Nageen Group of Schools

381 W.K Road Below HDFC Bank Meerut-250001

Test / Exam Name: Math's Chapter 9 Mcq Questions. **Standard: 10th** **Subject: Mathematics**

Student Name: ---------- **Section:** ---------- **Roll No.:** ----------

Questions: 148 **Time: 02:28 hh:mm** **Marks: 148**

Instructions

1. Attempt all questions.

Q1. If the shadow of a tower is 30m long when the sun's elevation is 30°. The length of the shadow, when the sun's elevation is 60° is: **1 Mark**

1. 20m
2. 10m
3. 30m
4. $10\sqrt{3}\text{m}$

Q2. If a flag staff of length 6m is placed on the top of a tower throws a shadow of $2\sqrt{3}\text{m}$ along the ground, then the angle that the sun makes with the ground is: **1 Mark**

1. 45°
2. 30°
3. 75°
4. 60°

Q3. In a right $\triangle XYZ$, XZ is the hypotenuse of length 12cm and $\angle X = 45^\circ$. The area of the triangle is: **1 Mark**

1. 36cm^2
2. 24cm^2
3. 72cm^2
4. 12cm^2

Q4. A circus artist is climbing a 30m long rope, which is tightly stretched and tied from the top of a vertical pole to the ground. If the angle made by the rope with the ground level is 45°, then the height of the pole is: **1 Mark**

1. $15\sqrt{2}\text{m}$
2. 20m
3. $10\sqrt{2}\text{m}$
4. $20\sqrt{2}\text{m}$

Q5. A river is 60m wide. A tree of unknown height is on one bank. The angle of elevation of the top of the tree from the point exactly opposite to the foot of the tree, on the other bank, is 30°. The height of the tree is: **1 Mark**

1. $30\sqrt{3}\text{m}$
2. $10\sqrt{3}\text{m}$
3. $20\sqrt{3}\text{m}$
4. $60\sqrt{3}\text{m}$

Q6. A contractor planned to install a slide for the children to play in a park. If he prefers to have a slide whose top is at a height of 1.5m and is inclined at an angle of 30° to the ground, then the length of the slide would be. **1 Mark**

1. $\sqrt{3}\text{m}$
2. 3m
3. 1.5m
4. $2\sqrt{3}\text{m}$

Q7. The angles of elevation of the top of a lamp-post as observed from a point 40m distant from the foot of thr post, is 30°. The height of the lamp post is: **1 Mark**

1. $40\sqrt{3}\text{m}$
2. $\frac{40\sqrt{3}}{3}\text{m}$
3. 20m
4. $\frac{40\sqrt{3}}{2}\text{m}$

Q8. A ramp for disabled people in a hospital must slope at not more than 30°. If the height of the ramp has to be 1m, then the length of the ramp be **1 Mark**

1. $\sqrt{3}\text{m}$
2. 1m
3. 2m
4. 3m

Q9. An electric pole is $10\sqrt{3}\text{m}$ high and its shadow is 10m in length, then the angle of elevation of the sun is: **1 Mark**

1. 45°
2. 15°
3. 30°
4. 60°

Q10. From the top of a tower, 80m high, the angles of depression of two points P and Q in the same vertical plane with the tower are 45° and 75° respectively, find the value of PQ. **1 Mark**

$[\text{Use} \tan 75^\circ 2 + \sqrt{3}]$

1. $80(\sqrt{3} + 1)\text{m}$
2. $80(\sqrt{3} - 1)\text{m}$
3. $160(\sqrt{3} + 1)\text{m}$
4. $160(\sqrt{3} - 1)\text{m}$

Q11. In a right $\triangle PQR$, PR is the hypotenuse of length 20cm and $\angle P = 60^\circ$. The area of the triangle is: **1 Mark**

1. $50\sqrt{3}\text{cm}^2$
2. $100\sqrt{3}\text{cm}^2$
3. 100cm^2
4. 50cm^2

Q12. If a 1.5m tall girl stands at a distance of 3m from a lamp-post and casts a shadow of length 4.5m on the ground, then the height of the lamp-post is: **1 Mark**

1. 1.5m
2. 2m
3. 2.5m
4. 2.8m

Q13. The _____ of an object can be determined with the help of trigonometric ratios. **1 Mark**

1. Shape
2. Height
3. Weight
4. None of these

Q14. The angle of elevation of the sun when the shadow of a pole 'h' metres high is $\frac{\text{h}}{\sqrt{3}}\text{metres}$ long is: **1 Mark**

1. 60°
2. None of these
3. 30°
4. 45°

Q15. From a point on the ground, 30m away from the foot of a tower, the angle of elevation of the top of the tower is 30°. The height of the tower is: **1 Mark**

1. 10m
2. 30m
3. $10\sqrt{3}\text{m}$
4. $30\sqrt{3}\text{m}$

Q16. If the angles of elevation of a tower from two points distant a and b (a > b) from its foot and in the same straight line from it are 30° and 60°, then the height of the tower is: **1 Mark**

1. $\sqrt{a+b}$
2. $\sqrt{ab}$
3. $\sqrt{a-b}$
4. $\sqrt{\frac{a}{b}}$

Q17. The angles of depression of the foot and the top of a pole at the top of a tower of height 100 metres are 45° and 30° respectively. The height of the pole is: **1 Mark**

1. $\frac{100(3+\sqrt{3})}{2}$
2. $\frac{100(3-\sqrt{3})}{3}$
3. $100(\sqrt{3}+1)$
4. $100(\sqrt{3}-1)$

Q18. The angle of depression of a car parked on the road from the top of a 150m high tower is 30º. The distance of the car from the tower (in metres) is: **1 Mark**

1. $50\sqrt{3}$
2. $150\sqrt{3}$
3. $150\sqrt{2}$
4. 75

Q19. A ramp for disabled people in a hospital must slope at not more than 30°. If the height of the ramp has to be 1m, then the length of the ramp be: **1 Mark**

1. 3m
2. 1m
3. 2m
4. $\sqrt{3}\text{m}$

Q20. If the angles of elevation of the top of a tower from two points distant a and b from the base and in the same straight line with it are complementary, then the height of the tower is: **1 Mark**

1. ab
2. $\sqrt{ab}$
3. $\frac{a}{b}$
4. $\sqrt{\frac{a}{b}}$

Q21. The ratio between the height and the length of the shadow of a pole is $1:\sqrt{3},$ then the sun's altitude is: **1 Mark**

1. 45°
2. 30°
3. 75°
4. 60°

Q22. The _____ is the line drawn from the eye of an observer to the point in the object viewed by the observer. **1 Mark**

1. Horizontal line
2. Line of sight
3. None of these
4. Vertical line

Q23. A kite is flying at a height of 30m from the ground. The length of string from the kite to the ground is 60m. Assuming that there is no slack in the string, the angle of elevation of the kite at the ground is: **1 Mark**

1. 45°
2. 30°
3. 60°
4. 90°

Q24. If the altitude of the sun is 60°, the height of a tower which casts a shadow of length 90m is: **1 Mark**

1. 60m
2. $90\sqrt{3}\text{m}$
3. 90m
4. $60\sqrt{3}\text{m}$

Q25. The angles of elevation of the top of 12m high tower from two points in opposite directions with it are complementary. If distance of one point from its base is 16m, then distance of second point from tower's base is? **1 Mark**

1. 24m
2. 9m
3. 12m
4. 18m

Q26. The _____ is the angle between the horizontal and the line of sight to an object when the object is below the horizontal level. **1 Mark**

1. None of these
2. Angle of depression
3. Angle of projection
4. Angle of elevation

Q27. he ratio of the length of a pole and its shadow is $1:\sqrt{3}$. The angle of elevation of the sun is: **1 Mark**

1. 90°
2. 60°
3. 30°
4. 45°

Q28. Two men are on opposite sides of a tower. They observe the angles of elevation of the top of the tower as 60° and 45° respectively. If the height of the tower is 60m, then the distance between them is: **1 Mark**

1. $20(\sqrt{3}+3)\text{m}$
2. $20(3-\sqrt{3})\text{m}$
3. None of these
4. $20(\sqrt{3}-3)\text{m}$

Q29. A man on the top of an observation tower finds an object at an angle of depression 30°. After the object was moved 30 metres in a straight line towards the tower, he finds the angle of depression to be 45°. The distance of the object now from the foot of the tower in metres is: **1 Mark**

1. $15\sqrt{3}$
2. $15(\sqrt{3}+1)$
3. $15(\sqrt{3}-1)$
4. $15(2+\sqrt{3})$

Q30. A ladder 12m long just reaches the top of a vertical wall. If the ladder makes an angle of 45° with the wall, then the height of the wall is: **1 Mark**

1. $12\sqrt{2}$m
2. 6m
3. 12m
4. $6\sqrt{2}$m

Q31. _____ is an instrument for measuring the angles of elevation and depression. **1 Mark**

1. Microscope
2. Telescope
3. Periscope
4. Theodolite

Q32. A circus artist is climbing a 20m long rope, which is tightly stretched and tied from the top of a vertical pole to the ground. If the angle made by the rope with the ground level is 30°, then the height of the pole is: **1 Mark**

1. 10m
2. $10\sqrt{3}$m
3. 20m
4. $20\sqrt{3}$m

Q33. The angle formed by the line of sight with the horizontal, when the point being viewed is above the horizontal level is called: **1 Mark**

1. Vertical Angle
2. Angle of Depression
3. Angle of Elevation
4. Obtuse Angle

Q34. A 1.2m tall boy stands at a distance of 2.4m from a lamp post and casts a shadow of 3.6m on the ground. The height of the lamp post is: **1 Mark**

1. 4m
2. 6m
3. 2m
4. 3m

Q35. The shadow of a 5m long stick is 2m long. At the same time, the length of the shadow of a 12.5m high tree is: **1 Mark**

1. 3.5m
2. 5m
3. 3m
4. 4.5m

Q36. If the angle of depression of a car from a 100m high tower is 45°, then the distance of the car from the tower is: **1 Mark**

1. 100m
2. 200m
3. $100\sqrt{3}$m
4. $200\sqrt{3}$m

Q37. The angles of depression of two ships from the top of a light house are 45° and 30° towards east. If the ships are 100m apart. the height of the light house is: **1 Mark**

1. $\frac{50}{\sqrt{3+1}}$m
2. $\frac{50}{\sqrt{3-1}}$m
3. $50(\sqrt{3}-1)$m
4. $50(\sqrt{3}+1)$m

Q38. **1 Mark**

A bridge across a river makes an angle of 45° with the river bank. If the length of the bridge across the river is 200m, then the breadth of the river is:

1. $100\sqrt{2}\text{m}$
2. $200\sqrt{2}\text{m}$
3. 200m
4. 100m

Q39. If the altitude of the sum is at 60°, then the height of the vertical tower that will cast a shadow of length 30m is: **1 Mark**

1. $30\sqrt{3}\text{m}$
2. 15m
3. $\frac{30}{\sqrt{3}}\text{m}$
4. $15\sqrt{2}\text{m}$

Q40. A and B are two stations due north and south of a tower of height 25m. The angles of depression of the stations from the top of the towe r observed to be 30° and 45° respectively. The distance between the two stations is: **1 Mark**

1. $25(\sqrt{3}+1)$
2. $25(\sqrt{3}-1)\text{m}$
3. $25\sqrt{3}\text{m}$
4. $25(2+\sqrt{3})\text{m}$

Q41. A kite is flying at a height of 60m from the level ground, attached to a string inclined at 30° to the horizontal. The length of the string is: **1 Mark**

1. $40\sqrt{3}\text{m}$
2. $60\sqrt{3}\text{m}$
3. 120m
4. 60m

Q42. A pole 10m high cast a shadow 10m long on the ground, then the sun's elevation is: **1 Mark**

1. 15°
2. 45°
3. 30°
4. 60°

Q43. The ratio of the length of a rod and its shadow is $1:\sqrt{3}.$ The angle of elevation of the sum is: **1 Mark**

1. 30°
2. 45°
3. 60°
4. 90°

Q44. If a kite is flying at a height of $10\sqrt{3}\text{m}$ from the level ground attached to a string inclined at 60° to the horizontal then the length of the string is: **1 Mark**

1. $40\sqrt{3}\text{m}$
2. $60\sqrt{3}\text{m}$
3. $80\sqrt{3}\text{m}$
4. 20m

Q45. If the shadow of a boy 'x' metres high is 1.6m and the angle of elevation of the sun is 45°, then the value of 'x' is: **1 Mark**

1. 0.8m
2. 1.6m
3. 3.2m
4. 2m

Q46. A ladder 12m long rests against a wall. If it reaches the wall at a height of $6\sqrt{3}\text{m},$ then the angle of elevation is: **1 Mark**

1. 30°
2. 45°
3. 75°
4. 60°

Q47. A pole 6m high casts a shadow $2\sqrt{3}\text{m}$ long on the ground, then the Sun's elevation is: **1 Mark**

1. 60°
2. 45°
3. 30°
4. 90°

Q48. In a right triangle ABC, $\angle C = 90^\circ.$ If $AC = \sqrt{3}$ BC and $\angle B = \phi,$ then find its value. **1 Mark**

1. None of these
2. 30°
3. 45°
4. 60°

Q49. A kite is flying at a height of 200m above the ground. The string attached to the kite is temporarily tied to a point on the ground. The inclination of the string with the ground is 45°. The length of the string, assuming that there is no slack in the string is: **1 Mark**

1. 100m
2. $200\sqrt{3}\text{m}$
3. 200m
4. $100\sqrt{2}\text{m}$

Q50. From a point on the ground which is 15m away from the foot of a tower, the angle of elevation is found to be 60°. The height of the tower is: **1 Mark**

1. 10m
2. $10\sqrt{3}\text{m}$
3. $20\sqrt{3}\text{m}$
4. $15\sqrt{3}\text{m}$

Q51. If in a $\triangle ABC,\ \angle C = 90^\circ$ and $\angle B = 45^\circ,$ then state which of the following is true? **1 Mark**

1. Perpendicular = Hypotenuse
2. Base = Hypotenuse
3. Base = Perpendicular
4. Base = Hypotenuse + Perpendicular

Q52. The length of the shadow of a tower standing on level ground is found to be 2x metres longer when the sun's elevation is 30°than when it was 45°. The height of the tower in metres is: **1 Mark**

1. $(\sqrt{3}+1)\text{x}$
2. $(\sqrt{3}-1)\text{x}$
3. $2\sqrt{3}\text{x}$
4. $3\sqrt{2}\text{x}$

Q53. If the height of the tower is $\sqrt{3}$ times of the length of its shadow, then the angle of elevation of the sun is: **1 Mark**

1. 15°
2. 30°
3. 60°
4. 45°

Q54. The angle of elevation of an object viewed is the angle formed by the line of sight with the horizontal when it is: **1 Mark**

1. Above the horizontal level
2. Below the horizontal level
3. At the horizontal level
4. None of the above

Q55. If the angles of elevation of a tower from two points at distances 'm' and 'n' where m > n from its foot and in the same line from it are 30° and 60°, then the height of the tower is: **1 Mark**

1. $\sqrt{m+n}$
2. $\sqrt{mn}$
3. $\sqrt{\frac{m}{n}}$
4. $\sqrt{m-n}$

Q56. The _____ is the line drawn from the eye of an observer to the point in the object viewed by the observer. **1 Mark**

1. Horizontal line
2. Vertical line
3. None of these
4. Line of sight

Q57. If the angle of depression of an object from a 75m high tower is 30°, then the distance of the object from the tower is: **1 Mark**

1. $25\sqrt{3}m$
2. $50\sqrt{3}m$
3. $100\sqrt{3}m$
4. $75\sqrt{3}m$

Q58. A kite is flying at a height of 90m above the ground. The string attached to the kite is temporarily tied to a point on the ground. The inclination of the string with the ground is 60°. The length of the string, assuming that there is no slack in the string is: **1 Mark**

1. $60\sqrt{3}m$
2. $90m$
3. $90\sqrt{3}m$
4. $45m$

Q59. The angle of elevation of a cliff from a point A on the ground and from the point B 100m vertically above A are α and β respectively. The height of the cliff (in metres) is: **1 Mark**

1. $\frac{100\tan\beta}{\cot\beta-\cot\alpha}$
2. $\frac{100\cot\beta}{\cot\beta-\cot\alpha}$
3. $\frac{100\tan\beta}{\cot\alpha+\cot\beta}$
4. $\frac{100\cot\beta}{\cot\alpha+\cot\beta}$

Q60. In a $\triangle ABC$ right angled at B, $\angle A = 30°$ and AC = 6cm, then the lenght of BC is : **1 Mark**

1. $3\sqrt{3}cm$
2. $2\sqrt{3}cm$
3. $3cm$
4. $4\sqrt{3}cm$

Q61. A ladder makes an angle of 60° with the ground when placed against a wall. If the foot of the ladder is 2m away from the wall, then the length of the ladder (in metres) is: **1 Mark**

1. $\frac{4}{\sqrt{3}}$
2. $4\sqrt{3}$

3. $2\sqrt{2}$
4. 4

Q62. A ladder makes an angle of 60º with the ground when placed against a wall. If the foot of the ladder is 2m away from the wall, then the length of the ladder (in metres) is: **1 Mark**

1. $\frac{4}{\sqrt{3}}$
2. $4\sqrt{3}$
3. $2\sqrt{2}$
4. 4

Q63. A man standing on a level plane observes the elevation of the top of a pole to be α. He then walks a distance equal to double the height of the pole and then finds that the elevation is now 2α. Then α= **1 Mark**

1. 30°
2. 15°
3. 60°
4. 45°

Q64. If two trees of height 'x' and 'y' standing on the two ends of a road subtend angles of 30° and 60° respectively at the midpoint of the road, then the ratio of x : y is: **1 Mark**

1. 1 : 1
2. 1 : 2
3. 3 : 1
4. 1 : 3

Q65. The length of the shadow of a 20m tall pole on the ground when the sun's elevation is 45° is: **1 Mark**

1. $20\sqrt{2}\text{m}$
2. 20m
3. 40m
4. $20\sqrt{3}\text{m}$

Q66. A pole stands vertically, inside a triangular park ABC. If the angle of elevation of the top of the pole from each corner of the park is same, then the foot of the pole is at the: **1 Mark**

1. centriod
2. circumcentre
3. incentre
4. orthocentre

Q67. The angle of depression of a car, standing on the ground, from the top of a 75m tower, is 30°. The distance of the car from the base of the tower (in metres) is: **1 Mark**

1. $25\sqrt{3}$
2. $50\sqrt{3}$
3. $75\sqrt{3}$
4. 150

Q68. A boy is flying a kite, the string of the kite makes an angle of 30° with the ground. If the height of the kite is 18m, then the length of the string is: **1 Mark**

1. $18\sqrt{3}\text{m}$
2. 18m
3. 36m
4. $36\sqrt{3}\text{m}$

Q69. The angle of depression of a boat from the top of a cliff 300m high is 60°. The distance of the boat from the foot of the cliff is: **1 Mark**

1. $100\sqrt{3}$
2. 100

3. $300\sqrt{3}$

4. 300

Q70. Two men are on opposite sides of a tower. They observe the angles of elevation of the top of the tower as 30° and 45° respectively. If the height of the tower is 100m, then the distance between them is: **1 Mark**

1. $100(1-\sqrt{3})$m
2. $100(\sqrt{3}-1)$m
3. none of these
4. $100(\sqrt{3}+1)$m

Q71. Two men are on opposite sides of a tower. They observe the angles of elevation of the top of the tower as 30° and 45° respectively. If the height of the tower is 100m, then the distance between them is: **1 Mark**

1. $100(\sqrt{3}-1)$m
2. $100(\sqrt{3}+1)$m
3. none of these
4. $100(1-\sqrt{3})$m

Q72. From a point P on the level ground, the angle of elevation of the top of a tower is 30°. If the tower is 100m high, the distance between P and the foot of the tower is: **1 Mark**

1. $300\sqrt{3}$m
2. $150\sqrt{3}$m
3. $200\sqrt{3}$m
4. $100\sqrt{3}$m

Q73. From the top of a building 60m high, the angles of depression of the top and the bottom of a tower are observed to be 30° and 60°. The height of the tower is: **1 Mark**

1. 60m
2. 40m
3. 45m
4. 50m

Q74. From a point on the ground which is 15m away from the foot of a tower, the angle of elevation is found to be 60°. The height of the tower is: **1 Mark**

1. $15\sqrt{3}$m
2. $20\sqrt{3}$m
3. $10\sqrt{3}$m
4. 10m

Q75. If the shadow of a boy 'x' metres high is 1.6m and the angle of elevation of the sun is 45°, then the value of 'x' is: **1 Mark**

1. 0.8m
2. 1.6m
3. 3.2m
4. 2m

Q76. A ladder makes an angle of 60° with the ground when placed against a wall. If the foot of the ladder is 2m away from the wall, then the length of the ladder (in metres) is: **1 Mark**

1. $\frac{4}{\sqrt{3}}$
2. $4\sqrt{3}$
3. 4
4. $2\sqrt{2}$

Q77. A flag staff stands upon the top of a building. At a distance of 40m. the angles of elevation of the tops of the flag staff and building are 60° and 30° then the height of the flag staff in metres is: **1 Mark**

1. $40\sqrt{3}$
2. $\frac{40}{\sqrt{3}}$
3. $\frac{160}{\sqrt{3}}$
4. $\frac{80}{\sqrt{3}}$

Q78. An observer 1.5m tall is 23.5m away from a tower 25m high. The angle of elevation of the top of the tower from the eye of the observer is: **1 Mark**

1. 30°
2. 60°
3. 45°
4. None of these

Q79. From the top of a cliff 24m height, a man observes the angle of depression of a boat is to be 60°. The distance of the boat from the foot of the cliff is: **1 Mark**

1. $8\sqrt{3}\text{m}$
2. $8\sqrt{2}\text{m}$
3. $8\sqrt{5}\text{m}$
4. 8m

Q80. In a right triangle ABC, $\angle C = 90°$. If $AC = \sqrt{3}$ BC and $\angle B = f$, then find its value. **1 Mark**

1. 45°
2. 30°
3. None of these
4. 60°

Q81. The angle of elevation of the top of a tower from two points P and Q at distances of 'a' and 'b' respectively from the base and in the same straight line with it are complementary. The height of the tower is: **1 Mark**

1. $2\sqrt{ab}$
2. None of these
3. ab
4. $\sqrt{ab}$

Q82. A plane is observed to be approaching the airport. It is at a distance of 12km from the point of observation and makes an angle of elevation of 30° there at. Its height above the ground is: **1 Mark**

1. 6km
2. 10km
3. 12km
4. None of these

Q83. In a right $\triangle ABC$, AC is the hypotenuse of length 10cm. If $\angle A = 30°$, then the area of the triangle is: **1 Mark**

1. 25cm^2
2. $\frac{25}{3}\sqrt{3}\text{cm}^2$
3. $\frac{25}{2}\sqrt{3}\text{cm}^2$
4. $25\sqrt{3}\text{cm}^2$

Q84. An electric pole is $10\sqrt{3}\text{m}$ high and its shadow is 10m in length, then the angle of elevation of the sun is: **1 Mark**

1. 45°
2. 30°
3. 60°
4. 15°

Q85. A pole 10m high cast a shadow 10m long on the ground, then the sun's elevation is: **1 Mark**

1. 60°
2. 45°
3. 30°
4. 90°

Q86. The angle of elevation of a cloud from a point h metre above a lake is θ. The angle of depression of its reflection in the lake is 45°. The height of the cloud is: **1 Mark**

1. $\mathrm{htan}(45^\circ + \theta)$
2. $\mathrm{hcot}(45^\circ - \theta)$
3. $\mathrm{htan}(45^\circ - \theta)$
4. $\mathrm{hcot}(45^\circ + \theta)$

Q87. The angle of elevation of the top of a tower at a point on the ground 50m away from the foot of the tower is 45º. Then the height of the tower (in metres) is: **1 Mark**

1. $50\sqrt{3}$
2. 50
3. $\frac{50}{\sqrt{2}}$
4. $\frac{50}{\sqrt{3}}$

Q88. The height of the vertical pole is $\sqrt{3}$ times the length of its shadow on the ground, then angle of elevation of the sun at that time is: **1 Mark**

1. 30º
2. 60º
3. 45º
4. 75º

Q89. A 20m pole casts a 5m long shadow. If at the same time of the day, a building casts a shadow of 20m, how high is the building? **1 Mark**

1. 400m
2. 4m
3. 80m
4. 100m

Q90. If the angle of elevation of a tower from a distance of 100 metres from its foot is 60°, then the height of the tower is: **1 Mark**

1. $100\sqrt{3}\mathrm{m}$
2. $\frac{100}{\sqrt{3}}\mathrm{m}$
3. $50\sqrt{3}$
4. $\frac{200}{\sqrt{3}}\mathrm{m}$

Q91. A river is 60m wide. A tree of unknown height is on one bank. The angle of elevation of the top of the tree from the point exactly opposite to the foot of the tree, on the other bank, is 30°. The height of the tree is: **1 Mark**

1. $60\sqrt{3}\mathrm{m}$
2. $20\sqrt{3}\mathrm{m}$
3. $10\sqrt{3}\mathrm{m}$
4. $30\sqrt{3}\mathrm{m}$

Q92. The _____ of an object is the angle formed by the line of sight with the horizontal when the object is above the horizontal level. **1 Mark**

1. Angle of projection
2. Angle of depression

3. Angle of elevation
4. None of these

Q93. A kite is flying at a height of 90m above the ground. The string attached to the kite is temporarily tied to a point on the ground. The inclination of the string with the ground is 60°. The length of the string, assuming that there is no slack in the string is: **1 Mark**

1. $90\sqrt{3}\text{m}$
2. $60\sqrt{3}\text{m}$
3. 90m
4. 45m

Q94. The ratio between the height and the length of the shadow of a pole is $\sqrt{3}:1,$ then the sun's altitude is: **1 Mark**

1. 30°
2. 45°
3. 75°
4. 60°

Q95. A ladder 14m long rests against a wall. If the foot of the ladder is 7m from the wall, then the angle of elevation is: **1 Mark**

1. 60°
2. 45°
3. 30°
4. 75°

Q96. If the length of the shadow of a tower is equal to its height, then the angle of elevation of the sun is a: **1 Mark**

1. 30°
2. 45°
3. 60°
4. 75°

Q97. If the length of a shadow of a tower is increasing, then the angle of elevation of the sun is: **1 Mark**

1. Decreasing
2. Increasing
3. Zero
4. Neither increasing nor decreasing

Q98. The angle of elevation of the sun, when the length of the shadow of a pole is equal to its height, is: **1 Mark**

1. 30°
2. 45°
3. 60°
4. 90°

Q99. The ratio between the height and the length of the shadow of a pole is $3-\sqrt{3}:1,$ then the sun's altitude is: **1 Mark**

1. 45°
2. 30°
3. 75°
4. 60°

Q100. From a point P on the level ground, the angle of elevation of the top of a tower is 30°. If the tower is 100m high, the distance between P and the foot of the tower is: **1 Mark**

1. $100\sqrt{3}\text{m}$
2. $300\sqrt{3}\text{m}$
3. $150\sqrt{3}\text{m}$
4. $200\sqrt{3}\text{m}$

Q101. **1 Mark**

If the angle of depression of an object from a 75m high tower is 30°, then the distance of the object from the tower is:

1. $75\sqrt{3}\text{m}$
2. $25\sqrt{3}\text{m}$
3. $100\sqrt{3}\text{m}$
4. $50\sqrt{3}\text{m}$

Q102. A pole 10m high cast a shadow 10m long on the ground, then the sun's elevation is: **1 Mark**

1. 60°
2. 15°
3. 45°
4. 30°

Q103. The angle of elevation of the sun when the shadow of a pole of height 'h' metres is $\sqrt{3}\text{h metres}$ long is: **1 Mark**

1. 45°
2. 30°
3. 60°
4. None of these

Q104. The ratio of the length of a pole and its shadow is 1: $\sqrt{3}$. The angle of elevation of the sun is: **1 Mark**

1. 90°
2. 60°
3. 45°
4. 30°

Q105. The length of shadow of a tower on the plane ground is $\sqrt{3}$ times the height of the tower.The angle of elevation of sun is: **1 Mark**

1. 45°
2. 30°
3. 60°
4. 90°

Q106. From the top of a cliff 25m high the angle of elevation of a tower is found to be equal to the angle of depression of the foot of the tower. The height of the tower is: **1 Mark**

1. 25m
2. 50m
3. 75m
4. 100m

Q107. The top of a broken tree has its top touching the ground at a distance of 10m from the bottom. If the angle made by the broken part with the ground is 30°, then the length of the broken part is: **1 Mark**

1. $\frac{20}{\sqrt{3}\text{m}}$
2. $20\sqrt{3}\text{m}$
3. $10\sqrt{3}\text{m}$
4. 20m

Q108. The angles of elevation of the top of a tower from two points on the ground at distances 8m and 18m from the base of the tower and in the same straight line with it are complementary. The height of the tower is: **1 Mark**

1. 8m
2. 12m
3. 18m
4. 16m

Q109. A pole 15m long rests against a vertical wall at an angle of 30° with the ground How high up the wall does the pole reach? **1 Mark**

1. 5m
2. 7m
3. 7.5m
4. 8m

Q110. A person walking 50 metres towards a chimney in a horizontal line. The angle of elevation of its top changes from 30° to 45°. Height of the chimney (in metres) is: **1 Mark**

1. $25(3+\sqrt{3})$m
2. $50(\sqrt{3}+1)$m
3. $25(\sqrt{3}+1)$m
4. $25(\sqrt{3}-1)$m

Q111. The tops of two poles of height 16m and 10m are connected by a wire. If the wire makes an angle of 60° with the horizontal, then the length of the wire is: **1 Mark**

1. 12m
2. 10m
3. $10\sqrt{3}$m
4. 16m

Q112. The angles of elevation of the top of a tower from two points on the ground at distances 8m and 18m from the base of the tower and in the same straight line with it are complementary. The height of the tower is: **1 Mark**

1. 12m
2. 18m
3. 8m
4. 16m

Q113. A balloon moving in a straight line passes vertically above two points A and B on horizontal plane 1000 ft apart. When above A it has an altitude of 60° as seen from B. When above B it has an altitude of 45° as seen from A. The distance of B from the point at which it will touch the plane is: **1 Mark**

1. $500(\sqrt{3}+1)$ft
2. 1500 ft
3. $500(3+\sqrt{3})$ ft
4. 500 ft

Q114. If the height of a tower and the distance of the point of observation from its foot, both, are increased by 10%, then the angle of elevation of its top: **1 Mark**

1. None of these
2. Remains unchanged
3. Increases
4. Decreases

Q115. If the angle of depression of a car from a 100m high tower is 45°, then the distance of the car from the tower is: **1 Mark**

1. $200\sqrt{3}$m
2. 200m
3. $100\sqrt{3}$m
4. 100m

Q116. The _____ is the angle between the horizontal and the line of sight to an object when the object is below the horizontal level. **1 Mark**

1. Angle of projection
2. Angle of elevation
3. None of these
4. Angle of depression

Q117. **1 Mark**

The upper part of a tree broken by the windfalls to the ground without being detached. The top of the broken part touches the ground at an angle of 30° at a point 8m from the foot of the tree. The original height of the tree is:

1. 8m
2. $8\sqrt{3}\text{m}$
3. $24\sqrt{3}\text{m}$
4. 24m

Q118. If the height of a vertical pole is $\sqrt{3}$ times the length of its shadow on the ground, then the angle of elevation of the sun at that time is: **1 Mark**

1. 30°
2. 60°
3. 45°
4. 75°

Q119. A vertical tower stands on a horizontal plane and is surmounted by a vertical flag staff of height 5m. From a point on the plane the angles of elevation of the bottom and top of the flagstaff are respectively 30° and 60°. The height of the tower is: **1 Mark**

1. 5m
2. 2.5m
3. 2m
4. 10m

Q120. The _____ of an object is the angle formed by the line of sight with the horizontal when the object is above the horizontal level. **1 Mark**

1. Angle of elevation
2. Angle of depression
3. Angle of projection
4. None of these

Q121. The horizontal distance between two towers is 60m and angular depression of the top of the first as seen from the second, which is 150m in height, is 30°. The height of the first tower is: **1 Mark**

1. $\left(150+20\sqrt{3}\right)\text{m}$
2. $\left(150+15\sqrt{3}\right)\text{m}$
3. $\left(150-20\sqrt{5}\right)\text{m}$
4. $\left(150-20\sqrt{3}\right)\text{m}$

Q122. The tops of two poles of height 16m and 10m are connected by a wire of length l metres. If the wire makes an angle of 30° with the horizontal, then l = **1 Mark**

1. 26
2. 16
3. 12
4. 10

Q123. The angles of elevation of top of a pole from two points A and B on the horizontal line lying on opposite side of the pole are observed to be 30° and 60° If AB = 100m, then height of the pole is: **1 Mark**

1. $20\sqrt{3}\text{m}$
2. $15\sqrt{3}\text{m}$
3. $10\sqrt{3}\text{m}$
4. $25\sqrt{3}\text{m}$

Q124. If the shadow of a tower is $\sqrt{3}$ times of its height, the altitude of the sun is: **1 Mark**

1. 15°
2. 30°
3. 45°
4. 60°

Q125. If the height of a tower is half the height of the flagstaff on it and the angle of elevation of the top of the tower as seen from a point on the ground is 30°, then the angle of elevation of the top of the flagstaff as seen from the same point is: **1 Mark**

1. None of these
2. 60º
3. 45º
4. 30º

Q126. A vertical stick 20cm long casts a shadow 15cm long. At the same time, a tower casts a shadow 30m long. The height of the tower is: **1 Mark**

1. 40m
2. 20m
3. 30m
4. 15m

Q127. A ladder makes an angle of 60° with the ground when placed against a wall. If the foot of the ladder is 2m away from the wall, then the length of the ladder (in metres) is: **1 Mark**

1. $\frac{4}{\sqrt{3}}$
2. $4\sqrt{3}$
3. $2\sqrt{2}$
4. 4

Q128. The measure of the angle of elevation of the top of a tower $75\sqrt{3}\text{m}$ high from a point at a distance of 75m from the foot of the tower in a horizontal plane is: **1 Mark**

1. 60°
2. 45°
3. 15°
4. 30°

Q129. The angle of elevation of the top of a tower from a point on the ground and at a distance of 30m from its foot is 30°. The height of the tower is: **1 Mark**

1. $30\sqrt{3}\text{m}$
2. 10m
3. $10\sqrt{3}\text{m}$
4. 30m

Q130. A ladder makes an angle of 60° with the ground when placed against a wall. If the foot of the ladder is 2 m away from the wall, then the length of the ladder (in metres) is: **1 Mark**

1. $\frac{4}{\sqrt{3}}$
2. $4\sqrt{3}$
3. $2\sqrt{2}$
4. 4

Q131. From a light house the angles of depression of two ships on opposite sides of the light house are observed to be 30° and 45°. If the height of the light house is h metres, the distance between the ships is: **1 Mark**

1. $(\sqrt{3}+1)\text{h meters}$
2. $(\sqrt{3}-1)\text{h meters}$
3. $\sqrt{3}\text{h meters}$
4. $1+\left(1+\frac{1}{\sqrt{3}}\right)\text{h meters}$

Q132. **1 Mark**

An electric pole is tied from the top to a point (some distance away from the base) on the ground using a string. The ratio of the height of pole to the string is $\sqrt{3}:22,$ then the angle of elevation of the top from the point on the ground is:

1. 45°
2. None of these
3. 30°
4. 60°

Q133. A tower subtends an angle of 30° at a point on the same level as its foot. At a second point hmetres above the first, the depression of the foot of the tower is 60°. The height of the tower is: **1 Mark**

1. $\frac{\mathrm{h}}{2}\mathrm{m}$
2. $\sqrt{3}\mathrm{h}\ \mathrm{m}$
3. $\frac{\mathrm{h}}{3}\mathrm{m}$
4. $\frac{\mathrm{h}}{\sqrt{3}}\mathrm{m}$

Q134. A circus artist is climbing a long rope, which is tightly stretched and tied from the top of a vertical pole to the ground. The ratio of the height of the pole to the length of the string is $1:\sqrt{2}.$ The angle made by the rope with the ground level is: **1 Mark**

1. 45°
2. 60°
3. 30°
4. None of these

Q135. The shadow of a tower on a level plane is found to be 60 metres longer when the sun's altitude is 30° than that when it is 45°. The height of the tower in metres is: **1 Mark**

1. $30(\sqrt{3}+1)$
2. $30(\sqrt{3}-1)$
3. $30(3+\sqrt{3})$
4. $30(3-\sqrt{3})$

Q136. If altitude of the sun is 60°, the height of a tower which casts a shadow of length 30m is: **1 Mark**

1. $10\sqrt{3}\mathrm{m}$
2. $15\sqrt{3}\mathrm{m}$
3. $20\sqrt{3}\mathrm{m}$
4. $30\sqrt{3}\mathrm{m}$

Q137. The angle of elevation of the top of a tower at a point on the ground 50m away from the foot of the tower is 45°. Then the height of the tower (in metres) is: **1 Mark**

1. 50
2. $50\sqrt{3}$
3. $\frac{50}{\sqrt{2}}$
4. $\frac{50}{\sqrt{3}}$

Q138. A ladder 15m long just reaches the top of a vertical wall. If the ladder makes an angle of 60° with the wall, then the height of the wall is: **1 Mark**

1. $15\sqrt{3}\mathrm{m}$
2. $\frac{15\sqrt{3}}{2}\mathrm{m}$
3. $\frac{15}{2}\mathrm{m}$
4. $15\mathrm{m}$

Q139. **1 Mark**

A tree 12m high is broken by the wind in such a way that its top touches the ground and makes an angle 30° with the ground. The height at which from the bottom the tree is broken by the wind is:

1. 9m
2. 6m
3. 4m
4. 8m

Q140. A pole of height 60m has a shadow of length $20\sqrt{3}\text{m}$ at a particular instant of time. The angle of elevation of the sun at this point of time. **1 Mark**

1. 30°
2. 60°
3. 45°
4. None of these

Q141. A pole 6m high casts a shadow $2\sqrt{3}\text{m}$ long on the ground, then the sun's elevation is: **1 Mark**

1. 60°
2. 30°
3. 45°
4. 75°

Q142. If the angle of elevation of a cloud from a point 200m above a lake is 30° and the angle of depression of its reflection in the lake is 60°, then the height of the cloud above the lake is: **1 Mark**

1. 200m
2. 500m
3. 30m
4. 400m

Q143. If the length of the shadow of a tower is $\sqrt{3}$ times that of its height, then the angle of elevation of the sun is: **1 Mark**

1. 45°
2. 60°
3. 75°
4. 30°

Q144. If the height of the tower is $\sqrt{3}$ times of the length of its shadow, then the angle of elevation of the sun is: **1 Mark**

1. 30°
2. 60°
3. 45°
4. 15°

Q145. The angle of elevation of the top of a hill at the foot of a tower is 60° and the angle of elevation of the top of the tower from the foot of the hill is 30°. If the tower is 50m high, then the height of the hill is: **1 Mark**

1. 150m
2. $50\sqrt{3}\text{m}$
3. $150\sqrt{3}\text{m}$
4. $100\sqrt{3}\text{m}$

Q146. If the altitude of the sun is 60°, the height of a tower which casts a shadow of length 90m is: **1 Mark**

1. $90\sqrt{3}\text{m}$
2. 60m
3. 90m
4. $60\sqrt{3}\text{m}$

Q147. A pole casts a shadow of length $2\sqrt{3}\text{m}$ on the ground when the sun's elevation is 60°. The height of the pole is: **1 Mark**

1. 6m

2. $4\sqrt{3}$m
3. 12m
4. 3m

Q148. The angle of elevation and the angle of depression from an object on the ground to an object in the air are related as: **1 Mark**

1. Equal
2. Less than
3. None of these
4. Greater than