Section : I - Aptitude and Logical Reasoning

1. In a family of six persons A, B, C, D, E & F
There are two married couples.
D is grandmother of A and mother of B.
C is wife of B and mother of F.
F is the granddaughter of E.
Who among the following is one of the couples?

(a) EB (b) CD (c) DE (d) EC

2. Morris is facing north and walks 10 kms. He turns 270^o anti clockwise and walks 15 kms. Now, he again turns 45^o clockwise and walks for 25 kms. Which direction is he facing now ?
(a) North- East (b) South- East (c) South (d) North

3. ODD MAN OUT
22, 33, 66, 99, 121, 279, 594
(a) 279 (b) 99 (c) 121 (d) 22

4. If LIFE is coded as FELI, how is MORE coded as
(a) MERO (b) EROM (c) REMO (d) OREM

5. 

What figure logically completes the series?
(a) (b) (c) (d)

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Section : II -Mathematics

6. What is the value of $\frac{0.96\times0.96\times0.96+0.04\times0.04\times0.04}{0.96\times0.96-0.96\times0.04+0.04\times0.04}$?

(a) 0 (b) 2 (c) 1 (d) Not defined

7. Find the remainder if $2x^4+x^3+5x^2+7x+3$ is divided by x^2+2.

(a) $5x+1$ (b) $5x-1$ (c) $-5x-1$ (d) $-5x+1$

8. If $4a^2+9b^2+c^2=100$, and $3ab+ac+\frac{3}{2}bc=11$, then what is the value of $2a+3b+c$?

(a) 10 (b) 11 (c) 12 (d) 13

9. If $x^2+\frac{1}{x^2}=79$, what is the value of $x+\frac{1}{x}$?

(a) 7 (b) 9 (c) $\sqrt{79}$ (d) 81

10. Which of the following is not polynomial?

(a) x^2+x+3 (b) x^7+1 (c) $x+\frac{1}{x}+2$ (d) 7

11. Simplify the following expression: $\frac{36\times x^{-3}}{6^{-2}\times12\times x^{-5}}$

(a) $108x^2$ (b) $\frac{3}{36x^2}$ (c) $\frac{72}{x^2}$ (d) $3x^2$

12. Express the number $\frac{1}{80000000}$ in standard form.

(a) $\frac{1}{8\times10^8}$ (b) $\frac{8}{10^8}$ (c) 1.25×10^{-7} (d) 1.25×10^{-8}

13. The HCF of two numbers is 6 and the product of the two numbers is 4320. How many pairs of numbers exists, which satisfies the above conditions?

(a) 2 (b) 3 (c) 4 (d) 5

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14. The highest common factor of $\frac{4}{3}, \frac{64}{9}, \frac{8}{81}, \frac{32}{27}$

(a) $\frac{4}{81}$ (b) $\frac{64}{3}$ (c) $\frac{160}{3}$ (d) $\frac{160}{81}$

15. A number leaves a remainder of 3 when divided by 4, 5, 6, 8, 10, 20 and 40. What is the smallest three-digit number that satisfies this condition?
(a) 107 (b) 188 (c) 103 (d) 123

Section : III - Science

16. A pendulum clock loses 12 seconds in 3 hours. How much time will it lose in 1 day?
(a) 48 seconds (b) 72 seconds (c) 96 seconds (d) 120 seconds

17. A measuring cylinder contains 40 mL of water. A stone is completely dipped into it, and the level rises to 54 mL. If the mass of the stone is 28 g, find its density.
(a) 1 g/cm^3 (b) 1.5 g/cm^3 (c) 2 g/cm^3 (d) 2.5 g/cm^3

18. A block of mass 5 kg is kept on a horizontal table. If g = 10 m/s^2, find the force with which the block presses on the table.
(a) 25 N (b) 50 N (c) 100 N (d) 5 N

19. A girl applies a force of 200 N on a box of area 0.4 m^2. Find the pressure exerted.
(a) 200 N/m^2 (b) 400 N/m^2 (c) 500 N/m^2 (d) 800 N/m^2

20. 2 Nm is equal to
(a) 2×10^8 dyne cm (b) 2×10^7 dyne cm (c) 2×10 dyne cm (d) 2×1080 dyne cm

21. The frequency of a sound wave is 256 Hz and its speed in air is 340 m/s. Calculate its wavelength.
(a) 0.67 m (b) 1.00 m (c) 1.33 m (d) 1.50 m

22. A boy claps near a tall building and hears the echo after 2 s. If the speed of sound is 340 m/s, find the distance of the building.
(a) 170 m (b) 340 m (c) 510 m (d) 680 m

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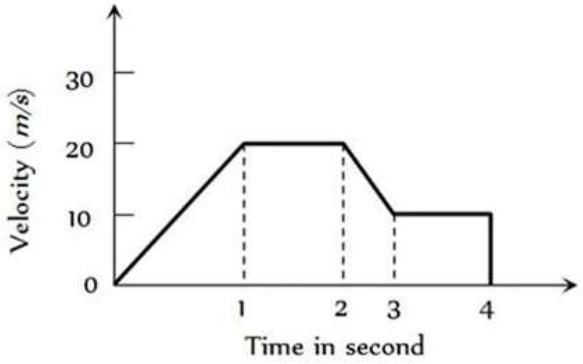
23. The variation of velocity of a particle with time moving along a straight line is illustrated in the following figure. The distance travelled the particle in four seconds is



(a) 60 m (b) 55 m (c) 25 m (d) 30 m

24. A particle is thrown vertically upward. Its velocity at half of the height is 10 m/s. The maximum height attained by it is ($g = 10\ ms^{-2}$)
(a) 8 m (b) 20 m (c) 10 m (d) 16 m

25. A body starts from rest is moving under a constant acceleration up to 20 sec. If it moves S_1 distance in first 10 sec., and S_2 distance in next 10 sec. then S_2 will be equal to :
(a) S_1 (b) $2S_1$ (c) $3S_1$ (d) $4S_1$

26. _____ is known as artificial silk.
(a) Rayon (b) Nylon (c) Polyester (d) None

27. Choose a biodegradable substance.
(a) Thermoplastic (b) thermosetting plastic
(c) PVC pipes (d) none

28. Atomicity of phosphorous
(a) 3 (b) 4 (c) 6 (d) 8

29. Rutherford's α-particle scattering experiment of gold foil is responsible for the discovery of
(a) neutron (b) electron (c) proton (d) atomic nucleus

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30. α - particles are doubly charged ions of
(a) lithium (b) beryllium (c) helium (d) hydrogen

31. Which of the following is a mixture?
(a) Air (b) Iron (c) Sulphur (d) Water

32. A mixture of ammonium chloride can be separated by
(a) filtration (b) distillation (c) sublimation (d) crystallization

33. In the Modern Periodic Table, elements are arranged in increasing order of their:
(a) Atomic Mass (b) Atomic Number
(c) Number of Neutrons (d) Valency

34. How many periods and groups are present in the Modern Periodic Table?
(a) 7 periods, 18 groups (b) 8 periods, 17 groups
(c) 7 periods, 7 groups (d) 18 periods, 7 groups

35. Which group in the periodic table contains the Noble Gases?
(a) Group 1 (b) Group 2 (c) Group 17 (d) Group 18

36. Cell organelle which has double membrane
(a) Mitochondria (b) Ribosome (c) Lysosome (d) Golgi bodies

37. preservation of milk is done by _____.
(a) Dehydration (b) Pasteurisation
(c) Adding preservatives (d) None of these

38. Cell organelle required for destroying foreign particle
(a) Glyoxysome (b) Lysosomes (c) Ribosome (d) Both (b) and (c)

39. Dengue is spread by
(a) Aedes mosquito (b) Anopheles mosquito
(c) Contaminated food and water (d) None of these

40. Organelle present in animal cell helps in the formation of cilia and flagella.
(a) Endoplasmic reticulum (b) Ribosome
(c) Centriole (d) Mitochondria

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41. Which of the following is not a communicable disease?
(a) Common cold (b) Chicken pox (c) Tuberculosis (d) Cancer

42. Living cell was discovered by _____.
(a) Robert Hooke (b) Robert brown
(c) Anton van Leeuwenhoek (d) Camillio Golgi

43. How many cells are formed as a result of binary fission?
(a) 2 (b) 3 (c) 1 (d) 4

44. Fallopian tube open into:
(a) Oviduct (b) Ovary (c) Uterus (d) Umbilical cord

45. Hydra the type of reproduction that occurs is
(a) Fission (b) Budding (c) Spore formation (d) Parthenogenesis

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