

**SECTION – 1 (PHYSICS)**

1. The optical phenomena, twinkling of stars, is due to  
(1) atmospheric reflection (2) Total reflection  
(3) Atmospheric refraction (4) Total refraction
2. Convex lens focus a real, point sized image at focus, the object is placed  
(1) At focus (2) Between F and 2F  
(3) At infinity (4) At 2F
3. A convex lens of focal length 40 cm is in contact with a concave lens of focal length 25 cm. The power of the combination is :  
(1)  $-1.5D$  (2)  $-6.5D$  (3)  $+6.5D$  (4)  $+6.67D$
4. A plane mirror and a person are moving towards each other with same velocity  $v$ . Then the velocity of the image is  
(1)  $v$  (2)  $2v$  (3)  $3v$  (4)  $4v$
5. A convex mirror has a focal length  $f$ . A real object is placed at a distance  $f$  in front of it from the pole produces an image at  
(1) Infinity (2)  $f$  (3)  $f/2$  (4)  $2f$
6. A virtual image, larger than the object can be produced by  
(1) plane mirror (2) concave lens (3) convex mirror (4) concave mirror
7. An object lies at distance of ' $2f$ ' from a concave lens of focal length ' $f$ '. Find the image distance  
(1)  $2f/3$  (2)  $f/2$  (3)  $2f/5$  (4)  $f$
8. A particle is travelling with constant speed. This means  
(1) Its position remains constant as time passes  
(2) It covers equal distances in equal time intervals  
(3) Its acceleration is zero  
(4) It does not change its direction of motion
9. A car travelling on a busy road is an example of:  
(1) Uniform motion (2) Non-uniform motion  
(3) Constant speed (4) Constant velocity
10. When an object under goes acceleration?  
(1) There is always an increase in its velocity (2) There is always an increase in its speed  
(3) A force must be acting on it (4) All of the above
11. Radius of curvature for plane mirror  
(1) infinite (2) zero  
(3) can be zero or infinite (4) insufficient information
12. Speed of sound is highest in –  
(1) Solid (2) liquid (3) gas (4) Cannot determine
13. A car increases its speed from 20 km/h to 50km/h in 10 sec. Its acceleration is?  
(1)  $30 \text{ m/s}^2$  (2)  $3 \text{ m/s}^2$  (3)  $18 \text{ m/s}^2$  (4)  $0.83 \text{ m/s}^2$

14. 1 Joule = 1 \_\_\_\_\_.  
(1)  $\text{N/m}^2$  (2)  $\text{kg}\cdot\text{m/s}^2$  (3)  $\text{N}\cdot\text{m}$  (4)  $\text{N}^2\cdot\text{m}^2$
15. An aeroplane flying at height of 20,000 m at a speed of  $300\text{km h}^{-1}$  has  
(1) only potential energy (2) only kinetic energy  
(3) both, potential and kinetic energy (4) none of the above
16. A light ray incidents on a plane mirror such that angle of reflection is  $30^\circ$ . Then the angle of deviation is  
(1)  $30^\circ$  (2)  $60^\circ$  (3)  $15^\circ$  (4)  $120^\circ$
17. Two bodies with kinetic energy in the ratio 4 : 1 are moving with equal linear momentum. The ratio of their masses is  
(1) 1 : 2 (2) 1 : 1 (3) 4 : 1 (4) 1 : 4
18. A body of mass m is placed in a freely falling lift. The apparent weight of the body is  
(1)  $m(g+g)$  (2) Zero (3) m (4) mg
19. A force can produce an acceleration of  $0.5\text{ m/s}^2$  in a body of mass 3.0 kg. If same force acts on a body mass 1.5 kg, the acceleration produced in it is  
(1)  $3.0\text{ m/s}^2$  (2)  $1.0\text{ m/s}^2$  (3)  $5.0\text{ m/s}^2$  (4)  $7.0\text{ m/s}^2$
20. A body of mass 2 kg is thrown vertically upwards with initial velocity of 20 m/s. After 2 sec, its kinetic energy will be ( $g = 10\text{ m/s}^2$ )  
(1) 400 J (2) 200 J (3) 100 J (4) Zero
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## SECTION – 2 (CHEMISTRY)

21. Non metal oxide which are not neutral  
 (1) CO (2) NO (3) N<sub>2</sub>O (4) NO<sub>2</sub>
22.  $a\text{Fe} + b\text{H}_2\text{O} \rightarrow c\text{Fe}_3\text{O}_4 + d\text{H}_2$  then find  $\frac{5a}{b^2 - c^2}$   
 (1) 0 (2) 4 (3) 2 (4) 1
23. P<sup>H</sup> of A = 5, B = 7.5, C = 3, D = 7  
 (i) A, B turns blue litmus red  
 (ii) A, C, and D turns Blue litmus red  
 (iii) A is strong acid compared to C  
 (iv) A don't change the colour of phenolphthalein  
 Which of the above statements is/are correct?  
 (1) (i), (iii) & (iv) (2) only (iii) (3) only (iv) (4) (ii) & (iv)
24. Which of the statement given below for the reaction is correct  
 $\text{ZnO} + \text{CO} \rightarrow \text{Zn} + \text{CO}_2$   
 (1) ZnO is being oxidized (2) CO is being reduced  
 (3) CO<sub>2</sub> is being oxidized (4) ZnO is being reduced
25. Which of the following is not an inorganic acid?  
 (1) Hydrochloric acid (2) Nitric acid  
 (3) Sulphuric acid (4) Acetic acid
26. Silver, gold and platinum are called noble metals because.....  
 (1) these are costly (2) these are precious  
 (3) these have very less reactivity (4) all of these
27. Which among the following species has the highest ionization potential  
 (1) B (2) C (3) Ne (4) F
28.  $\text{Fe}_2\text{O}_3 + 3\text{C} \rightarrow 2\text{Fe} + 3\text{CO}$ , in this reaction  
 (1) Fe undergoes oxidation and C undergoes reduction  
 (2) Fe undergoes reduction and C undergoes oxidation  
 (3) Both Fe and C undergoes reduction  
 (4) Both Fe and C undergoes oxidation
29. Which of the following metal forms amphoteric oxide?  
 (1) Ag (2) Zn (3) Hg (4) Fe
30. The element with a smallest atomic radius is  
 (1) Be (2) C (3) B (4) O

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**SECTION – 3 (BIOLOGY)**

31. Which element is used in the synthesis of proteins only?  
(1) Hydrogen                      (2) Oxygen                      (3) Nitrogen                      (4) Carbon dioxide
32. One cell-thick vessels are called  
(1) Arteries                      (2) Veins                      (3) Capillaries                      (4) Pulmonary artery
33. The chlorophyll in photosynthesis is used for  
(1) Absorbing light                      (2) Breaking down water molecule  
(3) No function                      (4) Reduction of  $\text{CO}_2$
34. Which of the following disease is transmitted sexually?  
(1) Kala azar                      (2) Jaundice                      (3) Cholera                      (4) Syphilis
35. Which one is a possible progeny in F<sub>2</sub> generation of pure bred tall plant with round seed and short plant with wrinkled seeds?  
(1) Tall plant with round seeds                      (2) Tall plant with wrinkled seeds  
(3) Short plant with round seed                      (4) All of the above
36. Homologous organ have  
(1) Same structure, same function                      (2) Different structure, different function  
(3) Same structure, different function                      (4) different structure, same function
37. Fruits are formed from  
(1) Stamen                      (2) Stigma                      (3) Ovary                      (4) Ovule
38. In which of the following groups of organisms are food materials broken down outside the body and absorbed?  
(1) Mushroom, green plants, amoeba                      (2) Yeast, mushroom, bread mould  
(3) Paramecium, amoeba, cuscuta                      (4) Cuscuta, lice, tapeworm
39. What are the products obtained by anaerobic respiration in plants?  
(1) Lactic acid + energy                      (2) Carbon dioxide + water + energy  
(3) Ethanol + carbon dioxide + energy                      (4) Pyruvate
40. Most of the digestion and absorption of the food takes place in the  
(1) small intestine                      (2) liver  
(3) stomach                      (4) large intestine. (2020)