SECTION – 1 (PHYSICS)

1.

$Kg\text{-}m/sec$ is the unit of linear momentum

2.

$$\vec{r} = x\hat{i} + y\hat{j} + z\hat{k} \quad \therefore r = \sqrt{x^2 + y^2 + z^2}$$

$$r = \sqrt{6^2 + 8^2 + 10^2} = 10\sqrt{2}\ m$$

3.

Total time of motion is 2 *min* 20 *sec* = 140 *sec*.

As time period of circular motion is 40 *sec* so in 140 *sec*. athlete will complete 3.5 revolution *i.e.,* He will be at diametrically opposite point *i.e.,* Displacement = 2*R*.

4.

As the total distance is divided into two equal parts therefore

distance averaged speed $= \dfrac{2v_1 v_2}{v_1 + v_2}$

5.

$$F = m\left(\frac{dv}{dt}\right) = \frac{100 \times 5}{0.1} = 5000\ N$$

6.

5*N* force will not produce any tension in spring without support of other 5*N* force. So here the tension in the spring will be 5*N* only.

7.

Due to acceleration in forward direction, vessel is an accelerated frame therefore a Pseudo force will be exerted in backward direction. Therefore water will be displaced in backward direction.

8.

As the body moves in the direction of force therefore work done by gravitational force will be positive.

$$W = Fs = mgh = 10 \times 9.8 \times 10 = 980\ J$$

9.

$$E = \frac{P^2}{2m} = \frac{(2)^2}{2 \times 2} = 1\ J$$

10.

Work = Force × Displacement

If force and displacement both are doubled then work would be four times.

SPACE FOR ROUGH WORK

SECTION – 2 (CHEMISTRY)

11.   (4)

12.   (2)

13.   (4)

14.   (3)

15.   (2)

16.   (2)

17.   (1)

18.   (2)

19.   (4)
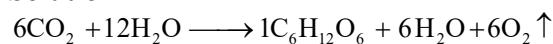
20.   (2)

SPACE FOR ROUGH WORK

SECTION – 3 (BIOLOGY)

21.

Solution

Character	Dominant trait	Recessive trait
Seed color	Yellow (YY)	Green (yy)

22. (1)

23.

Solution

$6CO_2 + 12H_2O \longrightarrow 1C_6H_{12}O_6 + 6H_2O + 6O_2 \uparrow$

24. (3)

25.

Solution

TCA (Tricarboxylic acid) cycle also known as Krebs cycle was discovered by Sir Hans Kerbs.

26. (1)

27.

Solution

Phanerogams are seed bearing plants that include gymmosperms and angiosperms (flowering plants). Double fertilization is a unique feature of only angiosperms.

28. (3)

29. (2)

30. (1)

31.

Solution

Photochemical reactions are light reactions whereas; carbon reactions are dark reactions.

32. (1)

33. (3)

34. (3)

35.

Solution

Endosperm is triploid (3n) nutritive tissue.

36. (3)

37. (2)

38. (3)

39.

Solution

$Tt \quad Rr \quad Yy$

$n = 3$

$2^n = 2^3 = 8.$

No of heterozygous pairs (n) =3

40.   (2)