SECTION – 1 (PHYSICS)

1. **Ans (3)**

2. **Ans (3)**

3. **Ans (1)**

$F_1 = 0.4\,m$

$F_2 = 0.25$

$$P = \frac{1}{f_1} + \frac{1}{f_2} = \frac{1}{0.4} + \left(-\frac{1}{0.25}\right)$$

$$= 2.5 - 4.0$$

$$= -1.5\,D$$

4. **Ans (3)**

$V_{OM} = -V_{IM}$

$v_0 - v_M = -v_I + v_M$

$v_I = 2v_M - v_0$

$= 2\times(-v) - (v)$

$(v_I = -2v - v = -3v)$

5. **Ans (3)**

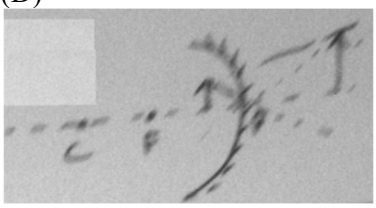
$$\frac{1}{v} + \frac{1}{u} = \frac{1}{f}$$

$$\frac{1}{v} = \frac{1}{f} - \frac{1}{4} = \frac{1}{f} - \left(-\frac{1}{f}\right)$$

$$\frac{1}{v} = \frac{2}{f} \Rightarrow v = \frac{f}{2}$$

6. **Ans (4)**

(D)



In concave mirror when object is placed b/w F and P, image is virtual and enlarged

7. **Ans (1)**

(A)

F= -f ; u = -2f

$$\frac{1}{F} = \frac{1}{v} - \frac{1}{u} \Rightarrow \frac{-1}{f} = \frac{1}{v} + \frac{1}{2f} \Rightarrow \frac{1}{v} = \frac{-3}{2f} \Rightarrow u = \frac{-2f}{3}$$

8. **Ans (2)**

Constant velocity means it is travelling in uniform motion.

9. **Ans (2)**

10. **Ans (3)**
F=ma

11. **Ans (1)**
Theoretical

12. **Ans (1)**
$V_{solid} > V_{liq} > V_{gas} \rightarrow$ for sound

13. **Ans (4)**
$a = \frac{v-u}{t}$
$= 30 \times \frac{5}{18} \times \frac{1}{10} = 0.83\,m/s^2$

14. **Ans (3)**
1 Joule=1 Nm

15. **Ans(3)**
Both PE and KE

16. **Ans (4)**
angle of incidence = angle of reflection = 30^o
Angle of deviation due to plane mirror is $\delta = 180 - 2i = 180° - 2(30°) = 120°$

17. **Ans (4)**
$KE = \frac{p^2}{2m} \quad \Rightarrow KE \propto \frac{1}{m} \quad \Rightarrow \frac{KE_1}{KE_2} = \frac{m_2}{m_1} = \frac{1}{4}$

18. **Ans (2)**
$W_{app} = m(g-a) = m(g-g) = 0$

19. **Ans (2)**
$F = m\,a$
$F = (3.0\text{ kg})(0.5\text{ m/s}^2) = (1.5\text{ kg})(a)$
$a = 1.0\text{ m/s}^2$

20. **Ans (4)**
velocity of the object after 2 sec of projection is $v = u - gt$
$= (20\text{ m/s}) - (10\text{ m/s}^2)(2\text{ s})$
$= 0$
Kinetic energy after 2 sec is $KE = \frac{1}{2}mv^2 = 0$ J

SPACE FOR ROUGH WORK

SECTION – 2 (CHEMISTRY)

21. **Ans (4)**

22. **Ans (4)**
(4)
$3Fe + 4H_2O \rightarrow Fe_3O_4 + 4H_2$
a=3
b=4 $\quad \frac{5a}{b^2 - c^2} = \frac{5 \times 3}{4^2 - 1^2} = 1$
c=1

23. **Ans (3)**

24. **Ans (4)**

25. **Ans (4)**

26. **Ans**
Sol.: Inert gases have highest I.P. in their respective period.

27. **Ans (3)**

28. **Ans (2)**

29. **Ans**
(2) 'ZnO' is amphoteric as it reacts with both acids as well as bases to produce salts.

30. **Ans**
(4) Atomic radius decreases from left to right across a period
Li > Be > B > C > N > O

SPACE FOR ROUGH WORK

SECTION – 3 (BIOLOGY)

31. **Ans (3)**

Proteins are polymers of amino acids

32. **Ans (3)**

Capillary wall is made of only squamous epithelium whereas arteries and veins walls are muscular

33. **Ans (1)**

Chlorophyll is a pigment and hence absorbs light

34. **Ans (4)**
Syphilis is a bacterial STD

35. **Ans (4)**

36. **Ans (3)**

37. **Ans (3)**

38. **Ans (2)**

Plants are autotrophic in nature whereas fungi are saprophytic in nature. Cuscuta , Lice and tapeworm are parasitic in nature

39. **Ans (3)**
Lactic acid is formed in muscle as a result of anaerobic respiration whereas pyruvate and carbon dioxide are produced in aerobic respiration

40. **Ans (1)**