Roll No. ☐☐☐☐☐

LDA/LDC EXAMINATION – 2015
(For Subordinate Courts of Manipur)
MATHEMATICS

Duration: 3 hrs	Question Booklet	Full Marks: 100 marks

GENERAL INSTRUCTION FOR MARKING OMR SHEET & OTHERS

Strict compliance of instructions is essential. Answer sheet will be processed by Electronic means in computer. Invalidation of Answer Sheet due to incomplete / incorrect filling of the OMR sheet will be the sole responsibility of the candidate. Accordingly candidates are advised to adhere to these instructions:

1. **Use BLACK / BLUE Ball point pen only**. Ink pen, pencil or pens with colours are strictly prohibited.

2. Write your Roll Number, Name (in Block), Subject, Examination Centre, Signature and Date of Exam in appropriate places on the OMR Sheet.

3. Mark the correct answer by darkening the circle.

4. Use of white fluid / eraser / blade etc. for correction in OMR sheet is not permitted.

5. Once marked, no change in the answer shall be permitted.

6. More than one answer is not allowed. Multiple answers given against one question will not be considered for evaluation, *i.e. marking more than one answer or making alterations after marking an answer will result in zero mark.*

7. Do not make any stray mark on the OMR sheet.

8. Do not cut or mutilate the OMR sheet.

9. Do not fold or damage the OMR sheet.

10. The signature should be identical with the signature given by the candidate in Application Form submitted to the High Court.

11. Candidate has to ascertain that the information furnished by him / her in the OMR Sheet are correct and duly checked by the invigilator.

12. Do not do any rough work on the OMR Sheet. It may be done in the rough paper provided.

13. There will be no re-checking / re-evaluation of the OMR sheet.

14. Please ensure that you have returned the OMR/Answer sheets to the Invigilator before leaving the Examination Hall.

L.D.A./L.D.C. EXAMINATION 2015
(For Subordinate Courts of Manipur)

MATHEMATICS

Time allowed : 3 Hours.   *Full Marks : 100*

➢ *Candidates should attempt all the questions.*
➢ *Each question carries equal marks.*
➢ *There will be no negative marking.*

Q.1.   If $(a + 3) + \frac{1}{(a+3)} = 4$ Then the value of $(a + 3)^3 + \frac{1}{(a+3)^3}$ is

(A)   76   (B)   52   (C)   0   (D)   4

Q.2.   If $a = 5$ and $b = -4$, the value of $64a^3 + 125b^3 + 240\,a^2b + 300\,ab^2$ is equal to

(A) 40   (B) 64000   (C) 1400   (D) 0

Q.3.   What is the least number which must be added to 893304 so as to get a perfect square is

(A) 279   (B) 1612   (C) 272   (D) 1712

Q.4.   On selling 270 articles, a man lost the selling price of 30 articles. What is his loss percent?

(A) 10%   (B) 20%   (C) 25 %   (D) 30%

Q.5.   A number consists of two digits. The digit in the ten's place is three times the digit in the unit place. The number formed by reversing the digit is 36 less than the original number. What is the number ?

(A) 93   (B) 73   (C) 62   (D) 52

Q.6.   The common zero (s) of the polynomials $x^3 - 5x^2 + 4x$, $2x^4 - 3x^3 + x^2$ and $x^3 - x$ are

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

Q.7.   The co-ordinates of A and B are (-4, 8) and (x, 3) respectively. If AB = 13, then the possible values of x are

(A) -8, -16   (B) -8, 16   (C) 8, -16   (D) 8, 16

Q.8.   The depth of a well of radius 3.5 m if its capacity is equal to that of a rectangular tank of dimensions 25m X 11m X 7m is

(A) 100 m   (B) 75m   (C) 50m   (D) 25m

Q.9. The number of lead shots, each of radius 6cm can be made out of a rectangular slab of dimensions 44cm X 36cm X 24cm are

(A) 21 (B) 14 (C) 6 (D) 42

Q.10. The value of $\tan^2 60^0 + \sec^2 45^0 + 6\cos^2 60^0$ is

(A) 4.5 (B) 6.5 (C) 5.5 (D) 8.5

Q.11. If $secA = \frac{13}{12}$ then , then the value of tan A is

(A) $\frac{169}{144}$ (B) $\frac{144}{169}$ (C) $\frac{5}{12}$ (D) $\frac{12}{5}$

Q.12. If $\tan\theta = \frac{5}{6}$, what is the value of $\frac{5\sin\theta - 6\cos\theta}{5\sin\theta + 6\cos\theta}$

(A) $\frac{11}{61}$ (B) $\frac{61}{11}$ (C) $\frac{-11}{61}$ (D) $\frac{-61}{11}$

Q.13. If A = {a, b, c}, then the number of subsets of A are

(A) 3 (B) 6 (C) 9 (D) 8

Q.14. If $\frac{a}{2} = \frac{b}{5} = \frac{c}{7}$, then $\frac{a+b+c}{c}$ equals to

(A) 2 (B) 5 (C) 7 (D) 14

Q.15. ABCD is a parallelogram. The bisectors of consecutive angles $\angle A$ and $\angle B$ intersect at O. Then $\angle AOB$ equals to

(A) 30^0 (B) 60^0 (C) 90^0 (D) 120^0

Q.16. Each interior angle of a regular hexagon is

(A) 120^0 (B) 108^0 (C) 135^0 (D) 45^0

Q.17. If $\cos\theta = \sin(2\theta + 30^0)$, $0 \leq \theta < 90^0$, then the value of θ is

(A) 60^0 (B) 45^0 (C) 30^0 (D) 20^0

Q.18. The value of $\tan 48^0 \tan 23^0 \tan 42^0 \tan 67^0$ is

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

Q.19. If A, B, C are the angles of a Δ ABC, then $\cos\frac{A+B}{2}$ equals to

(A) $\cos\frac{A}{2}$ (B) $\sin\frac{A}{2}$ (C) $\sin\frac{C}{2}$ (D) $\cos\frac{C}{2}$

Q.20. When the altitude of the sun is 30^0, the shadow of a tree is 10m. What is the height of the tree?

(A) $\frac{10}{3}$ m   (B) $\frac{10\sqrt{3}}{3}$ m   (C) $\frac{10}{3\sqrt{3}}$ m   (D) 2m

Q.21. PS is the median of triangle PQR and O is the centroid such that PO = 20 cm. The length of OS is

(A) 2cm   (B) 5cm   (C) 8 cm   (D) 10 cm

Q.22. In triangle ABC, BC is produced to D to form exterior angle ∠ACD. Then the angle between the bisectors of ∠ACB and ∠ACD is

(A) 70^0 (B) 80^0 (C) 90^0 (D) 60^0

Q.23. In a city, 70% of the population is literate. If the total population of the city is 987000 then the number of illiterate is

(A) 690900   (B) 296100   (C) 592200   (D) 197400

Q.24. If a + b + c = 0, then the value of ab(a+b) + bc(b+c) + ca(a+c) + 3abc is

(A) 6abc   (B) 4abc   (C) 2abc   (D) 0

Q.25. The sum of an integer and its reciprocal is $\frac{17}{4}$. Then the integer is

(A) 3   (B) 4   (C) 5   (D) 6

Q.26. The number of two digit numbers which are divisible by 7 are

(A) 10   (B) 11   (C) 12   (D) 13

Q.27. What is the 20th term of the sequence 1, $\frac{3}{2}$, 2, $\frac{5}{2}$, 3, ... ?

(A) $\frac{25}{2}$ (B) $\frac{23}{2}$ (C) $\frac{21}{2}$ (D) $\frac{19}{2}$

Q.28. The digit in the unit place of the product 2567 X 36 X 72 X 8 is

(A) 4   (B) 6   (C) 8   (D) 2

Q.29. If the universal set U = {1,2,3,........., 10} and A={2,4,6}, B = {7,8,9}, then $(A \cup B)^C$ is equal to

(A) {2,4,6,7,8,9}   (B) {1,3,5}   (C) {1,3,5,10} (D) {1,2,3,5,10}

Q.30. The distance between A(2,1) and B(-1,-2) is

(A) 3 units   (B) $\sqrt{2}$ units   (C) $2\sqrt{3}$ units (D) $3\sqrt{2}$ units

Q.31. If the point (-5, 6) lies on the graph of the equation $3x + ky = 15$, the value of k is

(A) 3   (B) 4   (C) 5   (D) 6

Q.32. Two angles of a linear pair are in the ratio 6:3. Then the measure of the second angle is

(A) 120^0 (B) 130^0 (C) 90^0 (D) 60^0

Q.33. Two unequal angles of a parallelogram are in the ratio 4:5 , then the one of angles is

(A) 75^0 (B) 80^0 (C) 90^0 (D) 95^0

Q.34. The ratio of two supplementary angles is unity. Then measure of one of the angles is

(A) 30^0 (B) 60^0 (C) 90^0 (D) 45^0

Q.35. In a triangle ABC, AB = AC and $\angle B = 80^0$, then $\angle A$ is equal to

(A) 20^0 (B) 30^0 (C) 40^0 (D) 60^0

Q.36. P and Q are mid points of the sides AB and AC of the Δ ABC respectively. If PQ = 6 cm, then length of BC is

(A) 6 cm   (B) 8 cm   (C) 10 cm   (D) 12 cm

Q.37. If "a" is an odd integer, then $a^2 + (a+2)^2 + (a+4)^2 + 1$ is a multiple of

(A) 11   (B) 10   (C) 12   (D) 9

Q.38. The least number which when divided by 7, 8 and 12 leaves the same remainder 5 in each case. The number is

(A) 173   (B) 163   (C) 183   (D) 193

Q.39. Two numbers are in the ratio 2 : 3. If 6 is added to each number, the sum are in the ratio 3 : 4. Then the numbers are

(A) 2 and 4   (B) 6 and 8   (C) 12 and 18 (D) 5 and 7

Q.40. In an examination, 52% students failed in Hindi and 42% in English. If 17% failed in both the subjects, what percentage of students passed in both subjects ?

(A) 38%   (B) 33%   (C) 23%   (D) 18%

Q.41. A man can do a piece of work in 5 days, but with the help of his son he can do it in 3 days. In what time can the son do it alone ?

(A) 7 days   (B) 8 days   (C) 7 ½ days   (D) 6 ½ days

Q.42. A train 800 m long is running at the speed of 78 km/hr. If it crosses a tunnel in 1 minute, then the length of the tunnel (in metre) is

(A) 2100m   (B) 500m   (C) 1300m   (D) 13m

Q.43. Two pipes A and B can fill a tank in 20 minutes and 30 respectively. If both pipes are opened together, the time taken to fill the tank is
(A) 50 min   (B) 12 min   (C) 25 min   (D) 15 min

Q.44. A and B can do a work in 12 days, B and C in 15 days, C and A in 20 days. If A, B and C work together, they will complete the work in

(A) 5 days   (B) $7\frac{5}{6}$ days   (C) 10 days   (D) $15\frac{2}{3}$ days

Q.45. The ages of Ram and Shyam are in the ratio of 8 : 7 respectively. After 6 years, the ratio of their ages will be 19 : 17. What is the difference in their ages ?

(A) 4 years   (B) 8 years   (C) 10 years   (D) None of these

Q.46. The length of a rectangular floor is twice its breadth. If Rs. 256 is required to paint the floor at the rate of Rs. 2 per square metre, then what would be the length of floor ?

(A) 16m   (B) 8 m   (C) 12 m   (D) 32 m

Q.47. In how many different ways can the letters of the word TOTAL be arranged ?

(A) 120   (B) 60   (C) 48   (D) None of these

Q.48. In a mixture of milk and water the proportion of water by weight was 75%. If in the 60 gm mixture, 15 gm water was added, what would be the percentage of water ?

(A) 75 %   (B) 88 %   (C) 90%   (D) None of these

Q.49. The difference between a two digit number and the number obtained by interchanging the two digits of the number is 9. What is the difference between the two digits of the number ?

(A) 3   (B) 2   (C) 1   (D) Cannot be determined.

Q.50. The average age of 12 men is decreased by one year when two of them of ages 28 years and 32 years are replaced by two women of same age. The age of the woman is

(A) 23 years   (B) 24 years   (C) 25 years   (D) 26 years

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Blank sheets for rough work (enclosed)