AP Physics 1

Sample Question Paper - 2022

Country: US | Duration: 3 hours | Max Marks: 5-point scale | Language: English

Negative Marking: No | Total Questions: 40 | QuizVerse AI Tutor

General Instructions:

1. This paper contains 40 questions across 1 section(s): Physics.
2. Duration: 3 hours. Maximum marks: 5-point scale.
3. Negative marking: No.
4. Read each question carefully before answering.

Section 1: Physics (40 Questions)

Q1. A ball is dropped from height 38 m. Its velocity just before hitting the ground is:

(A) 24.3 m/s

(B) 27.1 m/s

(C) 23.2 m/s

(D) 47.5 m/s

Q2. The current through a 26 ohm resistor connected to a 7 V battery is:

(A) 2.28 A

(B) 4.78 A

(C) 3.78 A

(D) 4.61 A

Q3. A body of mass 4 kg is moving in a circle of radius 8 m at 19 m/s. The centripetal force is:

(A) 124 N

(B) 146 N

(C) 176 N

(D) 65 N

Q4. The escape velocity from a planet of mass 8 x 10^24 kg and radius 6600 km is:

(A) 9.9 km/s

(B) 10.1 km/s

(C) 14.9 km/s

(D) 14.3 km/s

Q5. A solenoid of 409 turns and length 0.2 m carries current 5 A. The magnetic field inside is:

(A) 5.94 mT

(B) 3.92 mT

(C) 1.81 mT

(D) 19.86 mT

Q6. The work function of a metal is 3.3 eV. The threshold frequency is:

(A) 9.88 x 10^14 Hz

(B) 6.65 x 10^14 Hz

(C) 10.83 x 10^14 Hz

(D) 7.25 x 10^14 Hz

Q7. A block of mass 8 kg slides down a frictionless incline of angle 45 degrees. The acceleration is:

(A) 5.1 m/s^2

(B) 3.8 m/s^2

(C) 3.1 m/s^2

(D) 4.3 m/s^2

Q8. The de Broglie wavelength of an electron accelerated through 50 V is approximately:

(A) 1.07 Angstrom

(B) 1.17 Angstrom

(C) 2.55 Angstrom

(D) 1.32 Angstrom

Q9. The focal length of a concave mirror is 21 cm. An object at 25 cm forms image at:

(A) 15 cm, real inverted

(B) 47 cm, real inverted

(C) 34 cm, real inverted

(D) 53 cm, real inverted

Q10. A wire of resistance 15 ohm is bent into a circle. Effective resistance between diametrically opposite points is:

(A) 5 ohm

(B) 7 ohm

(C) 5 ohm

(D) 5 ohm

Q11. A body of mass 5 kg is moving in a circle of radius 8 m at 11 m/s. The centripetal force is:

(A) 113 N

(B) 51 N

(C) 59 N

(D) 173 N

Q12. The binding energy per nucleon of Fe-56 is approximately:

(A) 8.8 MeV

(B) 7.6 MeV

(C) 6.5 MeV

(D) 9.2 MeV

Q13. A solenoid of 268 turns and length 0.2 m carries current 10 A. The magnetic field inside is:

(A) 17.10 mT

(B) 2.75 mT

(C) 13.54 mT

(D) 15.17 mT

Q14. A wire of resistance 19 ohm is bent into a circle. Effective resistance between diametrically opposite points is:

(A) 2 ohm

(B) 8 ohm

(C) 6 ohm

(D) 8 ohm

Q15. An ideal gas at 304 K is heated at constant pressure to 757 K. The ratio of final to initial volume is:

(A) 2.3

(B) 2.0

(C) 2.7

(D) 1.6

Q16. An electron moves with velocity 1x10^6 m/s perpendicular to a magnetic field of 0.3 T. The radius of its path is:

(A) 2.09 cm

(B) 0.95 cm

(C) 1.71 cm

(D) 0.80 cm

Q17. A projectile is launched at 45 degrees with initial velocity 22 m/s. The time of flight is approximately:

(A) 3.3 s

(B) 3.9 s

(C) 2.9 s

(D) 4.6 s

Q18. A ball is dropped from height 90 m. Its velocity just before hitting the ground is:

(A) 35.8 m/s

(B) 32.6 m/s

(C) 35.0 m/s

(D) 28.3 m/s

Q19. An electron moves with velocity 2x10^6 m/s perpendicular to a magnetic field of 1.0 T. The radius of its path is:

(A) 4.32 cm

(B) 1.88 cm

(C) 3.93 cm

(D) 2.08 cm

Q20. A convex lens of focal length 18 cm forms a real image of an object placed 46 cm away. The image distance is:

(A) 25 cm

(B) 35 cm

(C) 19 cm

(D) 34 cm

Q21. The binding energy per nucleon of Fe-56 is approximately:

(A) 9.2 MeV

(B) 6.5 MeV

(C) 8.8 MeV

(D) 7.6 MeV

Q22. A solenoid of 145 turns and length 0.1 m carries current 4 A. The magnetic field inside is:

(A) 17.15 mT

(B) 16.56 mT

(C) 9.69 mT

(D) 1.19 mT

Q23. Two capacitors 9 uF and 9 uF are connected in series. The equivalent capacitance is:

(A) 4.38 uF

(B) 3.34 uF

(C) 4.96 uF

(D) 1.37 uF

Q24. In photoelectric effect, the stopping potential for light of wavelength 252 nm on a metal with work function 3.7 eV is:

(A) 3.34 V

(B) 1.49 V

(C) 3.59 V

(D) 2.45 V

Q25. A convex lens of focal length 21 cm forms a real image of an object placed 23 cm away. The image distance is:

(A) 18 cm

(B) 35 cm

(C) 38 cm

(D) 55 cm

Q26. The electric field at 2 m from a point charge of 2 uC is:

(A) 5661 N/C

(B) 1798 N/C

(C) 8217 N/C

(D) 1325 N/C

Q27. The electric field at 1 m from a point charge of 10 uC is:

(A) 4338 N/C

(B) 5784 N/C

(C) 6300 N/C

(D) 2935 N/C

Q28. In photoelectric effect, the stopping potential for light of wavelength 260 nm on a metal with work function 2.9 eV is:

(A) 2.43 V

(B) 2.94 V

(C) 3.39 V

(D) 0.69 V

Q29. Two masses 8 kg and 7 kg are connected by a string over a frictionless pulley. The acceleration of the system is:

(A) 1.73 m/s^2

(B) 1.16 m/s^2

(C) 4.13 m/s^2

(D) 2.54 m/s^2

Q30. A Carnot engine operates between 765 K and 266 K. Its efficiency is:

(A) 56%

(B) 25%

(C) 52%

(D) 35%

Q31. A car of mass 1593 kg moving at 44 m/s brakes to rest in 9 s. The braking force is:

(A) 4174 N

(B) 16867 N

(C) 15289 N

(D) 3916 N

Q32. The electric field at 3 m from a point charge of 6 uC is:

(A) 1784 N/C

(B) 7047 N/C

(C) 8811 N/C

(D) 672 N/C

Q33. Two capacitors 9 uF and 8 uF are connected in series. The equivalent capacitance is:

(A) 3.56 uF

(B) 2.76 uF

(C) 2.11 uF

(D) 4.24 uF

Q34. The work function of a metal is 2.0 eV. The threshold frequency is:

(A) 11.94 x 10^14 Hz

(B) 6.47 x 10^14 Hz

(C) 8.20 x 10^14 Hz

(D) 3.06 x 10^14 Hz

Q35. Light passes from glass (n=1.6) to air. The critical angle is:

(A) 38 degrees

(B) 39 degrees

(C) 43 degrees

(D) 43 degrees

Q36. A spring with k = 388 N/m is compressed by 0.15 m. The stored PE is:

(A) 15.02 J

(B) 20.86 J

(C) 4.98 J

(D) 15.44 J

Q37. A wire of resistance 11 ohm is bent into a circle. Effective resistance between diametrically opposite points is:

(A) 2 ohm

(B) 4 ohm

(C) 7 ohm

(D) 3 ohm

Q38. The binding energy per nucleon of Fe-56 is approximately:

(A) 7.6 MeV

(B) 9.2 MeV

(C) 6.5 MeV

(D) 8.8 MeV

Q39. A force of 38 N acts on a 19 kg body initially at rest. The velocity after 3 s is:

(A) 8 m/s

(B) 14 m/s

(C) 13 m/s

(D) 48 m/s

Q40. A radioactive substance has half-life 30 days. The fraction remaining after 33 days is:

(A) 1/4

(B) 1/8

(C) 1/16

(D) 1/16

Answer Key

Q1: (A)	Q2: (A)	Q3: (B)	Q4: (B)	Q5: (D)
Q6: (A)	Q7: (B)	Q8: (A)	Q9: (B)	Q10: (A)
Q11: (C)	Q12: (A)	Q13: (B)	Q14: (B)	Q15: (C)
Q16: (D)	Q17: (D)	Q18: (C)	Q19: (A)	Q20: (A)
Q21: (C)	Q22: (A)	Q23: (A)	Q24: (B)	Q25: (A)
Q26: (B)	Q27: (D)	Q28: (C)	Q29: (A)	Q30: (B)
Q31: (A)	Q32: (D)	Q33: (D)	Q34: (A)	Q35: (A)
Q36: (A)	Q37: (A)	Q38: (D)	Q39: (B)	Q40: (A)