PREVIOUS YEAR PAPER

DSSSB TGT Maths (Male) 2021 — 4 September 2021, Shift 1

DSSSB TGT · 4 September 2021 · Shift 1

167 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: 33 (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 4 September 2021, Shift 1. 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-male-4-sep-shift-1/

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.
FM : IJ :: EP : ?

(a) MH
(b) GM
(c) HM
(d) HL

Answer: (c)

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

(a) A3D
(b) D1F
(c) E3H
(d) F9O

Answer: (b)

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) 21 - 6
(b) 46 - 16
(c) 42 - 12
(d) 84 - 24

Answer: (b)

4. Complete the following letter series:
NPY, KNX, HLW, __

(a) FKV

(b) FJV

(c) EKV

(d) EJV

Answer: (d)

5. Find the wrong term in the given series.
0, -6, -24, -65, -120, -210

(a) -6

(b) -24

(c) -65

(d) -210

Answer: (c)

6. Which of the following expression is true if the expression M > N ≤ D = S < F > I < U is definitely true?

(a) M > S

(b) S < U

(c) F > N

(d) F > M

Answer: (c)

7. There are six players Rubi, July, Mitu, Pri[illegible]Ama[illegible]nd Rohan in a team. Prita is shorter than only 3 players. Aman is taller than Rohan but not t[illegible]st. Rohan is taller than Prita. Rubi is taller than July. July is not the shortest. How many players are taller than July?

(a) 1

(b) 2

(c) 3

(d) 4

Answer: (d)

8. For selection in IT companies through campus placement certain eligibility criteria has been set up.
Following are some requirements as IT companies are looking for some decent candidates for recruitment. i) Candidate should have at least 8 CGPA as average of all the semester exams. CGPA is the score which a student gets in semester exams out of 10.
ii) Candidate should not have any backlog in the semester exams.
iii) Candidate should have done Bachelor of Technology in computer science.
iv) Candidate should not be less than 21 years of age and also not more than 24 years of age.
In the case of a student fulfilling all the conditions except
a) At ii) above, a candidate has CGPA of more than 8.2, then he would be eligible for interview. b) At i) above, a candidate has managed to score at least 7.5 CGPA and has no backlog, then he will be eligible for written test.
In question below, details of one candidate are provided. You have to take one of the following course of actions based on the conditions given above and the information provided in the question and mark the number of that course of action as your answer.
Nishu, a 22-year-old girl has an average CGPA of 8 in all semesters and has one backlog. She is a graduate in Bachelor of Technology in Mechanical Engineering.

(a) She will be selected.

(b) She will not be selected.

(c) She will be eligible for written test.

(d) She will be eligible for interview.

Answer: (b)

9. Following are the conditions for selecting a candid for MBA in a top college-
The candidate must-
i) Be not more than 26 years of age on 1 July 2021.
ii) Be a 10th pass with minimum 90% mark
iii) Be a 12th pass in any discipline with minimu % marks.
iv) Have secured minimum 70% in Group Discussion.
v) Have secured minimum 75% in Personal Interview.
In the case of candidate who fulfils all the conditions except
a) At iii) above, but has secured at least 85% in class 12th with science stream ,his/her case is to be referred to department head of MBA. b) At v) above, but has secured at least 70% in Personal Interview, his/her case is to be referred to admission committee.
In question below, details of one candidate are provided. You have to take one of the following courses of action based on the conditions given above and mark the number of that course of action as your answer. All these cases are given to you as on 1st July 2021.
Neha scored 87% in 12th in Science stream and 92% in 10th class. She scored 75% in personal interview and 75% in Group Discussion. She was born on 24th April 1997.

(a) The candidate is selected.

(b) The candidate is not selected.

(c) The case is referred to department head of MBA.

(d) The case is referred to Admission Committee.

Answer: (c)

10. Find the missing number in the given series:
125, 102, 81, 62, 45, __

(a) 32

(b) 31

(c) 33

(d) 30

Answer: (d)

11. The following question is based on the five three-digit numbers given below.
625 463 875 327 136
If the second and third digits of each of the numbers are added, the resulting sum of which of the following numbers will not be exactly divisible by 3?

(a) 463

(b) 875

(c) 625

(d) 327

Answer: (c)

12. How many such pairs of letters are there in the word "NORM" each of which has as many letters between them in the word (in both forward and backward directions), as they have between them in the English alphabetical series?

(a) One

(b) Three

(c) Two

(d) Four

Answer: (c)

13. Read the following statements and answer the question on their basis.
A @ B means that A is the mother of B.
A # B means that A is the father of B.
A $ B means that A is B's brother.
A % B means that A is sister of B.
In expression A $ B # C @ D, how is B related to D?

(a) Maternal uncle

(b) Brother

(c) Father

(d) Maternal Grandfather

Answer: (d)

14. Six persons A, B, C, D, E and F are sitting in a row facing North. B sits to the left of D who sits to the immediate right of E. F sits to the immediate left of C who sits to the right of D. A sits at the leftmost position. Which of the following option is correct about the arrangement?

(a) F is fourth to the left of B

(b) C is sitting fifth to the right of B

(c) A is sitting fifth to the right of F

(d) E sits third to the left of C.

Answer: (d)

15. The loss incurred by selling an article for Rs. 11596 is equal to the profit incurred when the same article is sold for Rs. 16040. What should be the selling price to make 50% profit?

(a) Rs. 20727

(b) Rs. 20277

(c) Rs. 13818

(d) Rs. 20027

Answer: (a)

General Awareness

21. In the Bafta TV Awards 2021 who won the best actress (drama) award?

(a) Michaela Coel

(b) Hayley Squires

(c) Molly Windsor

(d) Billie Piper

Answer: (a)

22. The WHO has declared this country as Malaria free. Which country is this?

(a) India

(b) China

(c) Nepal

(d) Japan

Answer: (b)

23. Which book the Greek writer Megasthenes wrote?

(a) History of India

(b) Indika

(c) Indus Country

(d) Hindu Civilization

Answer: (b)

24. Sixteen great powers (Mahajanpadas) existed in which century?
    (a) 3rd and early 4th centuries BC.
    (b) 8th and early 9th centuries BC.
    (c) 1st and early 2nd centuries BC.
    (d) 7th and early 6th centuries BC.
    Answer: (d)

25. Who is the Vice-president of India (As on August 2021)?
    (a) Kocheril Raman Narayanan
    (b) Mohammad Hamid Ansari
    (c) Venkaiah Naidu
    (d) Bhairon Singh Shekhawat
    Answer: (c)

26. Who was the Chairman of the Drafting Committee of the Indian Constitution?
    (a) Dr. Rajesh Prasad
    (b) Dr. Sachchidananda Sinha
    (c) Dr. B. R. Ambedkar
    (d) Dr. Rajendra Prasad
    Answer: (c)

27. The name of the National sports of Pakistan is:
    (a) Hockey
    (b) Football
    (c) Cricket
    (d) Volleyball
    Answer: (a)

28. In 1985, Olympics (National Games) were held in which city of India?
    (a) Surat
    (b) Bombay
    (c) New Delhi
    (d) Kochi
    Answer: (c)

29. Bihar is popular for which of the following style of paintings?
    (a) Madhubani
    (b) Kalamkari
    (c) Gond
    (d) Warli
    Answer: (a)

30. Mohiniyattam dance form belongs to which state of India?
    (a) Punjab
    (b) Gujrat
    (c) Maharashtra
    (d) Kerala
    Answer: (d)

31. Select the right location of World's longest river.
    (a) Africa
    (b) Asia
    (c) Europe
    (d) America
    Answer: (a)

32. As saltwater, what percentage of the earth's water is found in oceans?
    (a) 0.57
    (b) 0.97
    (c) 0.67
    (d) 0.99
    Answer: (b)

33. Current (As on 22 May 2020) Repo Rate is:
    (a) 0.04
    (b) 0.03
    (c) 0.045
    (d) 0.08
    Answer: (a)

34. The ozone layer helps to protect life from which harmful radiation?
    (a) Beta radiation
    (b) Ultraviolet radiation
    (c) RF radiation
    (d) Ultrared radiation
    Answer: (b)

35. The cooking gas acronym LPG stands for:
    (a) Loose petroleum gas
    (b) Light petroleum gas
    (c) Liquefied purpose gas
    (d) Liquefied petroleum gas
    Answer: (d)

36. Which is the first anti-satellite (ASAT) missile has tested by India?

(a) Mission Shakti
(b) Mission Bhakti
(c) Mission Shanti
(d) Mission Ganga

Answer: (a)

37. According to researchers from Spain, which Vitamin supplements can decrease the Covid-19 admission rate in ICU?

(a) B12
(b) D
(c) A
(d) C

Answer: (b)

38. The Head Office of the United Nations Conference on Trade and Development (UNCTAD) is located at:

(a) Shanghai, China
(b) Kathmandu, Nepal
(c) Geneva, Switzerland
(d) Washington, D.C., United States

Answer: (c)

39. Who is the Indian with the most number of Osc wards?

(a) Ranveer Singh
(b) Bhanu Athaiya
(c) Amir Khan
(d) A.R. Rahman

Answer: (d)

40. Which female won the Nobel Peace Prize in 2014?

(a) Marie Curie
(b) Malala Yousafzai
(c) Mother Teresa
(d) Louise Glück

Answer: (b)

Arithmetic Ability

41. Find the quotient when the biggest 4-digit number divisible by 16 is divided by 28.

(a) 375
(b) 370
(c) 350
(d) 356

Answer: (d)

42. Convert the following into fractions:
2.0006, 4.0088

(a) 10003/2500, 5011/1250

(b) 10003/5000, 5011/1520

(c) 10003/5000, 5011/1250

(d) 10003/5000, 5000/1250

Answer: (c)

43. If $p/q = 7/4$ then what is $(p^2-q^2)/(p^2+q^2)$?

(a) 0.50

(b) 0.51

(c) 0.52

(d) 0.49

Answer: (b)

44. Find the smallest 4 digit number when divided by 15, 24, 30 leaves a common remainder 9.

(a) 1200

(b) 1201

(c) 1209

(d) 1203

Answer: (c)

45. There are three numbers given: 27, 42, 57. Find th argest number that divide and give a remainder of 10, 8 and 6.

(a) 13

(b) 11

(c) 17

(d) 19

Answer: (c)

46. The sum of cube of 3 numbers that are in the ratio 4:5:6 is 50625. What are the numbers?

(a) 25, 20, 30

(b) 30, 25, 20

(c) 20, 30, 25

(d) 20, 25, 30

Answer: (d)

47. In a school trip, the ratio of students to teachers are 16:1. What is the number of teachers required in the trip if there are 112 students?

(a) 5

(b) 6

(c) 7

(d) 8

Answer: (c)

48. What percent 12 mm is of 18 cm?

(a) 6.67%

(b) 6.6%

(c) 6.7%

(d) 7.0%

Answer: (a)

49. 30% of a number is 12 more than 1/6th of that number. What is that number?

(a) 80

(b) 70

(c) 90

(d) 60

Answer: (c)

50. 11 people went on a lunch together to a hotel. The expenses for 10 of them is Rs. 400 each. The expense of 10th person is Rs 100 more than the average of all the 11 people. What is the expense of the 11th person?

(a) 410 rupees

(b) 510 rupees

(c) 490 rupees

(d) 500 rupees

Answer: (b)

51. There are 3 numbers. If second number is 7 tim[illegible]ne third number and second number is twice first number. The average of 3 numbers is [illegible]
What is the smallest number?

(a) 6

(b) 21

(c) 12

(d) 3

Answer: (a)

52. A man sold two tables for Rs. 55450 each. On one he gains 18% and on the other he loses 18%. What is the gain or loss percentage in the entire transaction?

(a) 3.24% loss

(b) 3.2% loss

(c) 3.4% gain

(d) 3.42% gain

Answer: (a)

53. A man sold an article at Rs. 279 at a loss of 10%. What would be the gain percentage if he sells the same article at Rs. 372?

(a) 18%
(b) 19%
(c) 21%
(d) 20%

Answer: (d)

54. What is the single equivalent discount of 16%, 20% and 24% successive discounts?

(a) 48.93%
(b) 48.00%
(c) 48.39%
(d) 48.90%

Answer: (a)

55. The simple interest and compound interest on a certain sum of money is Rs. 80100 and Rs. 81902.25. The duration for which the interest was calculated is 2 years. Find the sum of money?

(a) Rs. 800000
(b) Rs. 900000
(c) Rs. 890000
(d) Rs. 980000

Answer: (c)

56. A sphere of diameter 18 cm is drawn into a wire lcm radius. What is the length of the wire?

(a) 927 cm
(b) 972 cm
(c) 792 cm
(d) 729 cm

Answer: (b)

57. Suresh can do a piece of work in 9 days and Nimesh can do the same work in 18 days. They both work together for 4 days and Suresh left after that, how long will now Nimesh take to complete the work?

(a) 5 days
(b) 6 days
(c) 4 days
(d) 7 days

Answer: (b)

58. A train is 135m long. The speed of the train is 45kmph. How many seconds will the train take to pass a pole?

(a) 10 secs

(b) 11 secs

(c) 10.8 secs

(d) 11.8 secs

Answer: (c)

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'.
Only after such preparatory measures- if / necessarily spreading over a period of many years- will public / attention and public resolution be fully aroused.

(a) Only after such preparatory measures- if

(b) necessarily spreading over a period of many years- will public

(c) attention and public resolution be fully aroused.

(d) No Error

Answer: (b)

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'.
The first preliminary criteria to be fulfilled before / the state can claim moral right to fight against all these things is that the young / generation should be afforded facilities for contracting an early marriage.

(a) The first preliminary criteria to be fulfilled before

(b) the state can claim moral right to fight against all these things is that the young

(c) generation should be afforded facilities for contracting an early marriage.

(d) No Error

Answer: (a)

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.
Our values determine (those metrics under which we measure) ourselves and everyone else.

(a) the metrics from which we measure

(b) those metrics from which we measure

(c) the metrics by which we measure

(d) No correction required.

Answer: (c)

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.
I'm keenly aware of (Principal of Priority, that states; you should) know the difference between what is urgent and what is important, and, you must do what's important first.

(a) the Principle of Priority, which states; you must

(b) that Principle of Priority, which states; you should)

(c) the Principal of Priority, which states; you must)

(d) No correction required.

Answer: (a)

65. Fill in the blank with the most appropriate choice.
They offered _____ and manifestly crazy productions to their amazed contemporaries.

(a) lackadaisical

(b) inert

(c) incomprehensive

(d) moony

Answer: (c)

66. The sentences below are not complete. There are four options for each question. Choose the best word to complete the sentence The best _____other workers can give is to fight together for better pay ourselves.

(a) discord

(b) adoption

(c) solidarity

(d) dissemination

Answer: (c)

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 EE British Academy Film Awards
P. British Academy of Film and
Q. or BAFTA Film Awards are presented in
R. Television Arts (BAFTA) to honour the
S. an annual award show hosted by the
best British and international contributions to film.

(a) SRQP

(b) RQSP

(c) PQRS

(d) QSPR

Answer: (d)

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.
The Grammys had their origin in the Hollywood Walk of Fame project in the 1950s.
P. They determined to rectify this by creating awards given by their industry similar to the Oscars and the Emmys.
Q. After deciding to go forward with such awards, a question remained what to call them.
R. One working title was the 'Eddie', to honour Thomas Edison, the inventor of the phonograph.
S. As recording executives on the Walk of Fame committee compiled a list of significant recording industry people who might qualify for a Walk of Fame star, they realized that many leading people in their business would not earn a star on Hollywood Boulevard.
Eventually, the name was chosen after a mail-in contest whereby approximately 300 contestants submitted the name 'Grammy', with the earliest postmark from contest winner Jay Danna of New Orleans, Louisiana, as an abbreviated reference to the gramophone.

(a) PQRS
(b) SPQR
(c) QSRP
(d) RSQP

Answer: (b)

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

(a) RECCESSION
(b) RECCESION
(c) RECESSION
(d) RECESION

Answer: (c)

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

(a) DETRIMENT
(b) RESPONSIBILITY
(c) PREROGATIVE
(d) DISPENSATION

Answer: (c)

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

(a) DEPENDENCE
(b) INCARCERATION
(c) REFUSAL
(d) AUTARCHY

Answer: (d)

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

(a) IMPOSTER

(b) CHARLATAN

(c) PHONY

(d) INGENUOUS

Answer: (d)

73. Select the most appropriate meaning for the word given below.
Torrent

(a) A surprise violent attack.

(b) Sudden cyclone.

(c) Single track carved out of the mountain.

(d) A violent or forceful flow of fluid.

Answer: (d)

74. Select the most appropriate meaning of the given idiom.
Loose talk

(a) Treat someone badly.

(b) Uninhibited, indiscreet talk or conversation.

(c) Behaving freely.

(d) Keeping secrets.

Answer: (b)

75. Select the most appropriate meaning of [illegible] proverb.
Shards bring luck

(a) The younger ones let the older ones go first.

(b) If something breaks, you will be lucky.

(c) A favour is followed by a consideration.

(d) A single positive event does not mean that the turnaround has been made.

Answer: (b)

78. Which of the following is not associated with health issues and potential dangers of using social media?

(a) Depression

(b) Sleeplessness

(c) Anxiety

(d) Stress

Answer: (b)

Discipline1

101. What will be the average rate of change of function Y = [25 - x^2] at x = 2?

(a) 21

(b) 4

(c) 2

(d) -4

Answer: (d)

102. What is the slope of the tangent to the curve y = 4x÷(x^2 + 1) at (0,0)?

(a) 0

(b) 2

(c) 4

(d) 8

Answer: (c)

103. What will be the differential function of log(x^2 + 2)?

(a) 2x÷(x^2+ 2) dx

(b) 2x÷(x^2– 2) dx

(c) -2x÷(x^2 + 2) dx

(d) -2x÷(x^2 - 2) dx

Answer: (a)

104. Find the value of the limit, limx→0 25÷ x?

(a) ∞

(b) 0

(c) 1÷2

(d) 3÷2

Answer: (a)

105. Which of the following characteristic is included in the study of general procedure for tracing the algebraic curve?
1)Symmetry
2) Orthogonality
3) Tangents to the Curve at the origin

(a) 1&2 are correct

(b) 1&3 are correct

(c) only 2

(d) only 1

Answer: (b)

106. Find out the area enclosed by parabolas x^2 = y and y^2 = x.

(a) 1÷6

(b) 1÷9

(c) 1÷3

(d) 1÷12

Answer: (c)

107. Calculate the volume of sphere by triple integration?

(a) $(8a^3\pi)\div3$

(b) $(4a^3\pi)\div3$

(c) $(a^3\pi)\div3$

(d) $(2a^3\pi)\div3$

Answer: (b)

108. Divergence and Curl of a vector field are _____.

(a) Scalar & Scalar

(b) Scalar & Vector

(c) Vector & Vector

(d) Vector & Scalar

Answer: (b)

109. Find out the slope of the tangent line for the curve $xy^3 - yx^3 = 2$ at the point (1,-1).

(a) 2

(b) 0

(c) -1

(d) -2

Answer: (c)

110. Zero of $x^2 - 100$ will be

(a) 0

(b) 10

(c) -100

(d) 100

Answer: (b)

111. This polynomial x^3+4x+8 has

(a) one negative and two imaginary zeros

(b) one positive and two imaginary zeros

(c) three real zeros

(d) no zeroes

Answer: (a)

112. Find out the number of equivalence classes that can be defined by the set {1,2,3}.

(a) 125

(b) 5

(c) 16

(d) 72

Answer: (b)

113. Discover the number of possible relations in an anti-symmetric relation with 19 elements.

(a) 1.9 × 364

(b) 2.02 × 1087

(c) 19.34 ×79¹

(d) ¹3.5× 9³²

Answer: (b)

114. A quadratic field is called a simple quadratic field if :

(a) every algebraic integer can be expressed as a product of prime element uniquely up to change of order and multiplication by units.

(b) the representation is unique apart from the order of the primes, the presence of unities and ambiguities between associated primes.

(c) it also follows that πi is associate of some γj and conversely.

(d) divisor, unity, associate and prime in Q(w) are same as those in k(i).

Answer: (a)

115. If A is a 9 × 10 matrix of rank 3. Which of the following is equal to the dimension of the null space of A?

(a) 9

(b) 10

(c) 3

(d) 7

Answer: (d)

116. Compute the inverse of the matrix A = [? 3
2 2 2
1 0 1]

(a) 1 -1 -1 0 1÷2 -1 1 1 2

(b) 1 −1 1 0 1÷2 −1 −1 1 2

(c) 1 −1 −1 0 1÷2 -1 −1 1 2

(d) 1 −1 −1 0 1÷2 −1 −1 1 3

Answer: (c)

117. Find out which of the following statements is not true if A is a Hermitian matrix.

(a) The diagonal entries of A are all real.

(b) There exists a unitary U such that U×AU is a diagonal matrix.

(c) If A^2= I, then A = I.

(d) If A^3= I, then A = I.

Answer: (d)

118. If A be a n × n real matrix. Then, which of the following statements is satisfied conditions for the matrix?

(a) If the eigenvalues of A are λ1, . . . , λn, then A is similar to a diagonal matrix with λ1, . . . , λn along the diagonal

(b) If rank (A) = r, then A has r non-zero eigenvalues.

(c) If A^ k = 0 for some k > 0, then trace(A) = 0.

(d) If A has a repeated eigenvalue, then A is not diagonalizable

Answer: (c)

119. Inner product spaces over the field of complex numbers are sometimes referred to as:

(a) vector space

(b) unitary space

(c) real vector space

(d) abstract vector space

Answer: (b)

120. What will be the value of $x^3 + y^3 + z^3$, if x + y + z = 0?

(a) 3xyz

(b) 2xyz

(c) xyz

(d) xyz(xy + yz + zx)

Answer: (a)

Discipline2

121. Find out the common ratio of the GP if the [illegible]erm of a GP is 1 and the sum of the third term and fifth term is 90

(a) 4

(b) 3

(c) 9

(d) 2

Answer: (b)

122. What is the sum of the next three numbers in the sequence?
1,3,6,10,15,21,...

(a) 108

(b) 74

(c) 76

(d) 109

Answer: (d)

123. Let us say a, b, c are in AP then Which of the following is not true?

(a) 2b = a + c

(b) b – a = c – b

(c) b + b = a + c

(d) b +a = c+b

Answer: (d)

124. If n is any positive integer then 1+3+5+...+(2n-1) = ?

(a) n

(b) n-1

(c) 2n-1

(d) n^2

Answer: (d)

125. Calculate lim n tends to infinity $(7n+3)\div(5n+\sqrt{n})$.

(a) 7÷5

(b) 1÷3

(c) 1÷5

(d) 7÷3

Answer: (a)

126. Calculate lim n tends to infinity (1+(1÷n))n

(a) 0

(b) 1

(c) n

(d) e

Answer: (d)

127. What will be the order and degree of the differential equation :
$3x(d^3y\div dx^3)+2x^2(dy\div dx)^3-5xy=0$

(a) Third order, first degree

(b) First order, fourth degree

(c) First order, third degree

(d) Third order, Third degree

Answer: (a)

128. If dy = 2×5dx ; then what is the equation of the y in terms of x if curves passes through (1,2)

(a) x5-y+2=0

(b) x5+y-2=0

(c) x6-3y+5 =0

(d) x6+3y-5=0

Answer: (c)

129. Which one is not the characteristics of Transcritical bifurcation:

(a) Solid line denotes stable steady-state

(b) Dashed line denotes unstable steady-state

(c) Non-linear implicit scalar equation

(d) Two steady-state branches collide.

Answer: (a)

130. The half-life of radium is 1600 years, i.e., it takes 1600 years for half of any quantity to decay. If a sample initially contains 50 g, how long will it be until it contains 45 g?

(a) 212.3 years

(b) 243.2 years

(c) 282.4 years

(d) 344.3 years

Answer: (b)

131. What is the order of this equation? $(d^2y \div dx^2) - (dy \div dx)^3 + 2x = 0$

(a) 1

(b) 2

(c) 3

(d) 0

Answer: (b)

133. The difference equation Pn+1 = aPn + b. Then C ulate P2 if If P0 = 2, a = 3, and b = −1.

(a) 5

(b) 14

(c) -7

(d) 1

Answer: (b)

134. Derivative of ∂÷∂x ln(2x+3) is equals to

(a) 2÷(2x+3)

(b) 2÷(2-3x)

(c) -2÷(2+3x)

(d) -1÷(2x+3)

Answer: (a)

135. If [xl is the greatest integer in x, then what is: lim $x \to -1$ [x+1] ?

(a) -1

(b) 0

(c) 1

(d) limit does not exist

Answer: (d)

136. Solve : lim x→0 sin (1÷x)

(a) 0

(b) 1

(c) -1

(d) does not exist

Answer: (d)

137. If Y is in terms of variable x as Y= f(x) then y is known as

(a) explicit function

(b) implicit function

(c) linear function

(d) identity function

Answer: (a)

138. In which option we can evaluate the limit by using L'Hôpital's rule?

(a) $\lim_{x\to\pi} \cos x\ x - \pi$

(b) $\lim_{x\to\infty} xe^{-x}$

(c) $\lim_{x\to1} \ln x\ x - 1$

(d) $\lim_{x\to0} \tan x\ x$

Answer: (b)

139. At what value or values of x this function is discc uous : f(x) = x + 4 if $x \leq -1$ & x^2 if $-1 < x < 1$; $2 - x$ if $x \geq 1$?

(a) 0

(b) 2

(c) 1

(d) -1

Answer: (d)

140. What is the angle which the tangent to the curve at P makes with the positive direction of x axis?The value of f'(x) is -1 at the point P on a continuous curve y = f(x).

(a) π÷2

(b) π÷4

(c) 3π÷4

(d) 3π÷2

Answer: (c)

Discipline3

141. Find out the differential function of $\sqrt{(x^2 + 2)}$?

(a) $x\sqrt{(x^2+ 2)}\ dx$

(b) $x\div\sqrt{(x^2 + 2)}\ dx$

(c) $x\div\sqrt{(x^2 - 2)}\ dx$

(d) $x\sqrt{(x^2 - 2)}\ dx$

Answer: (b)

142. Determine the series of sin θ using Taylor's theorem .

(a) 1- (θ²÷2!) +(θ4÷4!)-.....

(b) θ-(θ³÷3!) +(θ5÷5!)-.....

(c) θ+(θ³÷3!) +(θ5÷5!)-.....

(d) 1+(θ²÷2!) +(θ4÷4!)-.....

Answer: (b)

143. What is the expansion of y = Sin -1 x?

(a) $x+(x^3\div6)+(3\div40)x5+(5\div112)x7+.....$

(b) $x-(x^3\div6)+(3\div40)x5-(5\div112)x7+.....$

(c) $(x^3\div6)-(3\div40)x5+(5\div112)x7+.....$

(d) $x+(x^2\div6)+(3\div40)x^2+(5\div112)x^3+.....$

Answer: (a)

144. Find $\lim_{(x,y)\to(0,0)}(\sinh(x)\times\sinh(y))\div(xy)$

(a) 0

(b) ∞

(c) 1

(d) 990

Answer: (c)

145. A vector field with a vanishing curl is known as _

(a) Rotational

(b) Irrotational

(c) Solenoidal

(d) Cycloidal

Answer: (b)

146. Find the maximum value from the extreme values of this function : $u = x^2y^2 - 5x^2 - 8xy - 5y^2$

(a) (0,0)

(b) (1,-1)

(c) (-1,1)

(d) (3,3)

Answer: (a)

147. What is the area inside function $(2x^3 + 5x^2 - 4)\div x^2$ from x = 1 to a.

(a) $a^2\div2 + 5a - 4\ln(a)$

(b) $a^2 + 5a + 4\div a - 10$

(c) $a^2\div2 + 4\ln(a) - 11\div2$

(d) $a^2\div2 + 5a - 11\div2$

Answer: (b)

148. Find the volume V under the plane z=8x+6y over the rectangle R=[0,1]×[0,2].

(a) 20 units

(b) 10 units

(c) 30 units

(d) 40 units

Answer: (a)

149. What is the Green's value for the functions F = y^2 and G = x^2 for the region x = 1 and y = 2 from origin.

(a) 1

(b) -2

(c) 2

(d) -1

Answer: (b)

150. Calculate the value of the integral $\int C$ (xydy -y^2dx) where C is the square, cut from the first quadrant by the lines x = 1 and y = 1, will be ?(Using green's theorem)

(a) 1÷2

(b) 3÷2

(c) 5÷2

(d) 7÷2

Answer: (b)

151. Stokes theorem is used to convert the __ integr ıo ___ integrals

(a) line to area

(b) line to surface

(c) surface to line

(d) volume to area

Answer: (b)

152. What is the divergence of the vector field f $\rightarrow$ =$6x^2$i+$3xy^2$j+xyz^3k at the point(2,3,4).

(a) 348

(b) 124

(c) 100

(d) 106

Answer: (a)

153. Which conditions are necessary to explain that the upper and lower integrals of a bounded function exist?

(a) a, b ϵ R, a<b, and f:[a,b]$\rightarrow$R be bounded

(b) a,b ϵ R, a>b, and f:[a,b]$\rightarrow$R

(c) a, b ϵ R, a<b, and f:[a,b]$\rightarrow$R

(d) a, b ϵ R, a<b, and f:[a,b]$\rightarrow$Z be bounded

Answer: (a)

154. A funtion f on [0, 1] by f(x) = (
1, if x = 1÷n for some n ∈ N, 0, otherwise)
find ∫ f with limits 0 to 1.

(a) 0

(b) 1

(c) -1

(d) n

Answer: (a)

155. A function g : [0, π÷2] → R by
g(x) = (
cos² x, if x ∈ Q,
0, otherwise.)
Find the upper Riemann integrals of g over [0, π÷2].

(a) π÷2

(b) π

(c) π÷3

(d) π÷4

Answer: (d)

156. Integration of (Sin(x) + Cos(x))eˣ is_____

(a) eˣ Cos(x)

(b) eˣ Sin(x)

(c) eˣ Tan(x)

(d) eˣ(Sin(x)+Cos(x))

Answer: (b)

157. Find the value of ∫ cot³(x) cosec4 (x) dx

(a) –[cot4(x)÷4+cosec6(x)÷6]

(b) –[cosec4(x)÷4+cosec6(x)÷6]

(c) –[cot4(x)÷4+cot6(x)÷6]

(d) –[cosec4(x)÷4+cot6(x)÷6]

Answer: (c)

158. Which of these functions is not uniformly continuous on (0, 1)?

(a) x²

(b) 1÷x²

(c) sin(x)

(d) sin(x)÷x

Answer: (b)

159. Let f be the uniform limit of a sequence of continuous functions {fn}. Then f is
(a) Continuous
(b) Discontinuous
(c) Limited
(d) Infinite
Answer: (a)

160. Which one is not the properties of pointwise convergence ?
(a) The values of the functions fn need not be real numbers
(b) functions taking values in metric spaces
(c) There must be uniform spaces
(d) Every sequence of N has a least element
Answer: (d)

Discipline4

161. Elaborate $\cos(x^2)$ as a power series.
(a) $1+(x4\div2!)+(x8\div4!)-(x^{12}\div6!)+...$
(b) $1-(x4\div2!)+(x8\div4!)-(x^{12}\div6!)+...$
(c) $1-(x4\div2!)+(x8\div4!)+(x^{12}\div6!)+...$
(d) $1-(x4\div2!)-(x8\div4!)-(x^{12}\div6!)+...$
Answer: (b)

162. Find the radius of convergence for the power series:$\infty\sum n=1(7n\div n(3x-1)(n-^1))$
(a) $7|3x-1|$
(b) $(2x+1)\div6$
(c) $5|x+1|$
(d) $3!\times|4x-9|$
Answer: (a)

163. The Metric space is both complete and totally bounded is known as _____.
(a) Scalar
(b) Complete
(c) Compact
(d) Discrete
Answer: (c)

165. What is the representation of an open disk D(x, y) of radius r centered at origin in $\mathbb{R}^2$?
(a) $D=\{(x, y)|\ x^2+y^2 < r^2\}$
(b) $D=\{(x, y)|\ x^2+y^2 < r\}$
(c) $D=\{(x, y)|\ x^2+y^2 = r^2\}$
(d) $D=\{(x, y)|\ x^2+y^2 > r^2\}$
Answer: (a)

166. If d1, d2 are two metrics on the same set M, Which statement is not equivalent from the following statements :

(a) For every metric space (N, d), every f : M $\rightarrow$ N is d1 continuous iff it is d2 continuous

(b) the union of any finite collection of closed sets is closed

(c) For every metric space (N, d), every g : N $\rightarrow$ M is d1 continuous iff it is d2 continuous.

(d) d1 open and d2 open sets coincide

Answer: (b)

167. We call a topological space T sequentially compact if _____.

(a) T is not compact, it has a maximal open cover V without a finite subcover.

(b) every sequence in T has a convergent subsequence

(c) It T is compact, s $\in$ S and U is an open cover of T × S, there is open V $\subset$ S containing s such that T × V can be covered by a finite subfamily of U.

(d) U be the collection of their complements.By De Morgan's rules, U is a cover of T.

Answer: (b)

168. In which condition T is not disconnected ?

(a) T has a decomposition into two nonempty open sets

(b) T has a decomposition into two nonempty closed sets

(c) T has a subset which is open, closed and is neither $\varnothing$ nor T.

(d) the only decompositions of T into open sets are T= $\varnothing \cup$ T and T = T $\cup \varnothing$

Answer: (d)

169. Which one is not in the automorphism group?

(a) closure

(b) associativity

(c) identity

(d) decomposition

Answer: (d)

170. Let Q be the field of rational numbers. Find the Galois group order of $f(x) = x^2-2$ over Q.

(a) 2

(b) 3

(c) 4

(d) 1

Answer: (a)

171. Let G be a group we know that G is the internal direct product of two subgroups of H and K. It is not true when :

(a) HK=G

(b) H and K are normal subgroups of G

(c) H $\cap$ K = {e}

(d) H $\cup$ K = G

Answer: (d)

172. Calculate the number of elements of order 7 in $Z(49) \oplus Z(7)$.

(a) 48

(b) 51

(c) 49

(d) 56

Answer: (a)

173. U(5) and U(12) are finite collection of groups ; U(5) = {1, 2, 3, 4} and U(12) = {1, 5, 7, 11}. So $U(5) \oplus U(12)$?

(a) (1,5)

(b) (2,7)

(c) (4,3)

(d) (5,3)

Answer: (a)

174. Let X be a set and G be a group. A group action of G on X is a map $* : G \times X \to X$ given by $(g, x) \longrightarrow g * x$ such that 1)$(gh) * x = g * (h * x)$ for all $g, h \in G$ and $x \in X$.
2) $e * x = x$ for all $x \in X$
If this happens then we say that G acts on X and X is a

(a) G-homomorphism

(b) G-set

(c) G-isomorphism

(d) G-Bijection

Answer: (b)

175. Let $*$ be a group action of G on X. For $x \in X$, Gx denote the subset $\{g * x : g \in G\}$ of X.Define an equivalence relation v on X by setting x v y iff Gx = Gy. The equivalence class of x is known as the_____.

(a) disjoint union of x

(b) orbit Ox of x

(c) space of orbits Ox

(d) orbit and stabiliser of x

Answer: (b)

176. Let G be a finite group acting on a set X. Then which of the statement is not satisfied the action of G :

(a) The stabilizer Sx of x is a subgroup of G for every $x \in X$

(b) On(R) (group of orthogonal matrices) and S (unit sphere in Rn).

(c) $\ker(\varphi) = \cap x \in XSx$

(d) If $y \in Ox$ then there exists $h \in G$ such that Sx = hSyh^-1

Answer: (b)

177. If G is a finite group of order 217.Find out the number of generators of the group G.

(a) 181
(b) 182
(c) 188
(d) 180

Answer: (d)

178. If G be a group of order 57.Assume that G is not a cyclic group. Then what is the number of elements in G of order 3?

(a) 32
(b) 36
(c) 38
(d) 35

Answer: (c)

179. What is the analytic region of $f(z) = (x-y)^2 + 2i(x+y)$?

(a) x-y = -1
(b) x-y = 1
(c) x+y = 2
(d) x+y = -2

Answer: (b)

180. Find out the all values of Z from this equation : $e^{\quad} = 1+\sqrt{3}i$.

(a) $\ln(2) - (\pi \div 2 + 2\pi n)i$; $n \in Z$
(b) $\ln(2) + (\pi \div 3 + 2\pi n)i$; $n \in Z$
(c) $\ln(2) - (\pi \div 3 + \pi n)i$; $n \in Z$
(d) $\ln(2) + (\pi \div 2 + \pi n)i$; $n \in Z$

Answer: (b)

Discipline5

181. What is the magnitude of the expression below : e^z , where z is a complex number.

(a) 1
(b) e^x
(c) $\sqrt{(x^2+y^2)}$
(d) $\sqrt{(x^2-y^2)}$

Answer: (b)

182. To prove the Fundamental Theorem of Algebra, we will need the

(a) Extreme value theorem for two real variables
(b) Real valued functions for two real variables
(c) Both 1 & 2
(d) Neither 1 or 2

Answer: (c)

183. What is the value of x^x if $x = \sqrt{-1}$

(a) e^(π÷2)

(b) 1

(c) 0

(d) e^(-π÷2)

Answer: (d)

184. Let G be a connected open set and let : G → f be analytic function. Then which of the following is not an equivalent statements:

(a) f ≡ 0

(b) { z ∈ G:f(z)= 0 } has limit point in G

(c) R > 0 is arbitrary, radius of convergence is infinite

(d) there is a point a in G such that fn(ª)for each n ≥ 0 ;

Answer: (c)

185. Find out the the Taylor series expansion of 3 sin x + 2 cos x :

(a) 2 - 3x -x²- (x³÷2)+....

(b) 2+3x - x²- (x³÷2)+....

(c) 2-3x+x²+(x³÷2)+...

(d) 2+3x-x²+(x³÷2)+....

Answer: (b)

186. Find the residues of a function : f(z) = [1 ÷ { (z-[illegible]z+1)³ }]

(a) (-1÷27) & (-1÷125)

(b) (1÷27) & (1÷125)

(c) (1÷27) & (-1÷27)

(d) (1÷125) & (-1÷125)

Answer: (c)

187. ___ is regular element of Z(20)

(a) 16

(b) 13

(c) 14

(d) 15

Answer: (b)

188. In Ring of real quaternion , $(1 - 2i - 3j - 2k)^{-1}$ = ...

(a) (1 − 2i − 3j − 2k) ÷18

(b) (1 + 2i + 3j + 2k)÷18

(c) (−1 + 2i + 3j + 2k) ÷18

(d) (1 − 2i − 3j − 2k)÷6

Answer: (b)

189. Let A be a 5 × 5 matrix with real entries and $x \neq 0$. Then, the vectors x, Ax, A^2x, A^3x, A4x, A5x are

(a) linearly independent

(b) linearly dependent

(c) linearly independent if and only if A is symmetric

(d) linear dependence/independence cannot be determined from given data

Answer: (b)

190. Let A be a complex n × n matrix. Let λ1, λ2, λ3 be three distinct eigenvalues of A, with corresponding eigenvectors z1, z2, z3. Then, which of the following statements is false?

(a) z1 + z2, z1 − z2, z3 are linearly independent.

(b) z1, z2, z3 are linearly independent

(c) z1, z1 + z2, z1 + z2 + z3 are linearly independent

(d) z1, z2, z3 are linearly independent if and only if A is diagonalizable

Answer: (d)

Teaching Methodology

191. Sociologists have divided society into which stage on the basis of technology, instruments and means of living ?

(a) hierarchical stage

(b) positive stage

(c) metaphysical stage

(d) theological stage

Answer: (a)

192. What is social science?

(a) Astrology

(b) Sociology

(c) Biology

(d) Geography

Answer: (b)

193. The language to which a child is predominantly exposed from infancy is known as ___.

(a) Mother tongue

(b) Second language

(c) Father tongue

(d) National language

Answer: (a)

194. Which of the following is not the nature of school subject?

(a) serves as criteria by which we learn

(b) Gives a practical approach towards outer world

(c) has a specific code of conduct

(d) derives content from a wide range of sources

Answer: (b)

195. Gender identity in nearly all instances is self- identified as___

(a) one's private sense of being a man or a woman

(b) result of a combination of inherent and extrinsic or environmental factors

(c) it is manifested within society by observable factors such as behaviour and appearance.

(d) It is person's own subjective experience

Answer: (b)

196. " People who have variations of sex characteristics that do not fit with typical male or female bodies."is called _____.

(a) Binary Gendered

(b) Non-Binary Gendered

(c) Intersex

(d) Genderqueer

Answer: (c)

197. James Banks discusses three groups of approac s for multi-cultural education. From following find odd one.

(a) The Additive Approach

(b) The social action approach

(c) The Dominance Approach

(d) The Curriculum/ Contributions Approach

Answer: (c)

198. Which of this is not a origin of knowledge ?

(a) Objectivism

(b) Pragmatism

(c) Constructivism

(d) Interpretivism

Answer: (c)

199. Which of this is not a characteristic of evaluation?

(a) Evaluation is a continuous process

(b) It is a systematic process

(c) It is not confined to classrooms

(d) It includes only academic subjects

Answer: (d)

200. Which of this is not a model of disability?

(a) Charity model

(b) Social model

(c) Rehabilitation model

(d) Mental model

Answer: (d)

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	**(c)**	2	**(b)**	3	**(b)**	4	**(d)**	5	**(c)**	6	**(c)**	7	**(d)**	8	**(b)**
9	**(c)**	10	**(d)**	11	**(c)**	12	**(c)**	13	**(d)**	14	**(d)**	15	**(a)**		

General Awareness

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

Arithmetic Ability

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

General English

61	**(b)**	62	**(a)**	63	**(c)**	64	**(a)**	65	**(c)**	66	**(c)**	67	**(d)**	68	**(b)**
69	**(c)**	70	**(c)**	71	**(d)**	72	**(d)**	73	**(d)**	74	**(b)**	75	**(b)**	78	**(b)**

Discipline1

101	**(d)**	102	**(c)**	103	**(a)**	104	[illegible]	105	**(b)**	106	**(c)**	107	**(b)**	108	**(b)**
109	**(c)**	110	**(b)**	111	**(a)**	112	**(b)**	113	**(b)**	114	**(a)**	115	**(d)**	116	**(c)**
117	**(d)**	118	**(c)**	119	**(b)**	120	**(a)**								

Discipline2

121	**(b)**	122	**(d)**	123	**(d)**	124	**(d)**	125	**(a)**	126	**(d)**	127	**(a)**	128	**(c)**
129	**(a)**	130	**(b)**	131	**(b)**	133	**(b)**	134	**(a)**	135	**(d)**	136	**(d)**	137	**(a)**
138	**(b)**	139	**(d)**	140	**(c)**										

Discipline3

141	**(b)**	142	**(b)**	143	**(a)**	144	**(c)**	145	**(b)**	146	**(a)**	147	**(b)**	148	**(a)**
149	**(b)**	150	**(b)**	151	**(b)**	152	**(a)**	153	**(a)**	154	**(a)**	155	**(d)**	156	**(b)**
157	**(c)**	158	**(b)**	159	**(a)**	160	**(d)**								

Discipline4

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

Discipline5

181	**(b)**	182	**(c)**	183	**(d)**	184	**(c)**	185	**(b)**	186	**(c)**
187	**(b)**	188	**(b)**	189	**(b)**	190	**(d)**				

Teaching Methodology

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