

PREVIOUS YEAR QUESTION PAPER

PATH - 2019

PRERNA AMBITIOUS TALENT HUNT

Time Allotted : 2 Hours

Maximum Marks : 180

- Please read the instructions carefully. You are allotted 5 minutes specifically for this purpose.
- You are not allowed to leave the Examination Hall before the end of the test.

INSTRUCTIONS

A. General Instructions :

1. There are 1 to 45 Question. Attempt ALL the questions. Answers have to be marked on the OMR sheets.
2. Rough spaces are provided for rough work inside the question paper. No additional sheets will be provided for rough work.
3. Blank Papers, clip boards, log tables, slide rule, calculator, cellular phones, pagers and electronic device in any form, are not allowed.

B. Filling of OMR Sheet :

1. Ensure matching of OMR sheet with the question paper before you start marking your answers on OMR sheet.
2. On the OMR sheet, darken the appropriate bubble with black/blue pen for each character of your Enrollment No. and write your Name, Test Centre and other details at the designated places.
3. OMR sheet contains alphabets, numerals & special characters for making answer.

C. Marking Scheme for All Three Parts :

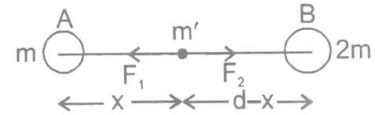
1. This booklet contains 45 questions & all questions are compulsory.
2. For each question you will be **awarded 4 marks** if you have darkened **only** the bubble corresponding to the correct answer and **zero mark** if no bubbles are darkened. In all other cases, **minus one (-1) mark** will be awarded.

Name of Candidate :

Registration No. :

1. A car covers the 1st half of the distance between two places at a speed of 40 km h^{-1} and the 2nd half at 60 km h^{-1} . What is the average speed of the car ?
(A) 48 km/h (B) 44 km/h (C) 38 km/h (D) 36 km/h
2. A hunter of 45 kg is standing on ice and fires a bullet of 100 gram with a velocity of 500 ms^{-1} by a gun of 5 kg . Find the recoil velocity of the hunter.
(A) 1 m/s (B) 4 m/s (C) 6 m/s (D) 8 m/s
3. Calculate the amount of glucose required to prepare 250 g of 5% solution of glucose by mass.
(A) 12.5 g (B) 14.5 g (C) 15.5 g (D) 18.5 g
4. The boiling point of alcohol is 78°C . What will be the temperature in Kelvin scale ?
(A) 373 K (B) 351 K (C) 375 K (D) 78 K
5. 10°C temperature is equal to -
(A) 163 K (B) 10 K (C) 183 K (D) 283 K
6. One atmosphere is equal to -
(A) $1.01 \times 10^5 \text{ Pa}$ (B) $3.46 \times 10^4 \text{ Pa}$ (C) 1 Pa (D) 10 Pa
7. How much water should be added to 16 ml acetone to make its concentration 48% ?
(A) 17.33 ml (B) 15.33 ml (C) 14.33 ml (D) 12.33 ml
8. The relative density of silver is 10.5 . The density of water is 10^3 kg/m^3 . What is the density of silver in S.I. unit ?
(A) $10.5 \times 10^3 \text{ kg/m}^3$. (B) $11.5 \times 10^3 \text{ kg/m}^3$. (C) $9.5 \times 10^3 \text{ kg/m}^3$. (D) $8.5 \times 10^3 \text{ kg/m}^3$.
9. What is the work to be done to increase the velocity of a car from 30 km/h to 60 km/h . If mass of the car is 1500 kg .
(A) $1.56 \times 10^5 \text{ J}$. (B) $1.56 \times 10^3 \text{ J}$. (C) $6 \times 10^5 \text{ J}$. (D) $3 \times 10^5 \text{ J}$.
10. Latent heat of vaporization of water is -
(A) $2.25 \times 10^2 \text{ J/kg}$ (B) $22.5 \times 10^5 \text{ J/kg}$ (C) $3.34 \times 10^5 \text{ J/kg}$ (D) $33.4 \times 10^2 \text{ J/kg}$
11. Which of the following is not a compound ?
(A) Marble (B) Washing soda (C) Quick lime (D) Brass
12. The elements which give out harmful radiation are called -
(A) normal elements (B) representative elements
(C) radioactive elements (D) none of these
13. The particle size of solute in true solution is of the order of -
(A) 10^{-6} m (B) 10^{-7} m (C) 10^{-8} m (D) 10^{-9} m

14. Two bodies A and B having mass m and $2m$ respectively are kept at a distance d apart. Where should a small particle be placed so that the net gravitational force on it due to the bodies A and B is zero ?



- (A) $x = \frac{d}{(1+\sqrt{2})^2}$ (B) $x = \frac{d}{(1+\sqrt{2})^4}$ (C) $x = \frac{d}{(1+\sqrt{2})^3}$ (D) $x = \frac{d}{(1+\sqrt{2})}$
15. Air is regarded as a -
 (A) compound (B) mixture (C) element (D) electrolyte
16. Simplify

$$4\sqrt{3} + 3\sqrt{48} - \frac{5}{2}\sqrt{\frac{1}{3}} = 4\sqrt{3} + 3\sqrt{16 \times 3} - \frac{5}{2}\sqrt{\frac{1 \times 3}{3 \times 3}}$$

- (A) $= 2\frac{91}{6}\sqrt{3}$ (B) $= \frac{91}{6}\sqrt{3}$ (C) $= 5\frac{91}{6}\sqrt{3}$ (D) $= 6\frac{91}{6}\sqrt{3}$
17. Rationalize the denominator of

$$\frac{a^2}{\sqrt{a^2 + b^2} - b}$$

- (A) $(\sqrt{a^2 + b^2} - b)$ (B) $2(\sqrt{a^2 + b^2} - b)$ (C) $3(\sqrt{a^2 + b^2} - b)$ (D) $4(\sqrt{a^2 + b^2} - b)$
18. If $\sqrt{3} = 1.732$, find the value of $\frac{1}{\sqrt{3}-1}$

- (A) 1.366 (B) 2.366 (C) 4.366 (D) 6.366
19. If $\sqrt{5} = 2.236$ and $\sqrt{2} = 1.414$, then Evaluate : $\frac{3}{\sqrt{5} + \sqrt{2}} + \frac{4}{\sqrt{5} - \sqrt{2}}$

- (A) 5.6 (B) 6.6 (C) 8.6 (D) 6.9

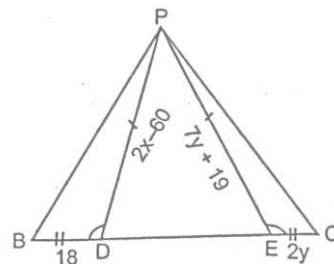
20. Simplify : $\frac{16 \times 2^{n+1} - 4 \times 2^n}{16 \times 2^{n+2} - 2 \times 2^{n+2}}$

- (A) 1/5 (B) 1/4 (C) 1/2 (D) 1/3
21. Factorise : $-10x^2 + 31x - 24$

- (A) $(3 - 2x)(5x - 8)$ (B) $2(3 - 2x)(5x - 8)$ (C) $4(3 - 2x)(5x - 8)$ (D) $3(3 - 2x)(5x - 8)$

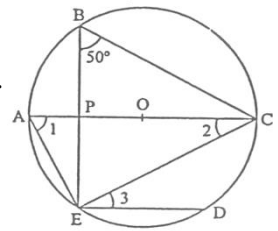
22. In figure, the congruent parts of triangles have been indicated by line markings. Find the values of x & y .

- (A) 16 & 9 (B) 15 & 9
 (C) 14 & 9 (D) 71 & 9



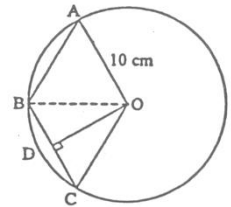
23. In the given figure, the chord ED is parallel to the diameter AC. Find $\angle CED$.

- (A) 50° (B) 40° (C) 60° (D) 70°



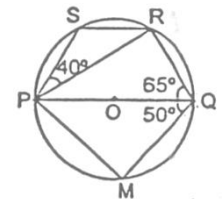
24. OABC is a rhombus whose three vertices, A, B and C lie on a circle with centre O. If the radius of the circle is 10 cm. Find the area of the rhombus.

- (A) $2 \times 25\sqrt{3}$ sq. cm. (B) $225\sqrt{3}$ sq. cm.
 (C) $125\sqrt{3}$ sq. cm. (D) $425\sqrt{3}$ sq. cm.



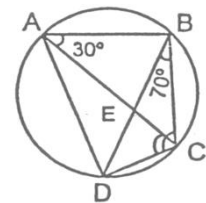
25. In figure, PQ is a diameter of a circle with centre O. If $\angle PQR = 65^\circ$, $\angle SPR = 40^\circ$, $\angle PQM = 50^\circ$, find angle QPM.

- (A) 60° (B) 40°
 (C) 50° (D) 30°



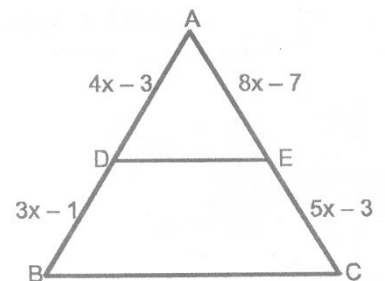
26. ABCD is a cyclic quadrilateral whose diagonals intersect at a point E. If $\angle DBC = 70^\circ$, angle BAC is 30° , find angle BCD.

- (A) 40° (B) 80°
 (C) 60° (D) 50°



27. In a $\triangle ABC$, D and E are points on the sides AB and AC respectively such that $DE \parallel BC$. If $AD = 4x - 3$, $AE = 8x - 7$, $BD = 3x - 1$ and $CE = 5x - 3$, find the value of x.

- (A) 3 (B) 1
 (C) 8 (D) 2



28. Simplify : $\left[3\frac{1}{3} \div \left\{ 1\frac{1}{2} - \frac{1}{2} \left(2\frac{1}{2} - \frac{1}{4} - \frac{1}{6} \right) \right\} \right]$

- (A) 23 (B) 72.7 (C) 31 (D) 78

29. if Rs. 782 be divided into three parts, proportional to $\frac{1}{2} : \frac{2}{3} : \frac{2}{4}$, then find the first part.

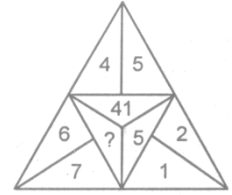
- (A) 2 (B) 204 (C) 31 (D) 24

30. By melting a solid cylindrical metal, a few conical materials are to be made. If three times the radius of the cone is equal to twice the radius of the cylinder and the ratio of the height of the cylinder and the height of the cone is 4 : 3, find the number of cones which can be made.

- (A) 9 (B) 6 (C) 8 (D) 4

31. ? is

- (A) 16 (B) 9 (C) 85 (D) 112



32. if $D = 4$ and $COVER = 63$, then $BASIS = ?$

- (A) 49 (B) 50 (C) 54 (D) 55

33. In a row of girls, Mardula is 18th from the right and Sanjana is 18th from the left. If both of them exchange their position, Sanjana becomes 25th from the left, how many girls are there in the row?

- (A) 40 (B) 41 (C) 42 (D) 35

34. If $p + q = r$, then it is not possible that

- (A) $p > q > r$ (B) $p < q + r$ (C) $p \times q > r$ (D) $p + q \times r$

35. Soni, who is Dubey's daughter, says to Preeti, "Your mother Shyama is the youngest sister of my father, Dubey's Father's Third child is Prabhat". How is Prabhat related to Preeti ?

- (A) Uncle (B) Father (C) grandmother (D) Father is law

36. Sanjay went 70 metres in the East before turning to his right. he went 10 metres before turning to his right again and went 10 metres from this point. From there he went 90 metres to the North. How far was he from the starting point?

- (A) 80 metres (B) 100 meters (C) 140 metres (D) 260 metres

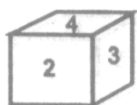
37. On what dates of October, 1975 did Tuesday fall ?

- (A) 3 Odd days (B) 2 Even days (C) 0 (D) All Answer

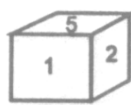
38. The time in the clock is 4 : 46, what is the mirror image ?

- (A) 7:14 (B) 4:64 (C) 8:46 (D) 12:64

39. From the following figures of dice, find which number will come in place of '?'



(i)



(ii)

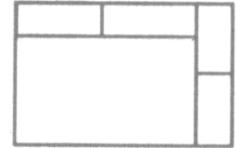


(iii)

- (A) 4 (B) 5 (C) 2 (D) 3

40. What is the number of rectangles in the following figure ?

- A. 6
B. 7
C. 8
D. 9



41. Ravi traveled 4 km straight towards south. He turned left and traveled 6 km straight, then turned right and traveled 4 km straight. How far is he from the starting point ?
(A) 8 km (B) 10 km (C) 12 km (D) 18 km
42. Find the days of the week on 16 January, 1969.
(A) Tuesday (B) Thursday (C) Friday (D) Monday
43. 3, 6, 24, 30, 63, 72, ?, 132
(A) 30 (B) 40 (C) 80 (D) 120
44. (ABC) - 6, (DEF) - 15, (GHI) - 24 ?
(A) (JKL) - 33 (B) (RTY) - 34 (C) (LOK) - 38 (D) (MNO) - 32
45. If AJAY is written as 1117, then is same code NAMA would be written as
(A) 5114 (B) 5411 (C) 5141 (D) 4511

