MHT CET 2026 Physics Sample Paper 2

Question Booklet Version **2** (Write this number on your Answer Sheet)	MH-CET-2026 Roll No.	Question Booklet Sr. No.
	Answer Sheet No.	(Write this number on your Answer Sheet)

Day and Date :

Duration: 3.00 hours
Total Marks : 200

This is to certify that, the entries of MH-CET Roll No. and Answer Sheet No. have been correctly written and verified.

Candidate's Signature   *Invigilator's Signature*

Instructions to Candidates

1. The test contains **50 Multiple Choice Questions (MCQs)** in the **Physics** section.
2. The total time allotted for the examination is **60 minutes**. The countdown timer on the top right of the screen will display the remaining time.
3. Candidates can navigate between questions in the Physics section at any time during the exam.
4. **Login Procedure:** Enter your Roll No. and Password as provided. Verify your name and photograph appearing on the screen. If there is a mismatch, report it to the invigilator immediately.
5. **Navigating Questions:** To select a question, click on the question number in the Question Palette on the right side of the screen.
6. **Answering:** To select your answer, click on the button of one of the options. To deselect, click on the chosen option again or click the **'Clear Response'** button.
7. **Saving:** You **MUST** click the **'Save Next'** button to save your answer for any question. Clicking 'Mark for Review' will not save the answer for final evaluation unless it is specifically answered and saved.
8. **Marking Scheme:**
   - Each correct response is awarded **one (1) mark**.
   - There is **no negative marking** for incorrect answers.
9. Status of questions will be shown by color codes: Green (Answered), Red (Not Answered), White (Not Visited), and Violet (Marked for Review).
10. Candidates are not allowed to open any other software or browser tabs. Doing so will result in the automated locking of the terminal.
11. **Rough Work:** All calculations must be done on the **Scribble Pad** provided. Candidates must write their Roll No. on the pad and return it to the invigilator before leaving the hall.
12. A digital Log Table/Calculator (if applicable) will be accessible via a button on the exam interface.
13. The test will automatically submit once the timer reaches zero. Candidates cannot submit the exam before the first 90 minutes.
14. Use of mobile phones, smartwatches, or any electronic gadgets is strictly prohibited.
15. No marks will be deducted for questions that are left unattempted.

1. An electron enters a magnetic field of magnitude 0.05 T at a speed of 3×10^6 m/s, making an angle of 30° with the field direction. What is the magnitude of magnetic force on it? % Charge of electron $= 1.6 \times 10^{-19}$ C

   A) 2.4×10^{-14} N   **B)** 1.2×10^{-14} N

   C) 3×10^{-14} N   **D)** 4.8×10^{-14} N

2. A 5-ohm resistor is connected to a 10 V battery. Calculate the current flowing through the resistor.

   A) 2.0 A   **B)** 1.0 A

   C) 0.5 A   **D)** 0.2 A

3. The clarity of the image formed on the retina of the eye depends on the ____

   A) visual angle   **B)** environmental condition

   C) distance of eye-lens from retina   **D)** material of the object whose image is observed

4. A current of 2 A flows through a conductor for 10 minutes. What is the total charge that flows through the conductor?

   A) 1200 C   **B)** 1000 C

   C) 200 C   **D)** 1500 C

5. A fluid flows through a pipe with a varying cross-sectional area. If the velocity of the fluid is $v_1 = 4\,\text{m/s}$ at a point where the cross-sectional area is $A_1 = 2\,\text{m}^2$, and the velocity at another point where the cross-sectional area is $A_2 = 1\,\text{m}^2$ is v_2, what is the velocity v_2?

   A) $8\,\text{m/s}$ **B)** $4\,\text{m/s}$

   C) $2\,\text{m/s}$ **D)** $1\,\text{m/s}$

6. In a series LCR circuit connected to an AC source, at resonance, the current is maximum because:

   A) The inductive reactance is maximum   **B)** The capacitive reactance cancels the inductive reactance

   C) The resistance is zero   **D)** The reactances add up

7. The value of acceleration due to gravity at Earth's surface is $9.8\,\mathrm{m/s^2}$. The altitude above its surface at which the acceleration due to gravity decreases to $4.9\,\mathrm{m/s^2}$ is close to: (Radius of Earth $R = 6.4 \times 10^6\,\mathrm{m}$)

A) $2.6 \times 10^6\,\mathrm{m}$ 　　　　　　　　　 **B)** $6.4 \times 10^6\,\mathrm{m}$

C) $9.0 \times 10^6\,\mathrm{m}$ 　　　　　　　　　 **D)** $1.6 \times 10^6\,\mathrm{m}$

8. At which temperature will the r.m.s. velocity of a hydrogen molecule be equal to that of an oxygen molecule at $47°\mathrm{C}$?

A) $80\,\mathrm{K}$ 　　　　　　　　　　　　　 **B)** $-73\,\mathrm{K}$

C) $4\,\mathrm{K}$ 　　　　　　　　　　　　　　 **D)** $20\,\mathrm{K}$

9. How much time does a particle at $x = C$ take to go from the mean position to the extreme (maximum displacement) for the first time?

A) $T/2$ 　　　　　　　　　　　　　　　 **B)** $T/4$

C) $T/3$ 　　　　　　　　　　　　　　　 **D)** T

10. Energy stored in a capacitor is given by the equation

$$E = \frac{1}{2}CV^2$$

where: - C is the capacitance, - V is the voltage, - E is the energy stored. Given the values of C, V, and E, determine the energy stored.}

A) $E = \frac{1}{2}CV^2$ 　　　　　　　　　 **B)** $E = CV$

C) $E = CV^3$ 　　　　　　　　　　　　 **D)** $E = \frac{1}{2}CV$

11. What is the fundamental frequency of an open organ pipe with length L and speed of sound v?

A) $\frac{v}{2L}$ 　　　　　　　　　　　　　 **B)** $\frac{v}{L}$

C) $\frac{2v}{L}$ 　　　　　　　　　　　　　 **D)** $\frac{vL}{2}$

12. An object of mass $0.5\,\mathrm{kg}$ is moving with a velocity of $10\,\mathrm{m/s}$. What is the momentum of the object?

A) $5\,\mathrm{kg}\cdot\mathrm{m/s}$ 　　　　　　　　　 **B)** $10\,\mathrm{kg}\cdot\mathrm{m/s}$

C) $50\,\mathrm{kg}\cdot\mathrm{m/s}$ 　　　　　　　　　 **D)** $0.5\,\mathrm{kg}\cdot\mathrm{m/s}$

13. In adiabatic compression, which of the following is true?

A) Temperature increases

B) Temperature decreases

C) Pressure remains constant

D) Amount of heat exchanged with surround

14. A sound wave has a frequency of 440 Hz. What is its time period?

A) 0.00227 s

B) 0.002 s

C) 0.0025 s

D) 0.004 s

15. An ice cube has a bubble inside. When viewed from one side, the apparent distance of the bubble is 12 cm. When viewed from the opposite side, the apparent distance of the bubble is 4 cm. If the side of the ice cube is 24 cm, the refractive index of the ice cube is:

A) $\frac{4}{3}$

B) $\frac{3}{2}$

C) $\frac{2}{3}$

D) $\frac{6}{5}$

16. A sound wave travels through air with a frequency of 500 Hz and a wavelength of 0.68 m. Calculate the speed of sound in air.

A) 340 m/s

B) 500 m/s

C) 200 m/s

D) 680 m/s

17. A gas occupies a volume of 10.0 L at a pressure of 2.0 atm and a temperature of 300 K. What will the volume be if the pressure is increased to 4.0 atm and the temperature is increased to 600 K? (Assume the amount of gas remains constant.)

A) 5.0 L

B) 10.0 L

C) 20.0 L

D) 2.5 L

18. The time period of SHM is 2 s with mass m. If an additional mass of 40 g is added, the time period increases by 3 s. What is m (in grams)?

A) 7.64 g

B) 40 g

C) 50 g

D) 60 g

19. A wheel of diameter 20 cm is rotating at 600 rpm. The linear velocity of a particle at its rim is:

A) $6.28\,\text{m/s}$

B) $12.56\,\text{m/s}$

C) $18.84\,\text{m/s}$

D) $3.14\,\text{m/s}$

20. A spherical air bubble is formed inside a liquid (like water). The radius of the bubble is 0.5 mm, and the surface tension of the liquid is 0.072 N/m. What is the pressure inside the bubble relative to the outside pressure?

A) $1.44 \times 10^3\,\text{Pa more}$

B) $1.44 \times 10^2\,\text{Pa more}$

C) $2.88 \times 10^3\,\text{Pa more}$

D) $2.88 \times 10^2\,\text{Pa more}$

21. Two bodies of masses $m_1 = 5\,\text{kg}$ and $m_2 = 10\,\text{kg}$ are placed 2 meters apart. What is the gravitational force between them?

A) $8.34 \times 10^{-10}\,\text{N}$

B) $6.67 \times 10^{-11}\,\text{N}$

C) $3.34 \times 10^{-7}\,\text{N}$

D) $2.00 \times 10^{-10}\,\text{N}$

22. A body of mass 10 kg is at a height of 5 m above the surface of the Earth. What is the gravitational potential energy of the body? (Take $g = 10\,\text{m/s}^2$)

A) 50 J

B) 500 J

C) 100 J

D) 250 J

23. A 200 g sample of water at 80°C is mixed with 100 g of water at 20°C. Assuming no heat loss to the surroundings, what is the final temperature of the mixture?

A) $50°\text{C}$

B) $60°\text{C}$

C) $55°\text{C}$

D) $45°\text{C}$

24. A uniform circular disc of mass 2 kg and radius 0.5 m is mounted on a frictionless axle. A force of 4 N is applied tangentially at the rim for 2 seconds. Find the angular velocity acquired by the disc at the end of 2 seconds.

A) 8 rad/s

B) 10 rad/s

C) 12 rad/s

D) 16 rad/s

25. An object is dropped from a helicopter flying horizontally at 360 km/h. It falls from a height of 2 km and reaches the ground in 20 seconds. What is the displacement of the package relative to the helicopter's position when it was dropped?

A) 2 km   **B)** $2\sqrt{2}$ km

C) 4 km   **D)** 8 km

26. A circular loop of radius 0.2 m carries a current of 4 A. What is the magnetic field at a point on the axis of the loop at a distance 0.2 m from the center?

A) $\frac{4\times10^{-6}}{4\times10^{-7}}$ T   **B)** $\sqrt{2}$ T

C) 4×10^{-7} T   **D)** $(0.2)^2$ T

27. A wire has a resistance of $10\,\Omega$ at $20°$C. If the temperature coefficient of resistance of the material is $0.004\,\text{per}°$C, what is the resistance of the wire at $50°$C?

A) $12\,\Omega$ **B)** $10.6\,\Omega$

C) $15\,\Omega$ **D)** $20\,\Omega$

28. A current-carrying rectangular loop PQRS is made of uniform wire. The length PR = QS = 5 cm and PQ = RS = 100 cm. If the ammeter current reading changes from I to $2I$, the ratio of magnetic forces per unit length on the wire PQ due to wire RS in the two cases respectively $F_{PQ}^{I} : F_{PQ}^{2I}$ is:

A) $1:2$ **B)** $1:4$

C) $1:5$ **D)** $1:3$

29. A pipe has a radius of 2 cm at one end and 1 cm at the other end. The velocity of the water at the wider end is 5 m/s. What is the velocity of the water at the narrower end, assuming incompressible flow?

A) $10\,\text{m/s}$ **B)** $20\,\text{m/s}$

C) $15\,\text{m/s}$ **D)** $25\,\text{m/s}$

30. A particle is moving with a constant velocity of 5 m/s in a circular path of radius 2 m. What is the centripetal acceleration of the particle?

A) 1.25 m/s^2 B) 2.5 m/s^2

C) 5 m/s^2 D) 10 m/s^2

31. A long straight wire carries a current of 10 A. A proton moves parallel to the wire at a distance of 0.05 m with a velocity of $2 \times 10^5 \text{ m/s}$ in the same direction as the current. Find the magnitude of the magnetic force acting on the proton. (Given: Charge of proton $q = 1.6 \times 10^{-19}$ C, permeability of free space $\mu_0 = 4\pi \times 10^{-7} \text{ Tm/A}$).

A) $2.56 \times 10^{-19} \text{ N}$ B) $1.28 \times 10^{-19} \text{ N}$

C) $5.12 \times 10^{-19} \text{ N}$ D) $3.84 \times 10^{-19} \text{ N}$

32. What is the resistance of a wire of length $L = 2 \text{ m}$ and cross-sectional area $A = 1 \times 10^{-6} \text{ m}^2$ made of a material with resistivity $\rho = 1.5 \times 10^{-7} \, \Omega\,\text{m}$?

A) $3 \times 10^{-7} \, \Omega$ B) $3 \times 10^{-6} \, \Omega$

C) $2 \times 10^{-7} \, \Omega$ D) $5 \times 10^{-6} \, \Omega$

33. A monkey of mass 50 kg climbs on a rope which can withstand the tension $T = 350 \text{ N}$. If the monkey initially climbs down with an acceleration of 4 m/s^2 and then climbs up with an acceleration of 5 m/s^2, choose the correct option ($g = 10 \text{ m/s}^2$):

A) $T = 700 \text{ N}$ while climbing upward   B) $T = 350 \text{ N}$ while going downward

C) Rope will break while climbing upward   D) Rope will break while going downward

34. A 5 Ω resistor and a 10 Ω resistor are connected in parallel. What is the equivalent resistance of the combination?

A) $3.33 \, \Omega$ B) $15 \, \Omega$

C) $7.5 \, \Omega$ D) $2 \, \Omega$

35. A block of mass 5 kg is placed on a frictionless surface. If a force of 10 N is applied to the block, what will be the acceleration of the block?

A) 2 m/s^2 B) 5 m/s^2

C) 0.5 m/s^2 D) 10 m/s^2

36. A light-emitting diode (LED) is fabricated using GaAs semiconductor material whose band gap is $1.42\,\text{eV}$. The wavelength of light emitted from the LED is:

A) $650\,\text{nm}$
B) $1243\,\text{nm}$

C) $875\,\text{nm}$
D) $1400\,\text{nm}$

37. Two vessels A and B are of the same size and are at the same temperature. Vessel A contains $1\,\text{g}$ of hydrogen and vessel B contains $1\,\text{g}$ of oxygen. P_A and P_B are the pressures of the gases in A and B respectively. Then $\frac{P_A}{P_B}$ is:

A) 8
B) 16

C) 32
D) 4

38. Two spherical black bodies radiate the same amount of heat per second. If their temperatures are T_1 and T_2, and their radii are R_1 and R_2, respectively, find the relation between their temperatures and radii.

A) $T_1 = \sqrt{2}T_2$
B) $T_1 = 2T_2$

C) $T_1 = \frac{T_2}{\sqrt{2}}$
D) $T_1 = \sqrt{3}T_2$

39. A uniform circular disc of mass 2 kg and radius 0.5 m is mounted on a frictionless axle. A force of 4 N is applied tangentially at the rim for 2 seconds. Find the angular velocity acquired by the disc at the end of 2 seconds.

A) 8 rad/s
B) 10 rad/s

C) 12 rad/s
D) 16 rad/s

40. Assertion (A): When two waves of equal amplitude and a phase difference of $\frac{\pi}{2}$ interfere, the resulting intensity is equal to the intensity of one wave. Reason (R): In interference, the resultant intensity is always the sum of individual intensities if the phase difference is non-zero.

A) Both A and R are true, and R is the correct explanation of A.
B) Both A and R are true, but R is not the correct explanation of A.

C) A is true, but R is false.
D) A is false, but R is true.

41. Two charges, $q_1 = +3\,\mu C$ and $q_2 = -4\,\mu C$, are placed 20 cm apart. Calculate the force between the charges.

A) $2.45\,\text{N}$
B) $1.35\,\text{N}$

C) $3.5\,\text{N}$
D) $4.2\,\text{N}$

42. Mass $= (28 \pm 0.01)$ g, Volume $= (5 \pm 0.1)$ cm^3. What is the percentage error in density?

A) $\frac{2.25}{28}\%$

B) $\frac{3.57}{28}\%$

C) $\frac{1.25}{28}\%$

D) $\frac{4.5}{28}\%$

43. A gas absorbs 100 J of heat while performing 40 J of work on its surroundings. Calculate the change in internal energy of the gas.

A) 60 J

B) 140 J

C) 40 J

D) 100 J

44. A block of mass 2 kg is acted upon by a net force of 10 N. What is its acceleration?

A) 2 m/s^2

B) 5 m/s^2

C) 10 m/s^2

D) 20 m/s^2

45. The fundamental frequency of a closed organ pipe of length 20 cm is equal to the second overtone of an organ pipe open at both ends. What is the length of the organ pipe open at both ends?

A) 1.0 m

B) 1.2 m

C) 1.4 m

D) 1.6 m

46. Point charge of $10\,\mu C$ is placed at the origin. At what location on the X-axis should a point charge of $40\,\mu C$ be placed so that the net electric field is zero at $x = 2$ cm on the X-axis?

A) 6 cm

B) 4 cm

C) 8 cm

D) -4 cm

47. What is the energy stored in a capacitor of capacitance $C = 10\,\mu F$ when a potential difference of $V = 20$ V is applied across it?

A) 0.01 J

B) 2 J

C) 4 J

D) 0.1 J

48. A coil of 100 turns, carrying a current of 5 A, is placed in a magnetic field of 2 T. The area of each turn is 0.01 m^2. What is the magnetic moment of the coil?

A) $0.5 \text{ A} \cdot \text{m}^2$

B) $1.0 \text{ A} \cdot \text{m}^2$

C) $2.0 \text{ A} \cdot \text{m}^2$

D) $5.0 \text{ A} \cdot \text{m}^2$

49. What is the gravitational force between two objects of masses $m_1 = 10\,\text{kg}$ and $m_2 = 20\,\text{kg}$, separated by a distance of $r = 5\,\text{m}$? (Gravitational constant $G = 6.67 \times 10^{-11}\,\text{N m}^2/\text{kg}^2$)

A) $5.33 \times 10^{-10}\,\text{N}$ **B)** $2.67 \times 10^{-9}\,\text{N}$

C) $4.67 \times 10^{-9}\,\text{N}$ **D)** $1.33 \times 10^{-9}\,\text{N}$

50. Sphere of color black, red, white, and yellow are heated to the same temperature. The decreasing order of cooling is:

A) $Black > Red > Yellow > White$ **B)** $Red > Black > White > Yellow$

C) $White > Yellow > Red > Black$ **D)** $Yellow > White > Red > Black$

PHYSICS ANSWER KEY

1. (B)	2. (A)	3. (C)	4. (A)	5. (A)
6. (B)	7. (A)	8. (D)	9. (B)	10. (A)
11. (A)	12. (A)	13. (A)	14. (A)	15. (B)
16. (A)	17. (A)	18. (A)	19. (A)	20. (D)
21. (A)	22. (A)	23. (A)	24. (D)	25. (B)
26. (B)	27. (A)	28. (B)	29. (A)	30. (B)
31. (B)	32. (A)	33. (C)	34. (A)	35. (A)
36. (C)	37. (B)	38. (A)	39. (D)	40. (D)
41. (A)	42. (B)	43. (A)	44. (B)	45. (B)
46. (A)	47. (A)	48. (B)	49. (A)	50. (A)