

SEMESTER-ONE

MATHEMATICS

Grade-12

Sample Paper-2

Max. Marks: 50

Time Allowed: 90 minutes

General Instructions:

- (i) This question paper consists of 40 questions in 4 sections.
- (ii) All questions are compulsory. However, an internal choice is provided in some questions. A student is expected to attempt only one of these questions.
- (iii) Section A consists of 10 Multiple Choice Questions carrying 1 mark each.
- (iv) Section B consists of 10 Fill in the Blank Type Questions carrying 1 mark each.
- (v) Section C consists of 10 True or False Type Questions carrying 1 mark each.
- (vi) Section D consists of 10 Very Short Answer Questions carrying 2 mark each.

Section A

Select and write one most appropriate option out of the four options given for each of the questions 1 – 10.

- 1.** The terms of a G.P. are positive. If each term is equal to the sum of two terms that follows, it then the common ratio is

(a) $\frac{\sqrt{3} - 1}{2}$

(b) $\frac{\sqrt{5} - 1}{2}$

(c) $\frac{\sqrt{5} + 1}{2}$

(d) $\frac{\sqrt{3} + 1}{2}$

2. Five numbers are in A.P whose sum is 25 and product is 2520. If one of these five numbers is $-1/2$, then the greatest number amongst them is
- (a) 16 (b) $21/2$
(c) 27 (d) 7
3. Calculate the standard deviation of ungrouped data of marks of students which are given below:
85, 65, 55, 42, 69, 83, 92, 77
- (a) 31.26 (b) 244.25
(c) 15.63 (d) 7.83
4. What is the coefficient of mean deviation 21, 34, 23, 39, 26, 37, 40, 20, 33, 27 (taken from the mean)
- (a) 0.11 (b) 0.22
(c) 0.33 (d) 0.44
5. The length, breadth and height of the cuboidal room are 13 m, 12 m, and 15 m respectively. What is the cost of whitewashing the four walls of the room if the cost of whitewashing is ₹ 9 per m^2 ?
- (a) ₹ 7750 (b) ₹ 6730
(c) ₹ 6750 (d) ₹ 7865
6. Select the number that can replace the question mark (?) in the following series.
2, 15, 41, 80, ?.
- (a) 130 (b) 132
(c) 134 (d) 136
7. Find the volume of right-prism based on a regular with a height of $6\sqrt{3}$ cm. Find its volume if the total surface area of the the prism is $192\sqrt{3} \text{ cm}^2$
- (a) 432 (b) 180
(c) $432\sqrt{3}$ (d) $216\sqrt{3}$
8. What does a couple produce in rigid motion?
- (a) Pure rotation (b) Pure translation
(c) Rotation and translation (d) No motion

9. The price of cooking oil has increased by 25%. By what percent should a family reduce the consumption of cooking oil so as not to increase the expenditure in this account
(a) 20% (b) 25% (c) 18% (d) 16%
10. What is the total surface area of a cone of radius 7cm and height 24cm? (Take $\pi = 227$)
(a) 710 cm^2 (b) 704 cm^2 (c) 700 cm^2 (d) 725 cm^2

Section B

Fill in the blanks with a suitable word for each of the questions 11 – 20.

11. What number comes next in this sequence? 19648, 1728, 112, _____.
12. What is the value of $2 - 2 + 2 - 2 + 2 - 2$ _____ n .
13. Mr. Peter has a monthly salary of L\$ 7,500. If he spends L\$ 6,250 every month, find his expenditure and savings in percent _____.
14. In a school there are 1500 boys and some are girls. If the number of boys are 75 %, calculate the number of girls _____.
15. Standard deviation of a data is _____ of any change in origin but is _____ on the change of scale.
16. A prism is a piece of transparent material having three rectangular surfaces and _____ triangular surfaces.
17. _____ is the value of the observation having the maximum frequency.
18. A cuboid has _____ rectangular faces, _____ edges and _____ vertices.
19. A sphere has a _____ Surface.
20. The mid-point of a class interval is called its _____.

Section C

State whether the following statements are true or false for each of the questions 21–30.

21. If p, q, r are in G.P then $pq = qr$.
22. In a G.P. $S_n = b(1 - r^n)/1 - r, r < 1$.
23. Bearings show whether lines are going north, south, east or west.
24. Bearings always have a relationship to north or south.

- 25.** If 90% of garden waste can't be recycled this means that 20% can be recycled.
- 26.** Standard deviation σ is an average of all deviations of x_i ($i = 1, \dots, N$) from their mean μ .
- 27.** Standard error σ_x is an average of all deviations of \bar{x}_i ($i = 1, \dots, K$) with sample size n from their mean $\bar{\mu}_x$.
- 28.** The degree to which numerical data tend to spread about an average value is called the variation or dispersion of data.
- 29.** The degree to which numerical data tend to spread about an average value is called the variation or dispersion of data.
- 30.** The absolute measure of dispersion for range is called the coefficient of range.

Section D

Answer each of the questions 31 – 40.

- 31.** Find the 30th and n th term of the sequence 4, 9, 14, 19,
- 32.** Determine the 2nd term and the 30th term of the AP whose 7th term is 64 and 15th term is 74.
- 33.** If the bearing of Y from X is 120° , find the bearing of X from Y.
- 34.** Draw a line segment of length 9.9 cm. Bisect it and measure the length of each part.
- 35.** Find the median, lower quartile and upper quartile of the following numbers:
12, 10, 22, 30, 15, 36, 14, 42, 15, 53, 25
- 36.** Solve $4x^2 + 32x - 8 = 0$ graphically.
- 37.** Sentences involving pronouns time such as 'he' 'she' 'they' are not statements. 'He is an engineer'.
- 38.** A music player is priced at L\$ 300 in different shops A and B which offer different hire purchase terms. Shop A requires 20% deposit and 12 monthly installments of L\$ 25.60. Shop B requires 30% deposit and 12 monthly installments of L\$ 23.10. Which shop has the better deal?
- 39.** Draw the graph of $y = 4 \cos 2x$.
- 40.** Draw the graph of $f(x) = 2\cos\left(3x - \frac{\pi}{4}\right)$.