



14. What horse power engine is required to lift 18.24 quintals of coal per minute from a mine 50m deep?  
(Take  $g = 10\text{ms}^{-1}$ )  
A) 20 hp                      B) 20.6 hp                      C) 20.5 hp                      D) 20.4 hp
15. The heart does 2.5J of work in each heart beat. How many times per minute does it beat, if its power is 4 watt.  
A) 96 times                      B) 60 times                      C) 120 times                      D) 70 times

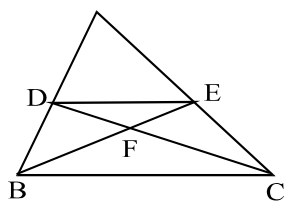
### CHEMISTRY

16. An isotone of  ${}^{76}_{32}\text{Ge}$  is :  
A)  ${}^{77}_{32}\text{Ge}$                       B)  ${}^{77}_{33}\text{As}$                       C)  ${}^{77}_{34}\text{Se}$                       D)  ${}^{81}_{36}\text{Kr}$
17. Rutherford's alpha scattering experiment eventually lead to conclusion that :  
A) Mass and energy are related  
B) Electron occupy empty space around the nucleus  
C) Neutrons are buried deep in the nucleus  
D) All of these
18. In which of the following the number of proton is greater than the number of neutrons, but the number of proton is less than the number of electrons :  
A)  $\text{D}_3\text{O}^+$                       B)  $\text{SO}_2$                       C)  $\text{H}_2\text{O}$                       D)  $\text{OH}^-$
19. The total number of neutron present in  ${}^{24}_{12}\text{Mg}$  is :  
A) 12                      B) 13                      C) 14                      D) 10
20. Bohr orbits are called stationary state because :  
A) Electrons in them are stationary  
B) Their orbits have fixed radii  
C) The electrons in them have fixed energy  
D) All are correct
21. Atomic number of an element is equal to the number of :  
A) electrons                      B) protons  
C) neutrons                      D) either electrons or protons
22. Deflection back of  $\alpha$  – particles on hitting thin foil of gold shows that :  
A) Nucleus is heavy                      B) Nucleus is small  
C) Both A & B                      D) Electron create hinderance in the movement of  $\alpha$  – particles
23. The atomic mass of an element is 19. The second shell of its atom contain 7 electrons. The number of neutrons in its nucleus is :  
A) 10                      B) 9                      C) 7                      D) 12
24. The shape of 'P' orbital is :  
A) Sphere                      B) Dump bell                      C) Oval                      D) None
25. Which of the following shows radio activity :  
A) Co                      B) Fe                      C) Cu                      D) Zn
26. The valency of Na is :  
A) 0                      B) 1                      C) 2                      D) 3
27. The correct electronic configuration of  $\text{H}^+$  is :  
A)  $1s^0$                       B)  $1s^2$                       C)  $1s^3$                       D)  $1s^1$
28. Maximum number of electron present in 'N' shell is :  
A) 18                      B) 32                      C) 2                      D) 8

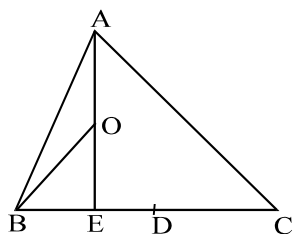




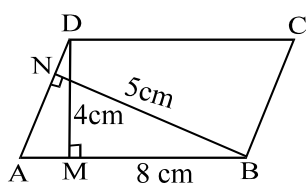
52. In the given figure  $DE \parallel BC$  and  $AD : DB = 5 : 4$ . Then  $\frac{\text{area}(\triangle DFE)}{\text{area}(\triangle CFB)}$  :



- A) 5 : 9                      B) 25 : 16                      C) 25 : 81                      D) None of these
53. Given two triangles, which are similar, of which has twice the perimeter of the other. By what factor is the area of the larger triangle bigger than the smaller.
- A) 2                      B) 4                      C)  $\sqrt{2}$                       D)  $2\sqrt{2}$
54. D is the mid point of side BC of  $\triangle ABC$  and E is the midpoint of BD. If O is the midpoint of BD. If O is the midpoint of AE, then  $\text{ar}(\triangle BOE) : \text{ar}(\triangle ABC) =$

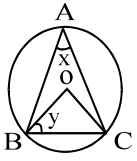


- A) 1 : 4                      B) 2 : 4                      C) 1 : 8                      D) None
55. In a parallelogram ABCD,  $AB = 8$  cm. The altitudes to sides AB and AD are respectively 4cm and 5cm. Then AD =



- A) 6.8 cm                      B) 6.4 cm                      C) 4.6 cm                      D) None of these
56. The sides BA and CD of a cyclic quadrilateral ABCD are produced to meet at P. The sides DA and CB are produced to meet at Q. If  $\angle ADC = 85^\circ$  and  $\angle BPC = 40^\circ$  then  $\angle COD$  equals :
- A)  $50^\circ$                       B)  $45^\circ$                       C)  $30^\circ$                       D)  $75^\circ$
57. In a circle of radius 10cm, the length of chord whose distance is 6cm from the centre is :
- A) 4 cm                      B) 5cm                      C) 8 cm                      D) 16 cm
58. In the given figure, if C is the centre of the circle and  $\angle PQC = 25^\circ$  and  $\angle PRC = 15^\circ$ , then  $\angle QCR$  is equal to :
- A)  $40^\circ$                       B)  $60^\circ$                       C)  $80^\circ$                       D)  $120^\circ$
59. In a cyclic quadrilateral, if  $\angle A - \angle C = 70^\circ$  then the greater of the angles A and C is equal to :
- A)  $95^\circ$                       B)  $105^\circ$                       C)  $125^\circ$                       D)  $115^\circ$

60. O is the centre of the circle BC is a chord of the circle and point A lies on the circle. If  $\angle BAC = x$ ,  $\angle OBC = y$  then  $x + y =$



A)  $> 90^\circ$

B)  $= 90^\circ$

C)  $< 90^\circ$

D)  $> 180^\circ$

**PHYSICS**

1. B
2. C
3. D
4. A
5. C
6. B
7. C
8. C
9. B
10. A
11. D
12. A
13. C
14. D
15. A

**CHEMISTRY**

16. B
17. B
18. D
19. A
20. B
21. D
22. C
23. A
24. B
25. A
26. B
27. A
28. B
29. A
30. C

**BIOLOGY**

31. B
32. B
33. C
34. C
35. D
36. C
37. B
38. A
39. C
40. C
41. B
42. A
43. C
44. C
45. B

**MATHEMATICS**

46. C
47. D
48. C
49. A
50. A
51. B
52. C
53. B
54. C
55. B
56. A
57. D
58. C
59. C
60. B