AP Physics 1

Sample Question Paper - 2025

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

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

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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. 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) 2.08 cm
(D) 3.93 cm

Q2. The de Broglie wavelength of an electron accelerated through 50 V is approximately:

(A) 1.07 Angstrom
(B) 1.32 Angstrom
(C) 2.55 Angstrom
(D) 1.17 Angstrom

Q3. The de Broglie wavelength of an electron accelerated through 100 V is approximately:

(A) 2.24 Angstrom
(B) 2.53 Angstrom
(C) 0.53 Angstrom
(D) 2.20 Angstrom

Q4. The escape velocity from a planet of mass 4 x 10^24 kg and radius 7718 km is:

(A) 13.2 km/s
(B) 9.0 km/s
(C) 14.0 km/s
(D) 8.9 km/s

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

(A) 1.81 mT
(B) 19.86 mT
(C) 3.92 mT
(D) 5.94 mT

Q6. A body of mass 5 kg is moving in a circle of radius 8 m at 11 m/s. The centripetal force is:

(A) 59 N

(B) 51 N

(C) 113 N

(D) 173 N

Q7. The focal length of a concave mirror is 17 cm. An object at 30 cm forms image at:

(A) 23 cm, real inverted

(B) 17 cm, real inverted

(C) 32 cm, real inverted

(D) 43 cm, real inverted

Q8. A block of mass 8 kg slides down a frictionless incline of angle 30 degrees. The acceleration is:

(A) 7.0 m/s^2

(B) 3.1 m/s^2

(C) 4.7 m/s^2

(D) 7.4 m/s^2

Q9. A wire of resistance 15 ohm is bent into a circle. Effective resistance between diametrically opposite points is:

(A) 7 ohm

(B) 5 ohm

(C) 5 ohm

(D) 5 ohm

Q10. 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

Q11. A Carnot engine operates between 781 K and 324 K. Its efficiency is:

(A) 51%

(B) 28%

(C) 60%

(D) 54%

Q12. An ideal gas at 292 K is heated at constant pressure to 489 K. The ratio of final to initial volume is:

(A) 2.3

(B) 2.1

(C) 2.7

(D) 2.1

Q13. Two capacitors 9 uF and 8 uF are connected in series. The equivalent capacitance is:

(A) 2.76 uF

(B) 3.56 uF

(C) 4.24 uF

(D) 2.11 uF

Q14. 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) 65 N

(C) 176 N

(D) 146 N

Q15. A spring with k = 388 N/m is compressed by 0.15 m. The stored PE is:

(A) 20.86 J

(B) 15.02 J

(C) 15.44 J

(D) 4.98 J

Q16. A Carnot engine operates between 461 K and 327 K. Its efficiency is:

(A) 69%

(B) 63%

(C) 35%

(D) 46%

Q17. A car of mass 1229 kg moving at 56 m/s brakes to rest in 7 s. The braking force is:

(A) 14865 N

(B) 10834 N

(C) 11583 N

(D) 5716 N

Q18. The binding energy per nucleon of Fe-56 is approximately:

(A) 9.2 MeV

(B) 7.6 MeV

(C) 8.8 MeV

(D) 6.5 MeV

Q19. A radioactive substance has half-life 20 days. The fraction remaining after 14 days is:

(A) 1/32

(B) 1/4

(C) 1/16

(D) 1/16

Q20. An electron moves with velocity 1x10^6 m/s perpendicular to a magnetic field of 0.2 T. The radius of its path is:

(A) 1.26 cm

(B) 1.43 cm

(C) 3.91 cm

(D) 1.26 cm

Q21. 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) 4.3 m/s^2

(C) 3.8 m/s^2

(D) 3.1 m/s^2

Q22. The current through a 26 ohm resistor connected to a 7 V battery is:

(A) 3.78 A

(B) 4.61 A

(C) 2.28 A

(D) 4.78 A

Q23. A solenoid of 145 turns and length 0.1 m carries current 4 A. The magnetic field inside is:

(A) 16.56 mT

(B) 9.69 mT

(C) 1.19 mT

(D) 17.15 mT

Q24. Light passes from glass (n=1.6) to air. The critical angle is:

(A) 39 degrees

(B) 43 degrees

(C) 43 degrees

(D) 38 degrees

Q25. 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

Q26. An electron moves with velocity 3x10^6 m/s perpendicular to a magnetic field of 0.7 T. The radius of its path is:

(A) 2.99 cm

(B) 1.21 cm

(C) 3.79 cm

(D) 0.85 cm

Q27. The focal length of a concave mirror is 29 cm. An object at 21 cm forms image at:

(A) 52 cm, real inverted

(B) 43 cm, real inverted

(C) 20 cm, real inverted

(D) 37 cm, real inverted

Q28. A ball is dropped from height 90 m. Its velocity just before hitting the ground is:

(A) 28.3 m/s

(B) 35.0 m/s

(C) 35.8 m/s

(D) 32.6 m/s

Q29. In photoelectric effect, the stopping potential for light of wavelength 324 nm on a metal with work function 3.1 eV is:

(A) 2.36 V

(B) 2.24 V

(C) 0.94 V

(D) 3.23 V

Q30. A ball is dropped from height 38 m. Its velocity just before hitting the ground is:

(A) 24.3 m/s

(B) 47.5 m/s

(C) 27.1 m/s

(D) 23.2 m/s

Q31. A block of mass 6 kg slides down a frictionless incline of angle 37 degrees. The acceleration is:

(A) 4.1 m/s^2

(B) 5.2 m/s^2

(C) 6.6 m/s^2

(D) 6.8 m/s^2

Q32. The work function of a metal is 4.9 eV. The threshold frequency is:

(A) 9.74 x 10^14 Hz

(B) 10.76 x 10^14 Hz

(C) 4.48 x 10^14 Hz

(D) 9.53 x 10^14 Hz

Q33. A force of 64 N acts on a 17 kg body initially at rest. The velocity after 4 s is:

(A) 49 m/s

(B) 7 m/s

(C) 37 m/s

(D) 26 m/s

Q34. The work function of a metal is 3.3 eV. The threshold frequency is:

(A) 7.25 x 10^14 Hz

(B) 10.83 x 10^14 Hz

(C) 9.88 x 10^14 Hz

(D) 6.65 x 10^14 Hz

Q35. A wire of resistance 19 ohm is bent into a circle. Effective resistance between diametrically opposite points is:

(A) 8 ohm

(B) 6 ohm

(C) 2 ohm

(D) 8 ohm

Q36. A projectile is launched at 60 degrees with initial velocity 36 m/s. The time of flight is approximately:

(A) 2.9 s

(B) 1.7 s

(C) 3.2 s

(D) 2.7 s

Q37. The de Broglie wavelength of an electron accelerated through 50 V is approximately:

(A) 2.64 Angstrom

(B) 2.14 Angstrom

(C) 1.20 Angstrom

(D) 1.53 Angstrom

Q38. 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

Q39. The current through a 11 ohm resistor connected to a 12 V battery is:

(A) 2.81 A

(B) 2.22 A

(C) 2.51 A

(D) 2.50 A

Q40. The escape velocity from a planet of mass 8 x 10^24 kg and radius 6600 km is:

(A) 10.1 km/s

(B) 14.3 km/s

(C) 9.9 km/s

(D) 14.9 km/s

Answer Key

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