following sectors only services are produced?
(A) In private sector (B) In primary sector
(C) In secondary sector (D) In tertiary sector

MATHEMATICS

81. If in a right angled triangle ABC, $\cos A = \frac{9}{41}$, then the value of $\cot A$ and $\operatorname{cosec} A$ will be
(A) $\frac{40}{9}, \frac{40}{41}$ (B) $\frac{9}{40}, \frac{41}{40}$
(C) $\frac{9}{41}, \frac{41}{9}$ (D) $\frac{9}{40}, \frac{40}{41}$
82. In $\triangle ABC$, if $\angle B = 90^\circ$, $AB = 5$, $BC = 12$, then $\sin C = \dots\dots\dots$
(A) $\frac{12}{13}$ (B) $\frac{5}{13}$
(C) $\frac{5}{12}$ (D) $\frac{13}{5}$

83. $(\sec\theta + \tan\theta)(1 - \sin\theta) = \dots\dots\dots$
 (A) 0 (B) = 1
 (C) $\cos\theta$ (D) $\sin\theta$
84. If $\tan\theta = \frac{1}{\sqrt{3}}$, then the value of $\frac{\operatorname{cosec}^2\theta - \sec^2\theta}{\operatorname{cosec}^2\theta + \sec^2\theta}$ is
 (A) $\sqrt{3}$ (B) 1
 (C) $\frac{1}{\sqrt{2}}$ (D) $\sqrt{2}$
85. For what value of k, the equation $3x^2 + 2x + k = 0$ will have real roots :
 (A) $k \leq \frac{1}{3}$ (B) $k \geq \frac{1}{3}$
 (C) $k = \frac{2}{3}$ only (D) None of the above
86. The product of Meera's age 5 years ago and her age 8 years later is 30. Her present age is –
 (A) 11 years (B) 9 years
 (C) 7 years (D) 5 years
87. The area of right angled triangle is 96sq mtr. If base is three times the altitude, the length of base is –
 (A) 24 mtr. (B) 20 mtr.
 (C) 18 mtr. (D) 15 mtr.
88. What is the probability that a leap year has 53 Sundays?
 (A) $\frac{7}{53}$ (B) $\frac{7}{52}$
 (C) $\frac{1}{7}$ (D) $\frac{2}{7}$
89. One card is drawn at random from a deck of 52 cards. The probability of getting a face card is
 (A) $\frac{3}{13}$ (B) $\frac{1}{26}$
 (C) $\frac{3}{26}$ (D) $\frac{4}{13}$
90. The perimeter of the rectangular field is 206 meter. What will be its area if its length is 23 meter more than its breadth?
 (A) 1520 meter² (B) 2420 meter²
 (C) 2480 meter² (D) 2520 meter²
91. The total surface area of a cube is 864 cm². Its volume is :
 (A) 3456 cm³ (B) 432 cm³
 (C) 1728 cm³ (D) 3466 cm³
92. The length of the longest pole that can be kept in a room of size 12m × 9m × 8m is :
 (A) 29m (B) 17 m
 (C) 21m (D) 19 m
93. Which point on x-axis is equidistant from the point A(7,6) and B(-3,4)?
 (A) (0, 4) (B) (-4, 0)
 (C) (3, 0) (D) (0, 3)

94. The point A(0, 6), B(-5, 3) and C(3, 1) are the vertices of a triangle which is :
 (A) Isosceles (B) Equilateral
 (C) Rightangled (D) None of these
95. The x-axis divides the line joining A(2, -3) and B(7, 4) in the ratio :
 (A) 2 : 1.5 (B) 2 : 3
 (C) 3 : 2 (D) 1 : 2
96. If A and B are two non empty sets, then $A \cup B =$
 (A) $\{x \mid x \in A \text{ and } x \in B\}$ (B) $\{x \mid x \in A \text{ or } x \in B\}$
 (C) $\{x \mid x \in A \text{ and } x \notin B\}$ (D) $\{x \mid x \notin A \text{ and } x \in B\}$
97. If A is a non empty set, ϕ is empty set \cup and is universal set, then $A \cap \phi =$
 (A) \cup (B) a
 (C) ϕ (D) A'
98. Selling price of one things is $\frac{3}{2}$ times of its cost price. What will be the percentage of profit?
 (A) $20\frac{1}{2}$ (B) $25\frac{1}{4}$
 (C) $33\frac{1}{3}$ (D) 50
99. A sold a bicycle to B on 20% profit. B sold it to C on 25% profit. If C paid Rs. 225 for it, then what was the cost price of bicycle to A?
 (A) 110 (B) 125
 (C) 120 (D) 150
100. The height of a cylinder is 14 cm and its curved surface area is 264 cm^2 , the volume of cylinder is :
 (A) 308 cm^3 (B) 396 cm^3
 (C) 1232 cm^3 (D) 1848 cm^3

NTSE STAGE – 1 (2016) (STATE OF M.P.)

SENT – 10

ANSWERS KEYS

PART-I MENTAL ABILITY(MAT)

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

PART-II (SAT)

PHYSICS

1. (A) 2. (B) 3. (A) 4. (NO OPTION IS MATCHING) 5. (A) 6. (B) 7. (B) 8. (D) 9. (C)
10. (D) 11. (B) 12. (A) 13. (C)

CHEMISTRY

14. (A) 15. (C) 16. (C) 17. (B) 18. (C) 19. (A) 20. (D) 21. (A) 22. (C) 23. (B) 24. (A)
25. (B) 26. (A)

BIOLOGY

27. (A) 28. (C) 29. (A) 30. (B) 31. (D) 32. (B) 33. (C) 34. (C) 35. (A) 36. (A) 37. (C)
38. (A) 39. (C) 40. (B)

HISTORY

41. (B) 42. (B) 43. (B) 44. (C) 45. (B) 46. (A) 47. (A) 48. (D) 49. (C) 50. (C) 51. (B)
52. (D) 53. (C) 54. (A) 55. (C)

GEOGRAPHY

56. (D) 57. (B) 58. (A) 59. (B) 60. (A) 61. (A) 62. (B) 63. (A) 64. (B) 65. (B) 66. (D)
67. (B) 68. (D) 69. (B) 70. (C)

CIVICS

71. (C) 72. (B) 73. (B) 74. (A) 75. (C)

ECONOMICS

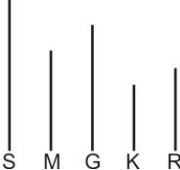

76. (D) 77. (C) 78. (C) 79. (B) 80. (D)

MATHEMATICS

81. (B) 82. (B) 83. (C) 84. (No option matching/bonus) 85. (A) 86. (C) 87. (A) 88. (D) 89. (D) 90. (D)
91. (C) 92. (B) 93. (C)
94. (A,C) 95. (A) 96. (B) 97. (C) 98. (D) 99. (D) 100. (B)

SOLUTIONS

MAT :

1. 36, **30**, 24, 18, 12
Hint : Difference of -6 in each step.
2. 1, 1, 4, 8, 9, 27, 16, 64, 25, **125**
Hint : Alternate series.
3. 3, 5, 8, 13, 21, **34**, 55
 $3 + 5 = 8$
 $5 + 8 = 13$
 $8 + 13 = 21$
 $13 + 21 = 34$
4. 80, 78, 75, 71, **66**
Hint : Successive difference of -2, -3, -4, -5
5. 2, 7, 17, 32, 52, **77**
Hint : Difference in each step of 5, 10, 15, 20, 25
6. B E G K : A D F J : :
Hint : Difference in each letter is one.
7. A B C D : N P R T
+13 +14 +15 +16
8. Opposite Letters
9. a C E : b d F :: f h J : ?
+1 +1 +1
19. 90/7 (remainder = 6 so it will be Saturday)
23. 
24. 
33.
$$\begin{array}{ccc} F & I & = & O \\ 6 + 9 & & & 15 \end{array}$$

So
$$\begin{array}{ccc} E & M & = & R \\ 5 + 13 & & & 18 \end{array}$$
34. $9 + 2^2 = 13$
 $13 + 3^2 = 22$
 $22 + 4^2 = 38$
35. $\sqrt{4} \times \sqrt{9} = 2 \times 3 = 6$
 $\sqrt{16} \times \sqrt{25} = 4 \times 5 = 20$

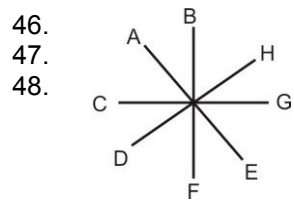
40. Difference of 1, 2, 3, 4, 5, 6, 7

41. Difference of 10, 20, 40, 80, 160

43. $2^2 = 4$
 $3^2 = 9$
 $4^2 = 16$
 $5^2 = 25$

44. $1+1=2$
 \downarrow
 $3+3=6$
 \downarrow
 $3+3+3=9$
 \downarrow
 $2+6+9=17$

45. $26 \times 12 = 312$
 $\frac{312}{3} = 104 \text{ in}$
 $104 = 8 \text{ f } 8 \text{ in}$



PHYSICS :

1. A
 $\Rightarrow \text{Req} = \frac{2 \times 2}{2+2}$
 $\Rightarrow \text{Req} = 1 \Omega$

2. B

3. A
 $10 \text{ VSD} = 8 \text{ MSD}$
 $\Rightarrow 1 \text{ VSD} = \frac{8}{10} \text{ MSD} = 0.8 \text{ MSD}$
 $\Rightarrow \therefore \text{LC} = 1 \text{ MSD} - 1 \text{ VSD}$
 $= 1 - 0.8 = 0.2 \text{ mm}$

4. $S_{n^{\text{th}}} = u + \frac{a}{2}(2n-1)$

$$\begin{aligned}
 5. \quad & \therefore \frac{x-32}{9} \\
 & \Rightarrow \frac{x}{5} = \frac{x-32}{9} \\
 & \Rightarrow 9x = 5x - 160 \\
 & \Rightarrow x = -40
 \end{aligned}$$

$$\begin{aligned}
 6. \quad & \text{Total distance} = x + x = 2x \\
 & \text{Total time} = t_1 + t_2 \\
 & = \frac{x}{50} + \frac{x}{150} \\
 \therefore \text{Av. Speed} &= \frac{\text{Total distance}}{\text{Total time}} = \frac{2x}{\frac{x}{50} + \frac{x}{150}} = 75 \text{ km/h}
 \end{aligned}$$

7. Latitude of that place

8. $R_s > R_1$ and $R_P + R_3$

9. Mars – Jupiter

10. D

11. B

12. A

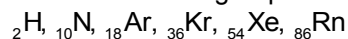
High resistance low melting point

13. C

CHEMISTRY :

14. Elements of same group have similar valence shell configuration

15. Elements of zero group are inert gases and these are



16. Covalent compounds are generally bad conductor of electricity

17. B

18. $\text{CH}_2\text{O} \Rightarrow \text{HCHO}$ = Formaldehyde

CH_3COOH = Acetic acid

$\text{C}_6\text{H}_{12}\text{O}_6$ = Glucose/Fructose

$\text{C}_{12}\text{H}_{22}\text{O}_{11}$ = Sucrose

19. A

20. D

21. A

22. C

23. B

24. A

25. B

26. A

MATHS

$$\begin{aligned}
 81. \quad & \cot a = 9/40 \\
 & \text{Cosec } A = 41/40
 \end{aligned}$$

$$82. \quad \sin c = 5/13$$

$$83. \quad (\sec \theta + \tan \theta)(1 - \sin \theta)$$

$$\Rightarrow \left(\frac{1 + \sin \theta}{\cos \theta} \right) (1 - \sin \theta)$$

$$\Rightarrow \frac{1 - \sin^2 \theta}{\cos \theta} = \cos \theta$$

$$84. \quad \tan \theta = \frac{1}{\sqrt{3}}$$

$$\frac{\operatorname{cosec}^2 \theta - \sec^2 \theta}{\operatorname{cosec}^2 \theta + \sec^2 \theta} \Rightarrow \frac{4 - \frac{4}{3}}{4 + \frac{4}{3}} = \frac{1}{2}$$

(Hence Bonus because NO option Matched)

$$85. \quad 3x^2 + 2x + K = 0$$

$$D \geq 0$$

$$4 - 12K \geq 0$$

$$-12K \geq -4$$

$$K \leq \frac{1}{3}$$

$$86. \quad (x - 5)(x + 8) = 30$$

$$x^2 + 8x - 5x - 40 - 30 = 0$$

$$x^2 + 3x - 70 = 0$$

$$x^2 + 10x - 7x - 70 = 0$$

$$(x + 10)(x - 7) = 0$$

$$X = 7$$

$$87. \quad \frac{1}{2} \times 3x \times x = 96$$

$$x^2 = 64$$

$$x = 8$$

$$3x = 24$$

$$88. \quad P(E) = \frac{2}{7}$$

$$89. \quad N(s) = 52$$

$$\text{For event} = {}^{12}C_1 = 12$$

$$P(E) = \frac{12}{52} = \frac{4}{13}$$

$$90. \quad \text{Breadth} = x$$

$$\text{Length} = x + 23$$

$$2(x + 23) + 2x = 206$$

$$4x = 160$$

$$x = 40$$

$$\text{Breadth} = 40$$

$$\text{Length} = 63$$

$$\text{Area} = 2520$$

$$91. \quad 6a^2 = 864$$

$$a^2 = 144$$

$$a = 12$$

$$\text{Volume} = a^3 = 1728$$

$$92. \quad \text{Longest Pole} = \text{Diagonal Length}$$

$$= \sqrt{a^2 + b^2 + c^2} = \sqrt{289} = 17$$

93. Coordinate of point on x-axis = (x, 0)

$$|AB| = |AC|$$

$$(7-x)^2 + 6^2 = (-3-x)^2 + 4^2$$

$$20x = 60$$

$$x = 3$$

$$A : (3, 0)$$

94. $|AB| = \sqrt{5^2 + 3^2}$

$$= \sqrt{34}$$

$$|BC| = \sqrt{64 + 4}$$

$$= \sqrt{68}$$

$$|CA| = \sqrt{9 + 25}$$

$$= \sqrt{34}$$

$$|AB| = |CA|$$

\therefore isosceles

$$\Rightarrow BC^2 = AB^2 + CA^2$$

$$68 = 34 + 34 = 68$$

\therefore Right angled

95. Let divides in K : 1 ratio

$$-3K + 4 = 0$$

$$K = \frac{4}{3}$$

96. B

97. C

98. $CP = x$

$$SP = \frac{3}{2}x$$

$$\% \text{Profit} = \frac{\frac{3}{2}x - x}{x} \times 100 = 50\%$$

99. Let A's cost price = x

$$B's \text{ cost price} = \frac{120x}{100} = \frac{6}{5}x$$

$$C's \text{ cost price} = \frac{120x}{100} \times \left(1 + \frac{25}{100}\right)$$

$$= \frac{120}{100} \times \frac{5}{4} \times x$$

$$= \frac{3}{2}x$$

$$\frac{3}{2}x = 225$$

$$x = \frac{450}{3} = 150$$

$$x = 150$$

100. $h = 14\text{cm}^2$

$$2\pi rh = 264$$

$$r = 3\text{cm}$$

$$\text{Volume} = \pi r^2 h$$

$$= \frac{22}{7} \times 9 \times 14 = 396 \text{ cm}^3$$