PREVIOUS YEAR PAPER

DSSSB TGT Maths (Female) 2021 — 10 September 2021, Shift 2

DSSSB TGT · 10 September 2021 · Shift 2

153 of the paper's 200 questions · +1 for a correct answer, −0.25 for a wrong one · 120 minutes

Left out of the original paper: 47 (any question that needs a figure, a symbol or formatting we cannot show, or whose text did not read back cleanly from the booklet).

Questions from the Delhi Subordinate Services Selection Board's paper of 10 September 2021, Shift 2. Each question is followed by its answer, and the answer key is repeated on the last page.

Take it as a timed practice test: exambharo.com/dsssb-tgt/previous-year-papers/dsssb-tgt-2021-maths-female-10-sep-shift-2/

General Ability

1. Select the option that is related to the third term on the same basis as the second term is related to the first term.
125 : 75 :: 625 : ?

(a) 275
(b) 575
(c) 475
(d) 555

Answer: (b)

2. Out of the given options, three are similar in a ce in manner. However, one option is NOT like the other three. Select the option which is om the rest.

(a) IJH
(b) MNL
(c) TUS
(d) XYA

Answer: (d)

3. Out of the given options, three are similar in a certain manner. However, one option is NOT like the other three. Select the option which is different from the rest.

(a) Spain
(b) Ballet
(c) Contemporary
(d) Ballroom

Answer: (a)

4. Complete the following letter series:
BC, DEF, HIJK, _, VWXYZA, FGHIJKL

(a) DCBA

(b) NOPQR

(c) OPRQN

(d) RPOQA

Answer: (b)

5. Find the wrong term in the given series.
6, 7, 10, 13, 21, 37

(a) 10

(b) 37

(c) 6

(d) 13

Answer: (a)

6. In the question one statement is given, followed by two conclusions, I and II. You have to consider the statement to be true even if it seems to be at variance from commonly known facts. You have to decide which of the given conclusions, if any, follows from the given statement.
Statement:
$S > L < P = T \geq V > R$
Conclusions:
I. $P > R$
II. $S \geq V$

(a) Only conclusion I follows

(b) Only conclusion II follows

(c) Either conclusion I or II follow

(d) Both conclusion I and II follow

Answer: (a)

7. Six friends Arun, Barun, Rocky, David, Sam, and Peter participated in the marathon and they run for different distances. Arun ran more distance than Sam and Peter only. Barun ran more than Arun but less than David. Rocky ran for the maximum distance.
Who ran the second largest distance?

(a) Barun

(b) Arun

(c) Sam

(d) David

Answer: (d)

8. Chhotu was going on the highway and met with an accident. You are passing by in your car, you will ___

(a) Move ahead as stopping there may lead you to some legal troubles.

(b) Gather people from the surroundings to get help.

(c) Call ambulance and proceed to your destination.

(d) Give the first aid from the car and take him to the nearest hospital in your car.

Answer: (d)

9. Suppose you are a principal of ABC School and one of your teacher is not working properly, as a principal you would ____

(a) Try to build up the teacher's abilities and interest in another job.

(b) Impose a fine/penalty on him.

(c) Talk to him and try to find out his problem and make an effort to solve it.

(d) Give the teacher two weeks to improve.

Answer: (c)

10. Find the missing number in the given series:
61, 306, 1225, _, 7353, 7354

(a) 3496

(b) 3566

(c) 3676

(d) 3586

Answer: (c)

12. If in the word 'EXPANSION' all the vowels are first arranged alphabetically and then all the consonants are arranged alphabetically and then the vowels are replaced by the previous letters and the consonants are replaced by the next letters from the English alphabet. Which letter will be third from the left end?

(a) Z

(b) D

(c) H

(d) N

Answer: (c)

13. Read the following statements and answer the question on their basis.
'A + B' means 'A is mother of B'.
'A - B' means 'A is husband of B'.
'A # B' means 'A is son of B'.
How is I related to L in the expression N # I + E — L?

(a) Mother

(b) Father

(c) Wife's mother

(d) Husband's mother

Answer: (d)

14. Six members A, B, C, D, E and F are sitting around a circular table facing centre but not necessarily in same order. E is to the immediate left of C, who is an immediate left of A. D is an immediate neighbour of B and F. Who sits between A and E?

(a) C
(b) D
(c) B
(d) F

Answer: (a)

General Awareness

21. In which of the following cities, IOCL(Indian Oil Corporation Limited) has decided to build India's first-ever green hydrogen unit?

(a) Agra
(b) New Delhi
(c) Mumbai
(d) Mathura

Answer: (d)

22. By which of the following bank, the economy of India downgraded to 10% from 11%?

(a) ADB(Asian Development Bank)
(b) PNB(Punjab National Bank)
(c) ICICI(Industrial Credit and Investment Corpor n of India Bank)
(d) IDBI(Industrial Development Bank of India)

Answer: (a)

23. Which of the following persons won the Gold medal in the javelin throw in the Tokyo Olympics 2020?

(a) Neeraj Chopra
(b) Abhinav Bindra
(c) Nishad Kumar
(d) Sushil Kumar

Answer: (a)

24. Who has written 'Indika'?

(a) Vishakhadatta
(b) Megasthenese
(c) Akbar
(d) Chandragupta Maurya

Answer: (b)

25. The real executive power is vested in:
    (a) Governor of the State
    (b) Union Minister
    (c) Council of Ministers headed by Prime Minister
    (d) Supreme Court

    Answer: (c)

26. On which of the following date, the Constitution of India was adopted by the Constituent Assembly?
    (a) 26th January 1950
    (b) 26th November 1950
    (c) 26th January 1949
    (d) 26th November 1949

    Answer: (d)

27. Which of the following cups are associated with the game of Hockey?
    (a) BILT Cup
    (b) Aga Khan Cup
    (c) Asia Cup
    (d) Berna Bellack Cup

    Answer: (b)

28. When was the first commonwealth games held?
    (a) 1926
    (b) 1930
    (c) 1935
    (d) 1936

    Answer: (b)

29. Which of the following folk dance originated from Odisha?
    (a) Ghumura
    (b) Kuchipudi
    (c) Kaligopal
    (d) Tippani Juriun

    Answer: (a)

30. From which of the following state folk dance of 'Jatra' originated?
    (a) Bihar
    (b) Jharkhand
    (c) Tamil Nadu
    (d) West Bengal

    Answer: (d)

31. Durand Line is in between which of the following countries?
    (a) Pakistan and Afghanistan
    (b) Pakistan and India
    (c) Afghanistan and Iran
    (d) Afghanistan and Uzbekistan

    Answer: (a)

32. Which among the following line divide India and Pakistan?
    (a) Hindenberg Line
    (b) Line of Control
    (c) Maginot Line
    (d) Mannerheim Line

    Answer: (b)

33. What is the main objective of Mission "TILHAN"?
    (a) to boost oilseed distribution
    (b) to boost the oilseed production
    (c) to boost oilseed import
    (d) to boost oilseed export

    Answer: (b)

34. Which of the following device is used to measure tude?
    (a) Altimeter
    (b) Microscope
    (c) Thermometer
    (d) Hygrometer

    Answer: (a)

35. Which of the following items is known as Allium Cepa as its Botanical name?
    (a) Brinjal
    (b) Onion
    (c) Potato
    (d) Tomato

    Answer: (b)

36. Which among the following is the symbol of Lead?
    (a) Al
    (b) Au
    (c) Pb
    (d) Tn

    Answer: (c)

37. Which among the following element has the symbol 'He'?
(a) Hydrogen
(b) Carbon
(c) Nitrogen
(d) Helium
Answer: (d)

38. When was the WTO (World Trade Organisation) founded?
(a) 1st January 1991
(b) 1st January 1993
(c) 1st January 1995
(d) 1st January 1998
Answer: (c)

39. Who is the author of 'The Merchant of Venice'?
(a) William Shakespeare
(b) Thomas Hardy
(c) Somerset Maughan
(d) John Bunyan
Answer: (a)

40. Who has written 'The Jungle Book'?
(a) Homer
(b) Rudyard Kipling
(c) Bulwer Lytton
(d) Victor Hugo
Answer: (b)

Arithmetic Ability

41. What will come in the place of question mark(?) in the following question?
66 × 66 ÷ 11 × 8 ÷ 8 ÷ (594/11) = ?
(a) 22/3
(b) 26/3
(c) 66
(d) 33
Answer: (a)

42. What approximate value will come in the place of question mark(?) in the following question?
(17.99 × 49.99) - (29.98 × 7.01) + 359.98 = ? × 29.9
(a) 25
(b) 15
(c) 20
(d) 35
Answer: (d)

43. What will come in the place of question mark(?) in the following question?
(2/3) × 48 + [7 + (1/4) × 64 + (1/4) × 96 - (1/2) × 14] = ?

(a) 30
(b) 72
(c) 50
(d) 40

Answer: (b)

44. Three number are in the ratio of 2 : 5 : 7 and their L.C.M. is 2100. Their H.C.F. is:

(a) 15
(b) 30
(c) 60
(d) 45

Answer: (b)

45. The H.C.F. of two numbers is 21 and the other two factors of their L.C.M. are 11 and 12. The larger of the two numbers is:

(a) 232
(b) 252
(c) 231
(d) 242

Answer: (b)

46. Two vessels A and B contains water and alcohol in the ratio 1 : 4 and 4 : 5. In what ratio these mixture to be mixed in vessel C so that the ratio of water and alcohol in the vessel C be 2 : 3?

(a) 9:2
(b) 3:7
(c) 2:9
(d) 7:3

Answer: (c)

47. Ram, Shyam and Ghanshyam have a business in which they share profit loss in the ratio of 5 : 4 : 3. When Shyam retires from the business, he gives his (1/4)th share to Ram and remaining to Ghanshyam. Find out the new profit sharing ratio of Ram and Ghanshyam.

(a) 1:1
(b) 2:1
(c) 1:2
(d) 1:3

Answer: (a)

48. The monthly income of Hari and Krishna together is Rs. 26,900. The income of Hari and Krishna is increased by 20% and 25% respectively. The new income of Krishna becomes 120% of the new salary of Hari. What is the initial income of Hari?

(a) Rs. 14400
(b) Rs. 12500
(c) Rs. 10000
(d) Rs. 15000

Answer: (b)

49. A man invested Rs.10000 each in two banks at the same rate of 8% per annum for 2 years, but one at simple interest and the other is compounded annually. After 2 years, the total interest obtained is what percentage of the total sum invested?

(a) 8%
(b) 8.16%
(c) 16%
(d) 16.32%

Answer: (d)

50. In the month of June, Nikhil's average expenditure for the first 10 days was Rs. 700 per day. After every 10 days, his average expenditure decreases by Rs. 15 and he earns Rs 23,000 per month. Calculate his savings in the month of June.

(a) Rs. 2150
(b) Rs. 2250
(c) Rs. 2350
(d) Rs. 2450

Answer: (d)

51. The mean of 40 observations was 30. It was found later that an observation 32 was wrongly taken as 20. Find corrected new mean.

(a) 30.3
(b) 31.2
(c) 30
(d) 30.4

Answer: (a)

52. Radhika purchases an IPhone and a TV for Rs.40000 and Rs.10000 respectively. She sold the first at a loss of 12% and the second at a profit of 8%. What is her overall loss/profit?

(a) Loss of Rs. 4000
(b) Profit of Rs. 3560
(c) Loss of Rs. 2400
(d) Profit of Rs. 4000

Answer: (a)

53. P, Q, R and S entered into a partnership by investing the capital in the ratio of 2:3:5:4. If P invested the money for 9 months, Q for 8 months, R for 4 months and S for 6 months. Find the share of R in the annual profit of Rs. 64,500.

(a) Rs. 18,000

(b) Rs. 15,000

(c) Rs. 21,000

(d) Rs. 16,500

Answer: (b)

54. The cost price of a chair was Rs. 1500. This price was marked up by 20% above the cost price. Chair was sold at a discount of 10% on the marked price. Find the selling price of chair.

(a) Rs. 1620

(b) Rs. 1720

(c) Rs. 1800

(d) Rs. 1650

Answer: (a)

55. The total sum of amounts of A and B at the end of 4 years and 2 years respectively on the same principal is Rs. 20,020. If A is charged Simple interest at the rate of 10% and B is charged Compound interest at the rate of 5%. Find the principal.

(a) Rs. 5,000

(b) Rs. 7,500

(c) Rs. 2,500

(d) Rs. 8,000

Answer: (d)

56. A wall is constructed with dimensions 22 m long, 9 m high and 72 cm thick. If 20% of the wall is filled with mortar and each brick measures 22 cm × 12 cm × 9 cm, then find the number of bricks required to construct the wall.

(a) 48000

(b) 15400

(c) 4700

(d) 28000

Answer: (a)

57. Sunita can finish a project in 21 days and Sarita can finish the same project in 15 days. Sarita worked for 10 days and left the job. How many days would it take Sunita to finish the remaining work alone?

(a) 10 days

(b) 7 days

(c) 12 days

(d) 11 days

Answer: (b)

58. A train of length 450 m is crossing a river bridge with the speed of 15 m/sec and a boat is also crossing the river, which is just below the bridge.
The length of the bridge is 150 m and the length of the boat is 50 m, what should be the speed of the boat so that both will reach to the other side of the river at the same time (consider the boat is travelling in still water)?

(a) 4 m/sec

(b) 5 m/sec

(c) 2.5 m/sec

(d) 6 m/sec

Answer: (b)

General English

61. The sentence below has been divided into three parts. Select the part of the sentence that has an error. If the sentence has no error, select the option 'No Error'.
The problem is there are no / clear guidelines as to what the / preliminary criteria should be.

(a) The problem is there are no

(b) clear guidelines as to what the

(c) preliminary criteria should be.

(d) No Error

Answer: (c)

62. The sentence below has been divided into three parts. Select the part of the sentence that has an error. If the sentence has no error, select the option 'No Error'.
She prefers her other suitor, George Neville, but when / Griffith loses his inheritance for her sake she excepts him, hoping / for a contented marriage without undue submission.

(a) She prefers her other suitor, George Neville, but when

(b) Griffith loses his inheritance for her sake she excepts him, hoping

(c) for a contented marriage without undue submission.

(d) No Error

Answer: (b)

63. Select the word segment that substitutes (replaces) the bracketed word segment correctly and completes the sentence meaningfully. Select the option 'no correction required' if the sentence is correct as given.
Some of us (has prepared for this type) of pressure and decision.

(a) are prepared for this type

(b) are been prepared for this type

(c) have begun preparedness for this type

(d) No correction required

Answer: (a)

64. Select the word segment that substitutes (replaces) the bracketed word segment correctly and completes the sentence meaningfully. Select the option 'no correction required' if the sentence is correct as given.
The room Tripitaka (enters containing about 30 women,) all dressed in very brief clothing.

(a) enters contained few 30 women,

(b) entered contained about 30 women,

(c) entered containing about 30 women,

(d) No correction required

Answer: (b)

65. Fill in the blank with the most appropriate choice.
Accordingly, it is not within the competence of the Rules Committee, to _____ the common law.

(a) vacate

(b) assemble

(c) abrogate

(d) bollix

Answer: (c)

66. The sentences below are not complete. There are four options for each question. Choose the best word to complete the sentence.
If Lott's original words are not enough to disqualify him as Senate leader, then his _____ grasp of public relations should be.

(a) besmirch

(b) maladroit

(c) instinct

(d) sensitive

Answer: (b)

67. Some parts of a sentence have been jumbled up, and labelled P, Q, R and S. Select the option that gives the correct sequence in which these parts can be rearranged to form a meaningful and grammatically correct sentence.
The Government of India Act was passed by
P. separate acts namely, the Government of India Act 1935 and
Q. the longest act enacted by the British Parliament
R. the British Parliament in August 1935, it was
S. at that time, hence it was divided into two
the Government of Burma Act 1935,

(a) SPQR

(b) PQRS

(c) RQSP

(d) QSPR

Answer: (c)

68. The question below consist of a set of labelled sentences. Out of four options given, select the most logical order of the sentences which form a paragraph.
Historically, many cultures considered adultery a very serious crime, some subject to severe punishment.
P. Penalties include capital punishment, mutilation, or torture.
Q. These punishments are usually for the woman and only sometimes for the man.
R. In countries where adultery is still a criminal offense, punishments range from fines to caning and even capital punishment.
S. Such punishments have gradually fallen into disfavour, especially in Western countries from the 19th century.
Since the 20th century, criminal laws against adultery have become controversial, with most Western countries decriminalising adultery.

(a) SRPQ
(b) PRQS
(c) PQSR
(d) QPSR

Answer: (d)

69. Four words are given, out of which only one word is spelt incorrectly. Choose the incorrectly spelt word.

(a) COLLECTABLE
(b) SKILET
(c) CIRCUMCISE
(d) BREWERY

Answer: (b)

70. Select the word that is similar in meaning (SYNONYM) to the word given below.
DISCOURTEOUS

(a) BRUSQUE
(b) HUMBLE
(c) TACTFUL
(d) APPLAUD

Answer: (a)

71. Select the word that is similar in meaning (SYNONYM) to the word given below.
CORRALLED

(a) COOP UP
(b) RELEASE
(c) EXPOSE
(d) FALTER

Answer: (a)

72. Select the word that is opposite in meaning (ANTONYM) to the word given below.
TRACTABLE

(a) DOCILE

(b) FLEXIBLE

(c) STUBBORN

(d) IMMOBILE

Answer: (c)

73. Select the most appropriate 'one word ' for the expressions given below.
A person who introduces the performers or contestants in a variety show.

(a) Compere

(b) Cypher

(c) Anchor

(d) Stage Artists

Answer: (a)

74. Select the most appropriate idiom for the given sentence.
To die.

(a) Kick the bucket

(b) Turn the tide.

(c) Sea change.

(d) Have the blues.

Answer: (a)

75. Select the most appropriate meaning of the given proverb.
The proof of the pudding is in its eating.

(a) Trying to be judgemental.

(b) The final results are the only way to judge something's quality or veracity.

(c) To take a chance.

(d) To know the truth.

Answer: (b)

Discipline1

101. Let f(x,y) be a function, then what will be the steps to find stationary points ?

(a) $\delta f/\delta x=0$, $\delta f/\delta y=0$

(b) $\delta^2 f/\delta x^2=0$, $\delta^2 f/\delta y^2=0$

(c) $\delta f/\delta x=0$, $\delta^2 f/\delta x^2=0$

(d) $\delta f/\delta y=0$, $\delta^2 f/\delta y^2=0$

Answer: (a)

102. Maximum value of the function $f(x)= x^3+ 2x^2+ 1$ is

(a) 1

(b) -1

(c) 2.185

(d) -2.185

Answer: (c)

103. Saddle Point is

(a) an extreme point

(b) neither a maximum nor a minimum point

(c) a maximum point

(d) a minimum point

Answer: (b)

104. If the equation of curve has even power of y then

(a) Curve is symmetric to X-axis.

(b) Curve is symmetric to Y-axis .

(c) Curve is symmetric to X-axis and Y-axis both.

(d) Curve is not symmetric to any axis.

Answer: (a)

105. What is the name of the curve y= 1/(1-x) ?

(a) Parabola

(b) Hyperbola

(c) Ellipse

(d) Pair of straight lines

Answer: (b)

106. What is the area in between y=6x, x=3 and X-axis ?

(a) 9 sq.unit

(b) 18 sq.unit

(c) 36 sq.unit

(d) 27 sq.unit

Answer: (d)

108. What is the vector equation of plane passing through point $\bar{a}$ and perpendicular to the vector $\bar{o}$?

(a) $(\bar{r}- \bar{a}). \bar{o}= 0$

(b) $(\bar{r}+ \bar{a}). \bar{o}= 0$

(c) $\bar{o}$

(d) $\bar{r}. \bar{o}= \bar{a}. \bar{r}$

Answer: (a)

110. If cosines of angles made by vector with coordinate axes are l, m and n then which option is correct ?

(a) $l^2 + m^2 + n^2 = 1$

(b) l + m+ n =0

(c) $l^2 + m^2 + n^2 = 0$

(d) l + m+ n =1

Answer: (a)

111. If α,β,and γ are the roots of the equation $ax^3+bx^2+cx+d=0, a\neq 0$ then αβ+βγ+γα =

(a) b/a

(b) a/a

(c) c/a

(d) d/a

Answer: (c)

112. $(\cos\theta + i\sin\theta)_{,}(\cos\phi + i\sin\phi)=$

(a) sin(θ-ϕ) + icos(θ-ϕ)

(b) sin(ϕ-θ)) + icos(θ-ϕ)

(c) cos(θ-ϕ) + isin(ϕ-θ)

(d) cos(θ+ϕ) + isin(θ+ϕ)

Answer: (d)

113. A relation is an equivalence if the relation is

(a) Reflexive, symmetric

(b) Symmetric, transitive

(c) Transitive, reflexive

(d) Reflexive, symmetric, and transitive

Answer: (d)

114. Let a and b be arbitrary elements in S and R be an equivalence relation on S then if b belongs to [a] , then

(a) [b]≠[a]

(b) [b]=[a]

(c) [b]<[a]

(d) [b]>[a]

Answer: (b)

117. If p is prime.then $a^p \equiv a(\text{mod})p$, for all a belongs to Z. Which theorem has above statement ?

(a) Livoullie's Theorem

(b) Pringhsum's Theorem

(c) Cauchy's Theorem

(d) Fermet's Theorem

Answer: (d)

118. To reduce a matrix into row echelon from , apply

(a) Only column operations

(b) Only row operations

(c) Both row and column operations

(d) No operations

Answer: (b)

119. Row echelon form of a matrix is /are

(a) unique

(b) two

(c) finitely many

(d) Infinte

Answer: (d)

120. A: All upper trianglar matrices are in echelon form. B:All matrices in echelon form are upper triangular matrices.

(a) Statement A is true and B is false.

(b) Statement A is false and B is true .

(c) Statement A is true and B is also true .

(d) Statement A is false and B also is false.

Answer: (b)

Discipline2

122. Every non-empty set of real numbers which is bounded above has

(a) supremum in R

(b) infimum in R

(c) supremum , not in R

(d) infimum, not in R

Answer: (a)

123. What are infimum and the supremum of the set { 1/n; n belongs to N} ?

(a) 1,2

(b) 0,1

(c) 2,1

(d) 1,0

Answer: (b)

124. If a and b are any two positive real numbers then

(a) na>b such that n is a positive integer

(b) na<b such that n is a positive integer

(c) na>b such that n is a integer

(d) na<b such that n is a integer

Answer: (a)

125. A sequence $\{S_i\}$ is bounded if
(a) $S_i \leq K$ for all i belongs to N
(b) $S_i \geq k$ for all i belongs to N
(c) $S_i < K$ for all i belongs to N
(d) $S_i \geq k$ for all i belongs to N , $S_i \leq K$ for all i belongs to N
Answer: (d)

126. The sequence {1 + (-1)n} is
(a) Convergent
(b) Divergent
(c) Oscillates finitely
(d) Oscillates infinitely
Answer: (c)

127. Bolzano-Weierstrass Theorem states as
(a) Every bounded sequence has a limit point.
(b) Every bounded sequence has limit.
(c) Every bounded sequence has supremum.
(d) Every bounded sequence has infimum.
Answer: (a)

128. A necessary condition for convergence of an infi series $\sum u_i$ is
(a) $u_i=1$ as i tends to infinity
(b) $u_i=0$ as i tends to infinity
(c) $u_i=\infty$ as i tends to infinity
(d) $u_i=10$ as i tends to infinity
Answer: (b)

129. If 'r' is a common ratio for a geometric series, then series is convergent if
(a) r=1
(b) r <1
(c) r>1
(d) $r \geq 1$
Answer: (b)

130. The positive term series $\sum 1/n7/8$ is
(a) Convergent
(b) Oscillates finitely
(c) Divergent
(d) Oscillates infinitely
Answer: (c)

131. What is the order of the equation $d^2y/dx^2 + dy/dx + y=0$?

(a) 1

(b) 2

(c) 3

(d) 4

Answer: (b)

133. Population growth graph goes.....

(a) exponentially

(b) parabolically

(c) hyperbolically

(d) elliptical

Answer: (a)

134. What is the population size at the time 't'?

(a) x(0) e^t , where a= birth rate - death rate.

(b) x(0) e^(at), where a= birth rate - death rate.

(c) e^at , where a= birth rate - death rate.

(d) x(0) e^a , where a= birth rate - death rate.

Answer: (b)

135. What is doubling period of population ?

(a) -(0.69314118)/a, where a= birth rate - death r[illegible].

(b) (0.69314118)/a, where a= birth rate - death [illegible].

(c) -(0.59314118)/a, where a= birth rate [illegible]te.

(d) (0.59314118)/a, where a= birth rate - death [illegible]ate.

Answer: (b)

136. What is the solution of the differential equation u"-2u'+u=0 ?

(a) (a+bx) e^x, where a and b are arbitrary constants.

(b) (a-bx) e^x, where a and b are arbitrary constants.

(c) (a-x) e^x, where a and b are arbitrary constants.

(d) (a+x) e^x, where a and b are arbitrary constants.

Answer: (a)

138. Which option is correct ?

(a) Mathematical modeling is a way of representation of problems with the help of mathematics formulas.

(b) Mathematical modeling is a way of representation of problems.

(c) Mathematical modeling is not a way of representation of problems with the help of mathematics formulas.

(d) Mathematical modeling is a way of representation of problems only related to biology.

Answer: (a)

139. Which option does not show the importance of mathematical modeling ?

(a) Don't control the parameters.

(b) Best way to understand the behavior of the system.

(c) Economic way of measurement.

(d) Allow us to predict the future nature.

Answer: (a)

140. What is the third step of process of mathematical model ?

(a) Validate mathematical model

(b) Define variables and parameters

(c) Construct equation

(d) Compute model output

Answer: (c)

Discipline3

141. The limit of the function $\{\log(1+x)\}/x$ as $x \to 0$

(a) 0

(b) 1

(c) 2

(d) 3

Answer: (b)

143. The function f has limit at point x=a if

(a) L.H.L.$\neq$ R.H.L.

(b) L.H.L.$\leq$ R.H.L.

(c) L.H.L.$\geq$ R.H.L.

(d) L.H.L.= R.H.L.

Answer: (d)

144. If f and g are two continuous functions at 'a' then $f \circ g$ and $g \circ f$ both are

(a) continuous at x=a.

(b) not continuous at x=a.

(c) not continuous for all values of x.

(d) not continuous for all values of x=a

Answer: (a)

145. Let f(x) is a function then f(x) has discontinuity of second kind at x=a if

(a) RHL exists at x=a.

(b) LHL exists at x=a.

(c) any of RHL or LHL or both does not exist at x=a.

(d) any of RHL or LHL or both exist at x=a.

Answer: (c)

146. Image of a closed and bounded interval under continuous map is

(a) closed and bounded

(b) open and bounded

(c) closed and unbounded

(d) open and unbounded

Answer: (a)

148. To prove Rolle's theorem, what must be satisfied by the function f ?

(a) f is differentiable on (a, b).

(b) f is differentiable on [a, b].

(c) f is continuous on (a, b).

(d) f is not continuous on [a, b]

Answer: (a)

149. Second order Taylor's polynomial with variable x is

(a) $f(a)+f'(a)\ (x-a)+(1/2!)f''(a)\ (x-a)^2$

(b) $f(a)+f'(a)\ (x-a)+(1/2!)f''(a)\ (x-a)^3$

(c) $f(a)+f'(a)\ (x-a)^2$

(d) $f(a)+f'(a)\ (x-a)^3$

Answer: (a)

150. Which is Maclaurin series?

(a) $f(0)+xf(0)+(x^2/2!)f''(0)+$.....

(b) $f(0)+xf(0)+(x^2/2!)f'(0)+$..... .

(c) $f(0)+xf'(0)+(x^2/2!)f''(0)+$..... .....

(d) $f(0)+xf'(0)+(x^2/2)f''(0)+$.....

Answer: (c)

151. what is the Taylor expansion of e^x ?

(a) $1+ x+ (x^2/2!)+ (x^3/3!)+$.....

(b) $x+ (x^2/2!)+ (x^3/3!)+$.....

(c) $1+ 2x+ (3x^2/2!)+ (4x^3/3!)+$.....

(d) $1+ x+ (x^2/2)+ (x^3/3)+$.....

Answer: (a)

153. What is the sufficient condition for a function to be continues at (a,b) ?

(a) One of the partial derivative exists and it is bounded in a nbd of (a,b) and others exist at (a,b).

(b) All partial derivatives exist at (a,b)

(c) One of the partial derivative exists and others exist at (a,b).

(d) One of the partial derivative exists and it is bounded in a nbd of (a,b).

Answer: (a)

154. When will a real valued function f in two variable be local maxima at (a,b) ?

(a) $\partial^2 f/\partial x^2\ \partial^2 f/\partial y^2 - \partial^2 f/\partial x\partial y > 0,\ \partial^2 f/\partial y^2 < 0$

(b) $\partial^2 f/\partial x^2\ \partial^2 f/\partial y^2 - \partial^2 f/\partial x\partial y > 0,\ \partial^2 f/\partial x^2 > 0$

(c) $\{\partial^2 f/\partial x^2\ \partial^2 f/\partial y^2 - (\partial^2 f/\partial x\partial y)^2\} > 0,\ \partial^2 f/\partial x^2 < 0$

(d) $\partial^2 f/\partial x^2\ \partial^2 f/\partial y^2 - \partial^2 f/\partial x\partial y > 0,\ \partial^2 f/\partial y^2 > 0$

Answer: (c)

156. Let f is a curve then what is the area of f ?

(a) $\int dx\ dy$

(b) $\int xy\ dx\ dy$

(c) $\int dy$

(d) $\int dx$

Answer: (a)

157. What is the value of the integral $\int\int xy\ dx\ dy$ when x goes from 1 to 2 and y goes from 0 to 1.

(a) 3÷5

(b) 3÷2

(c) 3÷4

(d) 3÷7

Answer: (c)

158. If P(x, y) and Q(x, y) are scalar functions defined over a domain D with piecewise smooth closed boundary C, then

(a) $\int\int [\partial Q/\partial x - \partial P/\partial y]dx\ dy = \int P(x, y)\ dx + Q(x, y)\ dy$

(b) $\int\int [\partial Q/\partial x + \partial P/\partial y]dx\ dy = \int P(x, y)\ dx + Q(x, y)\ dy$

(c) $\int\int [\partial Q/\partial x - \partial P/\partial y]dx\ dy = \int P(x, y)\ dx - Q(x, y)\ dy$

(d) $\int\int [\partial Q/\partial x + \partial P/\partial y]dx\ dy = \int P(x, y)\ dx - Q(x, y)\ dy$

Answer: (a)

159. Let $P(x, y) = x^2y$ and $Q(x, y) = xy$. Then what is single integral corresponds to $\int\int (y - x^2)\ dx\ dy$?

(a) $\int [x^2y\ dx + y\ dy]$

(b) $\int [xy\ dx + xy\ dy]$

(c) $\int [x^2y\ dx - xy\ dy]$

(d) $\int [x^2y\ dx + xy\ dy]$

Answer: (d)

160. " surface integral of the curl of a function over a surface bounded by a closed surface is equal to the line integral of the particular vector function around that surface." Which theorem is this ?

(a) Livouille's theorem

(b) Stoke's theorem

(c) Green's theorem

(d) Gauss divergence theorem

Answer: (b)

Discipline4

161. Which type of surface is circular cylinder ?

(a) Algebraic and differential surface

(b) topological surface

(c) Fractal surface

(d) Implicit surface

Answer: (a)

162. What are the names numbers U(P, f) and L(P, f) ?

(a) Upper and lower Reimann sums

(b) Upper and lower bound

(c) Upper and lower Riemann integrals

(d) Supremum and infimum

Answer: (a)

163. Let P be a refinement of Q, then

(a) L(P, f) = L(Q, f)

(b) L(P, f) <= L(Q, f)

(c) U(P, f) >= U(Q, f)

(d) L(P, f) >= L(Q, f)

Answer: (d)

164. Which option is correct?

(a) f is integrable on [a, b] iff for every e> 0 there exists a partition P such that U(P, f) - L(P, f)= 0.

(b) f is integrable on [a, b] iff for every e<0 there exists a partition P such that U(P, f) - L(P, f) >e.

(c) f is integrable on [a, b] iff for every e> 0 there exists a partition P such that U(P, f) - L(P, f)>e.

(d) f is integrable on [a, b] iff for every e> 0 there exists a partition P such that U(P, f) - L(P, f) < e.

Answer: (d)

165. What are improper integral ?

(a) It a definite integral with one limit or both limits at infinity.

(b) An indefinite integral

(c) It is definite integral with a constant as limit.

(d) It a integral with variable limits.

Answer: (a)

166. What is the integral of $1/x^2$ when limits goes from 1 to infinity ?

(a) 2

(b) 1

(c) 0

(d) ∞

Answer: (b)

167. A sequence {fn} defined on set S is said to be uniformly bounded on S if

(a) there exists k>0 such that |fn(x)| < k; for all x belongs to S and n belongs to N.

(b) there exists k<0 such that |fn(x)| > k; for all x belongs to S and n belongs to N.

(c) there exists k<0 such that |fn(x)| < k; for all x belongs to S and n belongs to N.

(d) there exists k>0 such that |fn(x)| > k; for all x belongs to S and n belongs to N.

Answer: (a)

168. If {fn} and {gn} converge uniformly to f(x) and g(x) respectively on a set S, then

(a) {fn}+ {gn} converges uniformly to f(x)+ g(x).

(b) {fn}+ {gn} converges uniformly to f(x) - g(x).

(c) {fn}+ {gn} converges uniformly to f(x)×g(x).

(d) {fn}+ {gn} converges uniformly to f(x) ÷g(x).

Answer: (a)

169. If the sequence of continuous function {fn} converges to a continuous function f(x) on a compact set A and {fn}>= {fn+1} for all n belongs to N, then

(a) {fn} does not to f(x) on A.

(b) {fn} tends to f(x) uniformly on A.

(c) {fn} tends to f(x) on A.

(d) {fn} does not to f(x) uniformly on A.

Answer: (b)

170. If R is the radius of convergence of any power s es then what is the interval of convergence?

(a) (-R, 1)

(b) (-R, 0)

(c) (-R, R)

(d) (0, R)

Answer: (c)

171. If R is the radius of convergence, then what's the condition of absolutely convergence of the power series?

(a) |x|<R

(b) |x|<0

(c) |x|=R

(d) |x|>R

Answer: (a)

172. Let (X, d) be a metric space, then which condition must be satisfied by metric space (X, d) ?

(a) d(x, y) = d(x, z) + d(z, y)

(b) d(x, y)= 0 iff x= 0

(c) d(x, y) <0

(d) d(x, y)= d(y, x)

Answer: (d)

173. Let (X, d) be a metric space, then arbitrary union of open sets is
(a) open in X.
(b) closed in X.
(c) compact in X.
(d) connected in X.
Answer: (a)

174. Which condition must satisfy by topological space ?
(a) Union of open sets belong to topological space.
(b) Arbitrary union of closed sets belong to topological space.
(c) Arbitrary union of open sets belong to topological space.
(d) Arbitrary intersection of open sets belong to topological space.
Answer: (c)

175. Let B be the basis of a topology on X , then
(a) B generates unique topology on X.
(b) B generates infinite many topology on X.
(c) B generates topology on X.
(d) B generates no topology on X.
Answer: (a)

176. T is topology, then
(a) may have more than one basis.
(b) may have two bases.
(c) may have infinitely many bases.
(d) don't have any basis.
Answer: (a)

177. Continuity depends on .....
(a) interval
(b) function
(c) epsilon
(d) codomain
Answer: (b)

178. In metric space, if the function f is continuous, then
(a) f is uniformly continuous.
(b) f is onto.
(c) f is differentiable.
(d) f is sequentially continuous.
Answer: (d)

179. To each open sphere S'(f(a)), there exists open sphere S(a, k) such that the function f[S(a, k)] is subset of S'(f(a)) iff

(a) the function f is uniformly continuous at 'a'.

(b) the function f is sequentially continuous at 'a'.

(c) the function f is continuous at 'a'.

(d) the function f is differentiable at 'a'.

Answer: (c)

180. A closed and bounded subset of R is called .....

(a) path connected set

(b) totally bounded set

(c) connected set

(d) compact set

Answer: (d)

Discipline5

181. The union of two disjoint open intervals on the real line is a space which is .....

(a) locally connected

(b) path connected

(c) connected

(d) compact

Answer: (a)

182. What is automorphism?

(a) An homomorphism from (G, *) onto (G, ,

(b) An isomorphism from (G', *) onto (G, *).

(c) An homomorphism from (G, *) onto (G', *).

(d) An isomorphism from (G, *) onto (G, *).

Answer: (d)

183. Let (G,*) be a group, then what is inner automorphism ?

(a) if f is a mapping from G to G such that fa(x)= ax a^{-1} , for all x belongs to G.

(b) if f is a mapping from G to G such that fa(x)= axa5/8, for all x belongs to G.

(c) if f is a mapping from G to G such that fa(x)= axa4, for all x belongs to G.

(d) if f is a mapping from G to G such that fa(x)= axa^2, for all x belongs to G.

Answer: (a)

184. Let G be a group with identity element e. Let H and K be normal subgroups of G such that H∩ K={e}. Then what is H×K ?

(a) external direct product

(b) internal direct product

(c) product

(d) internal direct sum

Answer: (b)

186. Let G be a group with identity element e. Let H and K be normal subgroups of G such that H∩ K={e}. Then what is H $\oplus$ K ?

(a) external direct product

(b) internal direct product

(c) product

(d) internal direct sum

Answer: (a)

187. What is the order of Klein's four group ?

(a) 4

(b) 3

(c) 2

(d) 1

Answer: (a)

188. Let H is a subgroup of the group G then aH is a subgroup of group G iff

(a) a belongs to group G.

(b) a belongs to subgroup H.

(c) a doesn't belong to group G.

(d) a doesn't belong to subgroup H.

Answer: (b)

189. Let S is a finite set of n symbols, then what is th rder of permutation group S ?

(a) n

(b) 2n

(c) n!

(d) n+1

Answer: (c)

Teaching Methodology

191. Play-way method is mostly ___

(a) Science based

(b) constructive

(c) Activity based

(d) Game based

Answer: (c)

192. Pragmatism methodology of teaching is the key-note of ___

(a) Experimentation

(b) Idealistic

(c) programmer

(d) Realistic

Answer: (a)

193. Which type of questions help determine if students know some required facts or information ?

(a) Open-ended question
(b) Closed question
(c) Factual questions
(d) Display questions

Answer: (c)

194. Aristotle divides the disciplines into three classes. Which of the following is not the one given by him?

(a) Theoretical
(b) Practical
(c) Productive
(d) Interactive

Answer: (d)

195. Which adjective are used to describe men?

(a) Emotional
(b) communicative
(c) independent
(d) gentle

Answer: (c)

196. Gender is a social construct having its impact o[illegible]nich of the following?

(a) attitudes, roles, responsibilities and behavio[illegible] patterns of every individual
(b) Family, religion, peer groups educa[illegible]
(c) dependency, patient and communicative
(d) society especially in developing and maintaining the culture

Answer: (a)

197. Which type of questions are put at the end of the lessons and helps to teacher?

(a) Introductory Questions
(b) Developmental Questions
(c) Recapitulatory Questions
(d) Testing Questions

Answer: (c)

198. The trend towards modernization in India can be seen in the form of a movement towards _____ of the society.

(a) Democratization
(b) Westernization
(c) Industrialization
(d) Secularization

Answer: (b)

199. Which of the following is a characteristic of summative evaluation?

(a) It is used for diagnostic purposes.

(b) It measures the level of success or proficiency that has been reached at the end of an instructional unit

(c) It allows students to take responsibility of their learning

(d) It is continuous evaluation

Answer: (b)

200. What is IQ of profound individuals?

(a) 90

(b) 100

(c) 25

(d) 70

Answer: (c)

Answer key

Answer key from the Delhi Subordinate Services Selection Board's official answer key for this sitting. "—" means the key gave none.

General Ability

1	**(b)**	2	**(d)**	3	**(a)**	4	**(b)**	5	**(a)**	6	**(a)**
7	**(d)**	8	**(d)**	9	**(c)**	10	**(c)**	12	**(c)**	13	**(d)**
14	**(a)**										

General Awareness

21	**(d)**	22	**(a)**	23	**(a)**	24	**(b)**	25	**(c)**	26	**(d)**
27	**(b)**	28	**(b)**	29	**(a)**	30	**(d)**	31	**(a)**	32	**(b)**
33	**(b)**	34	**(a)**	35	**(b)**	36	**(c)**	37	**(d)**	38	**(c)**
39	**(a)**	40	**(b)**								

Arithmetic Ability

41	**(a)**	42	**(d)**	43	**(b)**	44	**(b)**	45	**(b)**	46	**(c)**
47	**(a)**	48	**(b)**	49	**(d)**	50	**(d)**	51	**(a)**	52	**(a)**
53	**(b)**	54	**(a)**	55	**(d)**	56	**(a)**	57	**(b)**	58	**(b)**

General English

61	**(c)**	62	**(b)**	63	**(a)**	64	**(b)**	65	**(c)**	66	**(b)**
67	**(c)**	68	**(d)**	69	**(b)**	70	**(a)**	71	**(a)**	72	**(c)**
73	**(a)**	74	**(a)**	75	**(b)**						

Discipline1

101	**(a)**	102	**(c)**	103	**(b)**	104	[illegible]	105	**(b)**	106	**(d)**
108	**(a)**	110	**(a)**	111	**(c)**	112	**(d)**	113	**(d)**	114	**(b)**
117	**(d)**	118	**(b)**	119	**(d)**	120	**(b)**				

Discipline2

122	**(a)**	123	**(b)**	124	**(a)**	125	**(d)**	126	**(c)**	127	**(a)**
128	**(b)**	129	**(b)**	130	**(c)**	131	**(b)**	133	**(a)**	134	**(b)**
135	**(b)**	136	**(a)**	138	**(a)**	139	**(a)**	140	**(c)**		

Discipline3

141	**(b)**	143	**(d)**	144	**(a)**	145	**(c)**	146	**(a)**	148	**(a)**
149	**(a)**	150	**(c)**	151	**(a)**	153	**(a)**	154	**(c)**	156	**(a)**
157	**(c)**	158	**(a)**	159	**(d)**	160	**(b)**				

Discipline4

161	**(a)**	162	**(a)**	163	**(d)**	164	**(d)**	165	**(a)**	166	**(b)**
167	**(a)**	168	**(a)**	169	**(b)**	170	**(c)**	171	**(a)**	172	**(d)**
173	**(a)**	174	**(c)**	175	**(a)**	176	**(a)**	177	**(b)**	178	**(d)**
179	**(c)**	180	**(d)**								

Discipline5

181	**(a)**	182	**(d)**	183	**(a)**	184	**(b)**	186	**(a)**	187	**(a)**
188	**(b)**	189	**(c)**								

Teaching Methodology

191	**(c)**	192	**(a)**	193	**(c)**	194	**(d)**	195	**(c)**	196	**(a)**
197	**(c)**	198	**(b)**	199	**(b)**	200	**(c)**				