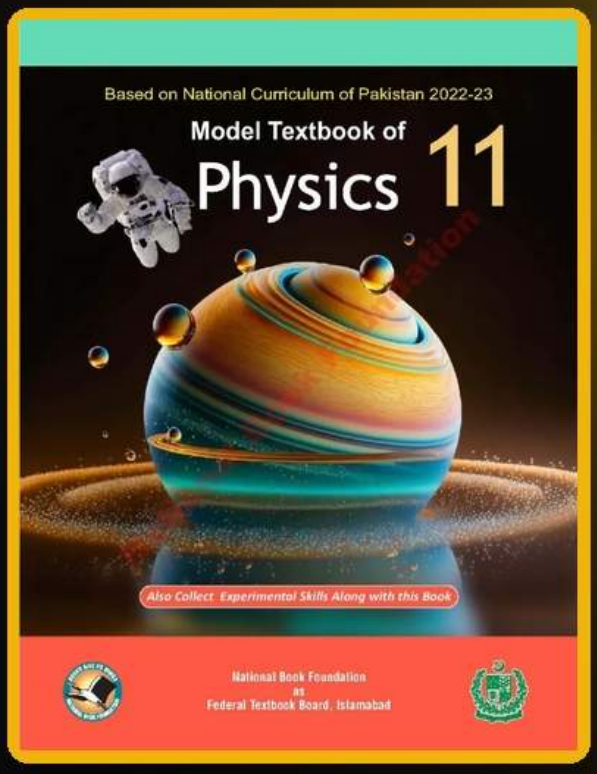
Study Bees
OFFICIAL PAK

PHYSICS CLASS #11

CHAPTER 12

ELECTROMAGNETISM



300
SLO BASED MCQs

Swipe →

Studybeesofficial

CamScanner

Studybeesofficial
EDUCATIONAL PLATFORM
www.studybeesofficial.com

HSSC-I NATIONAL BOOK FOUNDATION FBISE

PHYSICS TEST – CHAPTER 12: ELECTROMAGNETISM

Name:		Roll No.		Section:	

Total Time: 3:00 Hour **Total Marks: 300**

Time Allowed: 180 Minutes

PAPER OBJECTIVE
SECTION-A (MARKS 300)

NOTE: Section-A is compulsory. All parts of this section are to be answered on these pages and handed over to the center superintendent. Deleting / overwriting is not allowed. Do not use lead pencil.

Q.1 Fill the relevant bubble for each part. All parts carry one mark.

Questions	A	B	C	D	A	B	C	D
1. The study of the magnetic effects of current is called:	Electrostatics	Thermodynamics	Electromagnetism	Optics	○	○	●	○
2. A compass needle placed in a magnetic field can experience:	only a gravitational pull	only an electric force	no force at all	a magnetic force	○	○	○	●
3. Who imagined that each magnet sets up a magnetic field in the space around it?	Hans Oersted	Heinrich Lenz	Michael Faraday	Simeon Poisson	○	○	●	○
4. The first magnetic field model (1824) was presented by:	Charles Coulomb	John Mitchell	Simeon Denis Poisson	Petrus Peregrinus	○	○	●	○
5. Sprinkling iron filings near a magnet helps us visualize:	electric current	gravitational field	magnetic field lines	sound waves	○	○	●	○
6. Unlike electric field lines, magnetic field lines:	start on positive charges	never form loops	form complete closed loops	end on neutral points	○	○	●	○
7. Outside a bar magnet, field lines go from:	south pole to north pole	north pole to south pole	north pole to north pole	the centre to the poles	○	●	○	○
8. Inside a bar magnet, field lines go from:	south pole to north pole	north pole to south pole	one side to the other side	nowhere (no lines inside)	●	○	○	○
9. North and South poles do not exist independently because:	field lines cross each other	poles always attract	magnetic monopoles do not exist	the field is a scalar	○	○	●	○
10. The field of a bar magnet is strongest at its:	centre	midway between poles	poles	every point equally	○	○	●	○
11. Magnetic field is a _____ quantity.	scalar	dimensionless	vector	constant	○	○	●	○
12. The density of magnetic field lines indicates the field's:	polarity only	temperature	charge	strength	○	○	○	●
13. Like magnetic poles _____ and unlike poles _____.	repel; attract	attract; repel	repel; repel	attract; attract	●	○	○	○
14. In April 1820 Oersted found that a magnetic needle near a current-carrying wire aligns:	perpendicular to the wire	parallel to the wire	at 45° to the wire	randomly	●	○	○	○
15. The magnetic field lines around a long straight current-carrying wire are:	straight lines parallel to wire	concentric circles	radial lines	ellipses	○	●	○	○
16. The magnetic field around a wire lasts:	permanently after first use	only for one second	only when wire is hot	only while current flows	○	○	○	●
17. In the right-hand rule for a wire, the thumb points along the:	magnetic field	magnetic force	conventional current	electron flow	○	○	●	○

CamScanner

Questions	A	B	C	D	A	B	C	D
18. Compass needles are placed in a circle around a vertical wire. A heavy current is passed. The needles set themselves:	pointing toward the wire	pointing away from the wire	parallel to the wire	along the tangent to the circle	○	○	○	●
19. In the same set-up the current is reversed. The needles will:	reverse their direction	stay unchanged	point toward the wire	spin continuously	●	○	○	○
20. In the same set-up the current is switched off. All needles again point:	north-south	along the tangent	toward the wire	east-west	●	○	○	○
21. A wire carries current vertically upward. Seen from above, its field circles:	anticlockwise	clockwise	radially outward	along the wire	●	○	○	○
22. A long hollow copper pipe carries a direct current. The magnetic field due to the current exists:	only inside the pipe	both inside and outside	only outside the pipe	neither inside nor outside	○	○	●	○
23. A student draws two magnetic field lines crossing at a point. This is wrong because field lines:	never cross each other	always cross at poles	are always straight	start on the equator	●	○	○	○
24. A bar magnet is broken in the middle. Because monopoles do not exist, each piece has:	only a north pole	only a south pole	both a north and south pole	no poles	○	○	●	○
25. The north pole of one magnet is brought near the north pole of another. They:	attract each other	do not interact	repel each other	swap poles	○	○	●	○
26. A current-carrying wire lies in the field of a bar magnet; the fields support on one side and oppose on the other. The wire tends to move toward the:	weaker field region	stronger field region	south pole only	north pole only	●	○	○	○
27. Force on a wire of length L with current I at angle θ to field B:	$F = BIL\cos\theta$	$F = BL\sin\theta / I$	$F = IL / (B\sin\theta)$	$F = BIL\sin\theta$	○	○	○	●
28. The force on a current-carrying wire is maximum when the wire is:	parallel to the field	antiparallel to the field	along the field lines	perpendicular to the field	○	○	○	●
29. A straight wire lies along a uniform magnetic field. The force on it is:	zero	BIL	BIL / 2	2BIL	●	○	○	○
30. The magnetic force on a current-carrying wire is directed:	perpendicular to both wire and field	along the wire	along the field	opposite to the current	●	○	○	○
31. A horizontal wire carries current toward the south. For an upward magnetic force the field must point toward the:	west	north	east	south	○	○	●	○
32. A horizontal wire of mass 0.40 kg per metre carries 5.0 A. Minimum perpendicular B to lift it ($g = 9.8\ m/s^2$):	0.392 T	1.96 T	0.784 T	0.08 T	○	○	●	○
33. A 0.5 m wire carrying 3.2 A is at right angles to a 2.0 T field. The force on it is:	1.6 N	2.4 N	6.4 N	3.2 N	○	○	○	●
34. A 2 m wire carrying 15 A lies at 60° to a 0.50 T field. The force on it is:	15 N	12.99 N	7.5 N	25.98 N	○	●	○	○

CamScanner

Questions	A	B	C	D	A	B	C	D
35. A 100 m power line carries 600 A at 70° to Earth's field of 5×10^{-5} T. The force is about:	3.00 N	1.03 N	28.2 N	2.82 N	○	○	○	●
36. The current in a wire in a perpendicular uniform field is doubled. The magnetic force:	halves	stays the same	becomes four times	doubles	○	○	○	●
37. The SI unit of magnetic flux density is the:	weber	tesla	ohm	coulomb	○	●	○	○
38. 1 tesla is the flux density when a 1 m wire carrying 1 A, perpendicular to the field, feels a force of:	1 J	1 N	10^4 N	1 W	○	●	○	○
39. A 2 m wire carrying 4 A, perpendicular to a field, feels 8 N. The flux density B is:	1 T	0.5 T	2 T	4 T	●	○	○	○
40. A positive charge at rest in a magnetic field experiences:	no magnetic force	maximum force	force qB	force that depends on B only	●	○	○	○
41. A moving charge feels magnetic force only if its velocity has a component:	parallel to B	along E	perpendicular to B	of zero magnitude	○	○	●	○
42. Magnitude of magnetic force on charge q moving with v at angle θ to B:	qvB cosθ	qB sinθ / v	qvB sinθ	qv sinθ / B	○	○	●	○
43. A negative charge moves with the same velocity as a positive charge of equal magnitude. The magnetic force on it is:	in the same direction	opposite in direction	zero	double	○	●	○	○
44. A charged particle enters a field perpendicular to B. Its path is:	straight	circular	helical	parabolic	○	●	○	○
45. A charged particle enters a magnetic field at 60° to B. Its path is:	circular	straight	elliptical	helical	○	○	○	●
46. A beam of neutrons passes through a strong magnetic field. The beam:	deflects like protons	moves in a circle	moves in a helix	is not deflected	○	○	○	●
47. An electron and a proton enter a field with the same velocity. Ratio of accelerations a_e/a_p is:	m_e/m_p	1	$(m_p/m_e)^{1/2}$	m_p/m_e	○	○	○	●
48. An electron circles with radius r in a field. If the field is halved, the new radius is:	2r	r/2	r/4	4r	●	○	○	○
49. A proton and an α-particle enter a field perpendicularly with the same velocity. $r_p : r_\alpha$ is:	1 : 1	1 : 2	2 : 1	4 : 1	○	●	○	○
50. A charged particle circles with radius R. Its energy is doubled. The new radius is:	√2 R	R/√2	2R	R/2	●	○	○	○
51. An α-particle and a proton have equal momenta and enter a field perpendicularly. $r_\alpha : r_p$ is:	1 : 2	2 : 1	1 : 1	4 : 1	●	○	○	○

CamScanner

Questions	A	B	C	D	A	B	C	D
52. A proton moves along the axis of a current-carrying solenoid. The magnetic force on it is:	radially inward	radially outward	along the axis	zero (no force acts)	○	○	○	●
53. The kinetic energy of a charge in a uniform magnetic field does not change because the force:	is always zero	is very small	acts along the velocity	changes only the direction of velocity	○	○	○	●
54. A charge circles in a uniform magnetic field. Which quantity stays constant?	velocity	momentum	direction of motion	speed	○	○	○	●
55. A positive and a negative charge enter the same field with the same velocity. They:	curve the same way	go straight	stop	curve in opposite directions	○	○	○	●
56. Electron accelerated from rest through 3600 V has speed about:	3.56×10^{5} m/s	1.54×10^{7} m/s	9.8×10^{6} m/s	3.56×10^{7} m/s	○	○	○	●
57. That electron enters a 2.70 T field perpendicularly. The maximum force is:	1.54×10^{-19} N	1.54×10^{-11} N	3.56×10^{7} N	zero	○	●	○	○
58. A 1 μC charge moving at 2×10^{6} m/s enters a 0.5 T field at 60°. The force is:	1.0 N	0.5 N	1.73 N	0.866 N	○	○	○	●
59. A positive charge moves at 3.1×10^{5} m/s normal to a 5.4×10^{-5} T field and feels 8.1×10^{-16} N. Its charge is:	1.6×10^{-19} C	6.4×10^{-17} C	4.8×10^{-17} C	4.8×10^{-10} C	○	○	●	○
60. A 2 μC charge with $v = (2i + 3j)\times10^{6}$ m/s is in a 2 T field along +y. The force is:	8 N along +z	8 N along −z	12 N along +x	zero	●	○	○	○
61. A charge circling in a magnetic field gets its centripetal force from:	gravity	the magnetic force	friction	the electric force	○	●	○	○
62. The radius of the circular path of a charge q (mass m, speed v) in field B is:	r = qB/mv	r = mvB/q	r = qv/mB	r = mv/qB	○	○	○	●
63. The angular frequency of a charge circling in a magnetic field is:	ω = qB/m	ω = mB/q	ω = m/qB	ω = qBm	●	○	○	○
64. The time period of a charge circling in a magnetic field is:	T = 2πqB/m	T = qB/2πm	T = mv/qB	T = 2πm/qB	○	○	○	●
65. A proton enters a field perpendicularly and its speed doubles. Its period of revolution:	doubles	halves	stays the same	becomes four times	○	○	●	○
66. A proton moves in a circle of radius 12 cm in a 0.40 T field. Its speed is about:	4.6×10^{4} m/s	1.2×10^{6} m/s	4.6×10^{6} m/s	7.7×10^{-21} m/s	○	○	●	○
67. A proton in a cyclotron is in a 0.75 T field. Its cyclotron frequency is about:	11.4×10^{6} Hz	1.14×10^{6} Hz	75×10^{6} Hz	0.75×10^{6} Hz	●	○	○	○
68. In a velocity selector the electric and magnetic fields are:	perpendicular to each other	parallel	antiparallel	both zero	●	○	○	○

CamScanner

Questions	A	B	C	D	A	B	C	D
69. Charged particles pass undeflected through a velocity selector if their speed is:	$v = B/E$	$v = EB$	$v = E - B$	$v = E/B$	○	○	○	●
70. For undeflected motion in a velocity selector, the electric force is:	double the magnetic force	zero	equal and opposite to the magnetic force	perpendicular to the magnetic force	○	○	●	○
71. In a velocity selector E = 6000 V/m and B = 0.03 T. The selected speed is:	2×10^{-5} m/s	2×10^{5} m/s	180 m/s	5×10^{-6} m/s	○	●	○	○
72. In a selector the selected speed is 1×10^{6} m/s. A particle with a smaller speed is deflected in the direction of the:	magnetic force	velocity	magnetic field	electric force	○	○	○	●
73. A particle faster than E/B in a velocity selector is deflected in the direction of the:	magnetic force	electric force	electric field only	velocity	●	○	○	○
74. The charge of the particle is doubled in a velocity selector (E, B same). The speed that passes straight:	doubles	halves	stays the same	becomes zero	○	○	●	○
75. An 850 eV electron moving along −x is undeflected in B = 18.0 mT. The required E is:	311×10^{3} N/C	311×10^{-3} N/C	18×10^{3} N/C	850×10^{3} N/C	●	○	○	○
76. The Lorentz force on a charge is given by:	$F = qE + q(v \times B)$	$F = qE - qvB$	$F = q(v \times B)$ only	$F = qE$ only	●	○	○	○
77. The magnetic field at distance r from a long straight wire carrying current I is:	$B = \mu_0 I / 2r$	$B = \mu_0 nI$	$B = \mu_0 Ir / 2\pi$	$B = \mu_0 I / 2\pi r$	○	○	○	●
78. The value of μ_0 is:	$4\pi\times10^{7}$ Wb A^{-1} m^{-1}	1.6×10^{-19} C	$4\pi\times10^{-7}$ Wb A^{-1} m^{-1}	9×10^{9} N m^2 C^{-2}	○	○	●	○
79. The distance from a long straight current-carrying wire is doubled. The field becomes:	double	one-fourth	half	unchanged	○	○	●	○
80. A horizontal power line carries 100 A east to west. The field 2.0 m below it is:	1.0×10^{-7} T	1.0×10^{-5} T	2.0×10^{-5} T	$4\pi\times10^{-5}$ T	○	●	○	○
81. For that power line, the field at the point below it acts toward the:	north	east	west	south	○	○	○	●
82. Two wires 0.6 m apart carry 4 A and 8 A in the same direction. The zero-field point is:	0.3 m from the 4 A wire	0.4 m from the 4 A wire	0.1 m from the 4 A wire	0.2 m from the 4 A wire	○	○	○	●
83. Currents flow in the same direction in two wires. The neutral point is closer to the wire carrying the:	larger current	smaller current	longer length	positive charge	○	●	○	○
84. The field at the centre of a single circular loop of radius r carrying I is:	$B = \mu_0 I / 2\pi r$	$B = \mu_0 nI$	$B = \mu_0 I / 4\pi r$	$B = \mu_0 I / 2r$	○	○	○	●
85. A single circular loop of radius 10 cm carries 10 A. The field at its centre is:	6.28×10^{-5} T	6.28×10^{-6} T	2.0×10^{-5} T	1.26×10^{-4} T	●	○	○	○

CamScanner

Questions	A	B	C	D	A	B	C	D
86. The radius of a current loop is doubled (same current). The field at the centre:	doubles	halves	stays the same	becomes four times	○	●	○	○
87. The magnetic field inside a long solenoid is:	$B = \mu_0 I / 2r$	$B = \mu_0 nI$	$B = \mu_0 I / 2\pi r$	$B = \mu_0 NLI$	○	●	○	○
88. In a solenoid, n stands for:	total turns N	turns per unit length (N/L)	length L	number of layers	○	●	○	○
89. A 15.0 cm solenoid has 300 turns and carries 5.0 A. The field inside is about:	1.26×10^{-4} T	1.88×10^{-3} T	1.26×10^{-2} T	0.38 T	○	○	●	○
90. A solenoid's length is doubled with the same number of turns and current. The field:	doubles	halves	stays the same	becomes four times	○	●	○	○
91. The number of turns of a solenoid is doubled while its length stays the same. The field:	halves	stays the same	doubles	becomes zero	○	○	●	○
92. Compared with outside, the field inside a solenoid is:	strong and uniform	weak and non-uniform	zero	the same	●	○	○	○
93. In right-hand rule III for a solenoid, the thumb points toward the:	south pole	north pole	current direction	centre of the coil	○	●	○	○
94. Seen from its left end, the current in a solenoid goes clockwise. The left end acts as a:	north pole	south pole	neutral end	positive pole	○	●	○	○
95. For electron (electronic) current in a solenoid, the same rule is applied with the:	right hand	left hand	both hands	no hand	○	●	○	○
96. Moving away from a long straight wire, the field lines are:	closer together	farther apart (weaker field)	straight	unchanged	○	●	○	○
97. A solenoid combined with a ferrous core is known as an:	electroscope	electrolyte	electrometer	electromagnet	○	○	○	●
98. A soft iron rod is inserted into a current-carrying solenoid. The field inside:	becomes weaker	becomes much stronger	becomes zero	stays the same	○	●	○	○
99. A ferrous core strengthens a solenoid's field because the core:	reduces the current	becomes magnetized by induction	cancels the field	cools the wire	○	●	○	○
100. Two parallel wires carry currents in the same direction. They:	repel each other	attract each other	do not interact	rotate	○	●	○	○
101. Two parallel wires carry currents in opposite directions. They:	attract each other	repel each other	do not interact	merge	○	●	○	○
102. The force per unit length between two long parallel wires is:	$F/L = \mu_0 I_1 I_2 / 2r$	$F/L = \mu_0 nI$	$F/L = \mu_0 I_1 I_2 / 2\pi r$	$F/L = I_1 I_2 / 2\pi r$	○	○	●	○

CamScanner

Questions	A	B	C	D	A	B	C	D
103. Two parallel wires carry 10 A each, 0.1 m apart, in the same direction. Force per metre:	2.0×10^{-4} N/m	2.0×10^{-6} N/m	2.0×10^{-2} N/m	1.0×10^{-4} N/m	●	○	○	○
104. The distance between two current-carrying parallel wires is doubled. The force per unit length:	doubles	halves	stays the same	becomes one-fourth	○	●	○	○
105. The forces that two parallel current-carrying wires exert on each other form an:	equilibrium pair	balanced torque	centripetal pair	action-reaction pair	○	○	○	●
106. Between two parallel wires with currents in the same direction, the net field is:	strong	infinite	weak	constant	○	○	●	○
107. Between two parallel wires with currents in opposite directions, the net field is:	weaker	zero	stronger	unchanged	○	○	●	○
108. Magnetic flux through an area A in field B (angle θ between B and area vector) is:	$\Phi = BA\sin\theta$	$\Phi = B/A$	$\Phi = BA\cos\theta$	$\Phi = B + A$	○	○	●	○
109. The SI unit of magnetic flux is the:	weber	tesla	gauss	henry	●	○	○	○
110. Magnetic flux through a plane is maximum when the plane is held:	parallel to the field lines	perpendicular to the field lines	at 90° to its normal	along the field	○	●	○	○
111. A flat loop is held parallel to the field lines. The flux through it is:	zero	maximum	BA/2	infinite	●	○	○	○
112. A flat coil of area 0.02 m^2 is perpendicular to a 0.5 T field. The flux is:	0.01 Wb	0.04 Wb	0.1 Wb	25 Wb	●	○	○	○
113. B = (4i + 6k) Wb/m^2 passes through a 2.0 m^2 loop lying flat in the xy-plane. The flux is:	8 Wb	12 Wb	20 Wb	4 Wb	○	●	○	○
114. A 0.8 T field is perpendicular to a disc of radius 2 cm. The flux is about:	1.0×10^{-1} Wb	1.0×10^{-3} Wb	3.2×10^{-2} Wb	0.8 Wb	○	●	○	○
115. Magnetic flux density is defined as flux per unit:	area	length	time	charge	●	○	○	○
116. Magnetic flux linkage is the product of magnetic flux and the:	area	number of turns	resistance	time	○	●	○	○
117. A 300-turn coil (A = 0.80 m^2) faces perpendicular to a 4 mT field. The flux linkage is:	9.6 Wb turns	0.096 Wb turns	0.96 Wb turns	3.2 Wb turns	○	○	●	○
118. A coil has 200 turns, area 0.004 m^2 and B = 12.0 mT (perpendicular). Flux linkage is:	9.6×10^{-3} Wb turns	9.6×10^{-1} Wb turns	4.8×10^{-5} Wb turns	2.4 Wb turns	●	○	○	○
119. The phenomenon in which a change in magnetic flux induces an emf is called:	electrolysis	magnetization	polarization	electromagnetic induction	○	○	○	●

CamScanner

Questions	A	B	C	D	A	B	C	D
120. The basic requirement for electromagnetic induction is a:	constant magnetic flux	change in magnetic flux linking the coil	very large coil	strong current	○	●	○	○
121. Faraday's law: induced emf is directly proportional to the:	resistance of the coil	length of the wire only	rate of change of flux linkage	mass of the magnet	○	○	●	○
122. Faraday's law with Lenz's law is written as:	$\varepsilon = +N\,\Delta t/\Delta\varphi$	$\varepsilon = -N\,\Delta\varphi/\Delta t$	$\varepsilon = N\,\Delta\varphi\cdot\Delta t$	$\varepsilon = -\Delta t/N\Delta\varphi$	○	●	○	○
123. A bar magnet is at rest inside a coil joined to a galvanometer. The galvanometer shows:	maximum current	alternating current	no current	reverse current	○	○	●	○
124. A magnet is moved toward a coil, then away. Compared with the first case, the induced current when moved away is:	in the same direction	in the opposite direction	zero	doubled	○	●	○	○
125. A magnet is moved toward a coil faster. The induced emf:	decreases	stays the same	becomes zero	increases	○	○	○	●
126. A coil rotated in a magnetic field has induced emf because the:	coil's resistance changes	angle between B and area vector changes	magnet gets heavier	field becomes zero	○	●	○	○
127. Rotating a coil in a magnetic field is the basic principle of an electric:	generator	transformer	seismometer	electroscope	●	○	○	○
128. Two coils are placed close together and the current in one is changed. This is the principle of a:	generator	cyclotron	transformer	velocity selector	○	○	●	○
129. A loop sits in a steady, constant magnetic flux. The induced emf is:	maximum	zero	negative	infinite	○	●	○	○
130. The induced emf in a conductor does not depend on its:	rate of change of flux	number of turns	resistance	area of coil	○	○	●	○
131. The induced current in a closed circuit depends on the circuit's:	colour	mass	temperature of room	resistance	○	○	○	●
132. The flux through an open loop changes. Then:	emf is induced but no current flows	current flows but no emf	neither emf nor current	both emf and current	●	○	○	○
133. A 50 Ω coil and a 100 Ω galvanometer are in series with an induced emf of 1 V. The current is about:	20 mA	1 A	0.67 mA	6.67 mA	○	○	○	●
134. A 200-turn coil's flux changes by 5×10^{-3} Wb in 0.1 s. The induced emf is:	10 V	1 V	100 V	0.1 V	●	○	○	○
135. A loop in a perpendicular 0.6 T field shrinks at 0.8 m^2/s. The induced emf is:	0.75 V	0.48 V	1.33 V	4.8 V	○	●	○	○
136. Which action increases the emf induced in a coil?	increasing the number of turns	decreasing magnet speed	keeping the magnet at rest	decreasing coil area	●	○	○	○

CamScanner

Questions	A	B	C	D	A	B	C	D
137. The law that the induced current opposes the change producing it was found in 1834 by:	Heinrich Lenz	Michael Faraday	Hans Oersted	John Mitchell	●	○	○	○
138. According to Lenz's law the induced current always:	opposes the change that causes it	aids the change that causes it	is zero	flows in the same direction as flux	●	○	○	○
139. Lenz's law is in accordance with the law of conservation of:	charge	energy	momentum	angular momentum	○	●	○	○
140. The north pole of a bar magnet is pushed toward a coil. The coil face nearest the magnet becomes a:	south pole	neutral face	north pole	positive face	○	○	●	○
141. When a bar magnet is pulled away from a coil, the face of the coil toward the magnet becomes a:	north pole	neutral face	positive face	south pole	○	○	○	●
142. Pushing a magnet toward a coil takes effort because the work done against the opposing force is converted into:	sound energy	nuclear energy	gravitational energy	electrical energy	○	○	○	●
143. In Fleming's right-hand rule, the thumb points along the conductor's:	induced current	magnetic field	motion	resistance	○	○	●	○
144. A metallic ring hangs in a vertical plane. A magnet's N pole is pushed toward it. The ring:	moves toward the magnet	stays stationary	spins about its axis	moves away from the magnet	○	○	○	●
145. A metal plate under a vibrating magnet damps its oscillations because induced currents:	attract the magnet	oppose the motion (Lenz's law)	heat the air	reverse gravity	○	●	○	○
146. A seismometer, which records ground vibrations, works on:	Faraday's law of induction	Ohm's law	Coulomb's law	Boyle's law	●	○	○	○
147. During an earthquake a seismometer's coil and magnet:	stay fixed together	lose their charge	stop working	move relative to each other	○	○	○	●
148. The first seismometer based on electromagnetic induction (around 1906) was built by:	Faraday	Lenz	Poisson	Gallitzin	○	○	○	●
149. Which device also obeys Faraday's law of induction?	thermometer	barometer	transformer	compass	○	○	●	○
150. ε and Δφ/Δt have the same unit, which is the:	volt	weber	ampere	tesla	●	○	○	○
151. A 0.8 m wire carrying 6 A is perpendicular to a 0.5 T field. The magnetic force on it is:	4.8 N	1.2 N	2.4 N	9.6 N	○	○	●	○
152. A 1.5 m wire carrying 4 A lies at 30° to a 0.2 T field. The magnetic force on it is:	1.04 N	1.2 N	0.3 N	0.6 N	○	○	○	●
153. A 0.25 m wire carrying 10 A is perpendicular to a 0.8 T field. The magnetic force on it is:	4 N	1 N	2 N	8 N	○	○	●	○

CamScanner

Questions	A	B	C	D	A	B	C	D
154. A 2 m wire carrying 8 A lies at 60° to a 0.4 T field. The magnetic force on it is:	5.54 N	3.2 N	11.1 N	2.77 N	●	○	○	○
155. A 3 m wire carrying 12 A lies at 45° to a 0.05 T field. The magnetic force on it is:	2.55 N	1.27 N	0.636 N	5.09 N	○	●	○	○
156. A 0.4 m wire carrying 2.5 A lies at 30° to a 0.6 T field. The magnetic force on it is:	0.52 N	0.6 N	0.15 N	0.3 N	○	○	○	●
157. A 1.2 m wire carrying 7.5 A is perpendicular to a 0.3 T field. The magnetic force on it is:	5.4 N	1.35 N	10.8 N	2.7 N	○	○	○	●
158. A 0.9 m wire carrying 3 A lies at 60° to a 0.9 T field. The magnetic force on it is:	2.1 N	1.22 N	4.21 N	1.05 N	●	○	○	○
159. A 5 m wire carrying 20 A is perpendicular to a 0.02 T field. The magnetic force on it is:	4 N	1 N	2 N	8 N	○	○	●	○
160. A 0.6 m wire carrying 15 A lies at 30° to a 0.3 T field. The magnetic force on it is:	2.34 N	1.35 N	2.7 N	0.675 N	○	●	○	○
161. A 0.6 m wire carrying 5 A, perpendicular to a field, feels a force of 3 N. The flux density is:	1 T	2 T	0.5 T	4 T	●	○	○	○
162. A wire in a 0.4 T perpendicular field feels 1.2 N when 0.5 m of it carries current. The current is:	6 A	12 A	3 A	24 A	●	○	○	○
163. A wire carrying 5 A in a 0.3 T perpendicular field feels 0.9 N. The length of wire in the field is:	1.2 m	0.6 m	0.3 m	2.4 m	○	●	○	○
164. A horizontal wire of mass 0.20 kg per metre carries 4 A. The minimum perpendicular B to lift it ($g = 9.8\ m/s^2$) is:	0.98 T	0.49 T	0.245 T	1.96 T	○	●	○	○
165. A horizontal wire of mass 0.05 kg per metre carries 10 A. The minimum perpendicular B to lift it is:	0.049 T	0.098 T	0.0245 T	0.196 T	●	○	○	○
166. A wire of mass 0.10 kg per metre lies in a 0.7 T perpendicular field. The current needed to lift it is:	2.8 A	1.4 A	0.7 A	5.6 A	○	●	○	○
167. A wire of mass 0.250 g/cm carries 2.5 A. The minimum perpendicular B to lift it is:	0.196 T	0.098 T	0.049 T	0.392 T	○	●	○	○
168. A 20 g rod 0.5 m long lies perpendicular to a 0.4 T field. The current that just floats it is:	0.98 A	1.96 A	0.49 A	3.92 A	●	○	○	○
169. The maximum force on a wire in a field is 6 N. The force when it is at 30° to the field is:	5.2 N	6 N	3 N	1.5 N	○	○	●	○
170. The maximum force on a wire in a field is 8 N. The force when it is parallel to the field is:	0 N	8 N	4 N	16 N	●	○	○	○

CamScanner

Questions	A	B	C	D	A	B	C	D
171. A 2 μC charge moves at 3×10^{5} m/s perpendicular to a 0.4 T field. The magnetic force is:	0.24 N	0.48 N	0.12 N	0.96 N	●	○	○	○
172. A 5 μC charge moves at 4×10^{6} m/s at 30° to a 0.2 T field. The magnetic force is:	3.46 N	4 N	1 N	2 N	○	○	○	●
173. An electron moves at 5×10^{6} m/s perpendicular to a 2 T field. The magnetic force is:	3.2×10^{-12} N	8×10^{-13} N	1.6×10^{-12} N	6.4×10^{-12} N	○	○	●	○
174. A proton moves at 1×10^{7} m/s at 60° to a 1.5 T field. The magnetic force is:	2.08×10^{-12} N	1.2×10^{-12} N	4.16×10^{-12} N	1.04×10^{-12} N	●	○	○	○
175. An α-particle moves at 2×10^{6} m/s perpendicular to a 0.8 T field. The magnetic force is:	1.02×10^{-12} N	2.56×10^{-13} N	2.05×10^{-12} N	5.12×10^{-13} N	○	○	○	●
176. A 4 μC charge moves at 2.5×10^{5} m/s at 45° to a 0.6 T field. The magnetic force is:	0.849 N	0.212 N	0.424 N	1.7 N	○	○	●	○
177. A proton moves at 4×10^{6} m/s at 30° to a 0.9 T field. The magnetic force is:	4.99×10^{-13} N	5.76×10^{-13} N	2.88×10^{-13} N	1.44×10^{-13} N	○	○	●	○
178. A 3 μC charge moves at 2×10^{6} m/s perpendicular to a 0.25 T field. The magnetic force is:	1.5 N	3 N	0.75 N	6 N	●	○	○	○
179. A proton ($e = 1.6\times10^{-19}$ C) in a 1.5 T field feels 4.8×10^{-13} N moving perpendicular to it. Its speed is:	4×10^{6} m/s	1×10^{6} m/s	2×10^{6} m/s	8×10^{6} m/s	○	○	●	○
180. A 2 μC charge moving at 5×10^{5} m/s perpendicular to a field feels 0.5 N. The field is:	1 T	0.25 T	0.5 T	2 T	○	○	●	○
181. A charge moving at 2×10^{5} m/s perpendicular to a 0.5 T field feels 0.6 N. The charge is:	1.2×10^{-5} C	3×10^{-6} C	2.4×10^{-5} C	6×10^{-6} C	○	○	○	●
182. A 2 μC charge moves with $v = 4\times10^{5}$ m/s along +x in a 0.5 T field along +y. The force is:	0.4 N along +z	0.4 N along −z	0.4 N along +x	0.8 N along +z	●	○	○	○
183. A 2 μC charge moves with $v = 2\times10^{5}$ m/s along +y in a 0.5 T field along +x. The force is:	0.2 N along +z	0.2 N along +y	0.2 N along −z	0.4 N along −z	○	○	●	○
184. A negative charge moves along +x in a field along +y. The magnetic force on it points along:	+z	+x	−z	+y	○	○	●	○
185. An electron moves at 2×10^{6} m/s perpendicular to a 1.0×10^{-3} T field. Radius of its path:	0.0228 m	0.00569 m	0.0456 m	0.0114 m	○	○	○	●
186. An electron moves at 3×10^{6} m/s perpendicular to a 2.0×10^{-3} T field. Radius of its path:	0.00854 m	0.0171 m	0.00427 m	0.0342 m	●	○	○	○
187. A proton moves at 1×10^{6} m/s perpendicular to a 0.50 T field. Radius of its path:	0.0418 m	0.0104 m	0.0209 m	0.0835 m	○	○	●	○

CamScanner

Questions	A	B	C	D	A	B	C	D
188. An α-particle ($m = 4m_p$, $q = 2e$) moves at 2×10^6 m/s perpendicular to a 0.40 T field. Radius:	0.104 m	0.209 m	0.0522 m	0.418 m	●	○	○	○
189. An electron accelerated from rest through 400 V enters a 1.0×10^{-3} T field perpendicularly. Radius:	0.0675 m	0.135 m	0.0337 m	0.27 m	●	○	○	○
190. A proton circles with radius 0.05 m in a 0.8 T field. Its speed is:	7.66×10^6 m/s	3.83×10^6 m/s	1.92×10^6 m/s	1.53×10^7 m/s	○	●	○	○
191. A proton moving at 2×10^6 m/s circles with radius 0.1 m. The field strength is:	0.418 T	0.209 T	0.104 T	0.835 T	○	●	○	○
192. A charge circles with radius 5 cm. The field is doubled and its speed tripled. The new radius is:	3.3 cm	7.5 cm	10 cm	30 cm	○	●	○	○
193. A charge circles with radius 6 cm. The speed is halved and the field is tripled. The new radius is:	9 cm	4 cm	1 cm	36 cm	○	○	●	○
194. An electron circles in a 1.0×10^{-3} T field. Its frequency is:	5.59×10^7 Hz	1.4×10^7 Hz	2.8×10^7 Hz	1.12×10^8 Hz	○	○	●	○
195. An electron circles in a 2.0×10^{-3} T field. Its time period is:	3.58×10^{-8} s	1.79×10^{-8} s	8.94×10^{-9} s	7.15×10^{-8} s	○	●	○	○
196. A proton circles in a 1.2 T field. Its frequency is:	3.66×10^7 Hz	1.83×10^7 Hz	9.15×10^6 Hz	7.32×10^7 Hz	○	●	○	○
197. A proton circles in a 0.50 T field. Its frequency is:	1.52×10^7 Hz	3.81×10^6 Hz	3.05×10^7 Hz	7.62×10^6 Hz	○	○	○	●
198. A proton circles in a 0.40 T field. Its angular frequency is:	7.66×10^7 rad/s	3.83×10^7 rad/s	1.92×10^7 rad/s	1.53×10^8 rad/s	○	●	○	○
199. A proton must circle 1.5×10^7 times per second. The required field is:	1.97 T	0.492 T	3.93 T	0.984 T	○	○	○	●
200. An electron is accelerated from rest through 100 V. Its speed is:	1.19×10^7 m/s	2.96×10^6 m/s	5.93×10^6 m/s	2.37×10^7 m/s	○	○	●	○
201. An electron is accelerated from rest through 900 V. Its speed is:	1.78×10^7 m/s	3.56×10^7 m/s	8.89×10^6 m/s	7.11×10^7 m/s	●	○	○	○
202. A proton is accelerated from rest through 1000 V. Its speed is:	8.75×10^5 m/s	2.19×10^5 m/s	1.75×10^6 m/s	4.38×10^5 m/s	○	○	○	●
203. A proton is accelerated from rest through 2000 V. Its kinetic energy is:	6.4×10^{-16} J	3.2×10^{-16} J	1.6×10^{-16} J	1.28×10^{-15} J	○	●	○	○
204. A velocity selector has $E = 1.0\times10^4$ V/m and B = 0.05 T. The selected speed is:	4×10^5 m/s	1×10^5 m/s	8×10^5 m/s	2×10^5 m/s	○	○	○	●

CamScanner

Questions	A	B	C	D	A	B	C	D
205. A velocity selector has E = 8000 V/m and B = 0.02 T. The selected speed is:	8×10^{5} m/s	2×10^{5} m/s	1.6×10^{6} m/s	4×10^{5} m/s	○	○	○	●
206. To select particles of speed 1.5×10^{6} m/s with E = 3×10^{5} N/C, the magnetic field needed is:	0.4 T	0.1 T	0.8 T	0.2 T	○	○	○	●
207. To select particles of speed 5×10^{5} m/s with B = 0.4 T, the electric field needed is:	4×10^{5} N/C	2×10^{5} N/C	1×10^{5} N/C	8×10^{5} N/C	○	●	○	○
208. A 500 eV electron passes undeflected through a selector with B = 10 mT. The electric field is:	1.33×10^{5} N/C	2.65×10^{5} N/C	6.63×10^{4} N/C	5.3×10^{5} N/C	●	○	○	○
209. In a selector E/B = 2×10^{5} m/s. A particle with speed 3×10^{5} m/s is deflected toward the:	magnetic force direction	electric force direction	it goes straight	it stops	●	○	○	○
210. In a selector E/B = 2×10^{5} m/s. A particle with speed 1×10^{5} m/s is deflected toward the:	magnetic force direction	it goes straight	electric force direction	it stops	○	○	●	○
211. A 2 µC charge moves at 1×10^{6} m/s in E = 1×10^{5} V/m and B = 0.05 T (forces opposite). The net force is:	0.1 N	0.3 N	0.2 N	0.05 N	●	○	○	○
212. A 2 µC charge moves at 1×10^{6} m/s in E = 1×10^{5} V/m and B = 0.05 T (forces in the same direction). The net force is:	0.1 N	0.3 N	0.6 N	0.15 N	○	●	○	○
213. A long straight wire carries 10 A. The magnetic field 0.05 m from it is:	8×10^{-5} T	2×10^{-5} T	4×10^{-5} T	1.6×10^{-4} T	○	○	●	○
214. A long straight wire carries 25 A. The magnetic field 0.1 m from it is:	1×10^{-4} T	2.5×10^{-5} T	2×10^{-4} T	5×10^{-5} T	○	○	○	●
215. A long straight wire carries 100 A. The magnetic field 0.4 m from it is:	1×10^{-4} T	2.5×10^{-5} T	2×10^{-4} T	5×10^{-5} T	○	○	○	●
216. A long straight wire carries 50 A. The magnetic field 2 m from it is:	1×10^{-5} T	2.5×10^{-6} T	5×10^{-6} T	2×10^{-5} T	○	○	●	○
217. A long straight wire carries 200 A. The magnetic field 0.25 m from it is:	1.6×10^{-4} T	3.2×10^{-4} T	8×10^{-5} T	6.4×10^{-4} T	●	○	○	○
218. A long straight wire carries 5 A. The magnetic field 0.02 m from it is:	1×10^{-4} T	2.5×10^{-5} T	5×10^{-5} T	2×10^{-4} T	○	○	●	○
219. A long straight wire carries 1000.000000 A. The magnetic field 10 m from it is:	4×10^{-5} T	1×10^{-5} T	2×10^{-5} T	8×10^{-5} T	○	○	●	○
220. A long straight wire produces 4.0×10^{-5} T at 0.1 m. The current is:	20 A	40 A	10 A	80 A	●	○	○	○
221. A long straight wire carrying 10 A produces 2.0×10^{-5} T at a distance of:	0.2 m	0.05 m	0.1 m	0.4 m	○	○	●	○

CamScanner

Questions	A	B	C	D	A	B	C	D
222. A wire gives 8×10^{-5} T at 4 cm. At 16 cm from it the field is:	4×10^{-5} T	3.2×10^{-4} T	1×10^{-5} T	2×10^{-5} T	○	○	○	●
223. A single circular loop of radius 0.05 m carries 5 A. The field at its centre is:	1.26×10^{-4} T	3.14×10^{-5} T	2.51×10^{-4} T	6.28×10^{-5} T	○	○	○	●
224. A single circular loop of radius 0.02 m carries 2 A. The field at its centre is:	6.28×10^{-5} T	1.26×10^{-4} T	3.14×10^{-5} T	2.51×10^{-4} T	●	○	○	○
225. A single circular loop of radius 0.3 m carries 12 A. The field at its centre is:	5.03×10^{-5} T	2.51×10^{-5} T	1.26×10^{-5} T	1.01×10^{-4} T	○	●	○	○
226. A single circular loop of radius 0.04 m carries 8 A. The field at its centre is:	2.51×10^{-4} T	1.26×10^{-4} T	6.28×10^{-5} T	5.03×10^{-4} T	○	●	○	○
227. A single loop of radius 0.1 m has a field of 3.14×10^{-5} T at its centre. The current is:	9.99 A	2.5 A	5 A	20 A	○	○	●	○
228. A solenoid of 500 turns and length 0.25 m carries 2 A. The field inside is:	0.0101 T	0.00503 T	0.00251 T	0.0201 T	○	●	○	○
229. A solenoid of 1000 turns and length 0.5 m carries 1.5 A. The field inside is:	0.00377 T	0.00754 T	0.00188 T	0.0151 T	●	○	○	○
230. A solenoid of 200 turns and length 0.1 m carries 0.5 A. The field inside is:	0.00251 T	6.28×10^{-4} T	0.00503 T	0.00126 T	○	○	○	●
231. A solenoid of 600 turns and length 0.3 m carries 4 A. The field inside is:	0.0201 T	0.00503 T	0.0101 T	0.0402 T	○	○	●	○
232. A solenoid of 1200 turns and length 0.6 m carries 2.5 A. The field inside is:	0.0126 T	0.00314 T	0.00628 T	0.0251 T	○	○	●	○
233. A solenoid has 800 turns per metre and carries 3 A. The field inside is:	0.00603 T	0.00302 T	0.00151 T	0.0121 T	○	●	○	○
234. A solenoid carrying 2 A has B = 6.28×10^{-3} T inside. Its turns per metre are:	1250.000000	5000.000000	628	2500.000000	○	○	○	●
235. A solenoid 0.2 m long carries 5 A and has 9.42×10^{-3} T inside. Its total turns are about:	300	150	600	1500.000000	●	○	○	○
236. The field inside a solenoid is 4 mT. If its length is doubled (same turns, current), the field becomes:	2 mT	8 mT	4 mT	1 mT	●	○	○	○
237. The field inside a solenoid is 4 mT. If the turns are doubled (same length, current), the field becomes:	8 mT	2 mT	4 mT	16 mT	●	○	○	○
238. A solenoid's current is tripled and its field is then 9 mT. The original field was:	3 mT	27 mT	9 mT	1 mT	●	○	○	○

CamScanner

Questions	A	B	C	D	A	B	C	D
239. Two long parallel wires carry 5 A and 5 A, 0.05 m apart. The force per metre is:	2×10^{-4} N/m	5×10^{-5} N/m	4×10^{-4} N/m	1×10^{-4} N/m	○	○	○	●
240. Two long parallel wires carry 20 A and 30 A, 0.2 m apart. The force per metre is:	0.0012 N/m	3×10^{-4} N/m	6×10^{-4} N/m	0.0024 N/m	○	○	●	○
241. Two long parallel wires carry 100 A and 100 A, 0.5 m apart. The force per metre is:	0.008 N/m	0.002 N/m	0.016 N/m	0.004 N/m	○	○	○	●
242. Two long parallel wires carry 8 A and 12 A, 0.04 m apart. The force per metre is:	9.6×10^{-4} N/m	2.4×10^{-4} N/m	0.00192 N/m	4.8×10^{-4} N/m	○	○	○	●
243. Two long parallel wires carry 2 A and 3 A, 0.01 m apart. The force per metre is:	2.4×10^{-4} N/m	6×10^{-5} N/m	1.2×10^{-4} N/m	4.8×10^{-4} N/m	○	○	●	○
244. Two parallel wires carry 10 A each and attract with 1.0×10^{-4} N per metre. Their separation is:	0.4 m	0.2 m	0.1 m	0.8 m	○	●	○	○
245. A 10 A wire and another wire 0.05 m away have 8.0×10^{-5} N/m between them. The second current is:	2 A	4 A	1 A	8 A	●	○	○	○
246. Two parallel wires carry 20 A and 30 A, 0.2 m apart. The total force on a 3 m length is:	0.0036 N	9×10^{-4} N	0.0072 N	0.0018 N	○	○	○	●
247. Parallel wires 0.4 m apart carry 3 A and 9 A in the same direction. The neutral point is from the 3 A wire at:	0.1 m	0.2 m	0.05 m	0.4 m	●	○	○	○
248. Parallel wires 0.8 m apart carry 2 A and 6 A in the same direction. The neutral point is from the 2 A wire at:	0.2 m	0.4 m	0.1 m	0.8 m	●	○	○	○
249. Parallel wires 1.2 m apart carry 5 A and 15 A in the same direction. The neutral point is from the 5 A wire at:	0.6 m	0.15 m	1.2 m	0.3 m	○	○	○	●
250. Two wires 0.5 m apart carry equal currents in the same direction. The neutral point is from either wire at:	0.25 m	0.5 m	0.125 m	1 m	●	○	○	○
251. A 0.05 m² coil is in a 0.4 T field, with 0° between B and the area vector. The flux is:	0.04 Wb	0.01 Wb	0.02 Wb	0.08 Wb	○	○	●	○
252. A 0.02 m² coil is in a 0.6 T field, with 60° between B and the area vector. The flux is:	0.0104 Wb	0.012 Wb	0.006 Wb	0.003 Wb	○	○	●	○
253. A 0.04 m² coil is in a 0.5 T field, with 30° between B and the area vector. The flux is:	0.0173 Wb	0.01 Wb	0.0346 Wb	0.00866 Wb	●	○	○	○
254. A 0.0025 m² coil is in a 1.2 T field, with 0° between B and the area vector. The flux is:	0.006 Wb	0.003 Wb	0.0015 Wb	0.012 Wb	○	●	○	○
255. A 0.1 m² coil is in a 0.8 T field, with 45° between B and the area vector. The flux is:	0.113 Wb	0.0566 Wb	0.0283 Wb	0.226 Wb	○	●	○	○

CamScanner

Questions	A	B	C	D	A	B	C	D
256. A circular loop of radius 5 cm lies perpendicular to a 0.3 T field. The flux is:	0.00471 Wb	0.00118 Wb	0.00942 Wb	0.00236 Wb	○	○	○	●
257. A circular loop of radius 10 cm lies perpendicular to a 0.2 T field. The flux is:	0.0126 Wb	0.00628 Wb	0.00314 Wb	0.0251 Wb	○	●	○	○
258. A flux of 4×10^{-3} Wb passes perpendicularly through 0.01 m². The flux density is:	0.8 T	0.4 T	0.2 T	1.6 T	○	●	○	○
259. A flux of 2×10^{-3} Wb passes perpendicularly through an area in a 0.5 T field. The area is:	0.004 m²	0.008 m²	0.002 m²	0.016 m²	●	○	○	○
260. A 100-turn coil has B = 0.2 T and A = 0.01 m² (perpendicular). The flux linkage is:	0.4 Wb turns	0.1 Wb turns	0.8 Wb turns	0.2 Wb turns	○	○	○	●
261. A 500-turn coil has B = 3 mT and A = 0.02 m² (perpendicular). The flux linkage is:	0.03 Wb turns	0.06 Wb turns	0.015 Wb turns	0.12 Wb turns	●	○	○	○
262. A 250-turn coil has B = 0.04 T and A = 0.005 m² (perpendicular). The flux linkage is:	0.1 Wb turns	0.05 Wb turns	0.025 Wb turns	0.2 Wb turns	○	●	○	○
263. A coil with flux linkage 0.6 Wb turns has a flux of 2 mWb per turn. Its number of turns is:	150	600	1200.000000	300	○	○	○	●
264. A magnetic field of 0.2 T equals:	2000 G	20 G	200 G	0.02 G	●	○	○	○
265. A magnetic field of 3000 G equals:	30 T	3 T	0.03 T	0.3 T	○	○	○	●
266. A magnetic field of 5×10^{-3} T equals:	5 G	50 G	500 G	0.5 G	○	●	○	○
267. Earth's field of 0.5 G equals:	5×10^{-4} T	5×10^{-5} T	5×10^{-6} T	0.5 T	○	●	○	○
268. The flux linking a 100-turn coil changes by 0.002 Wb in 0.05 s. The average induced emf is:	4 V	8 V	2 V	16 V	●	○	○	○
269. The flux linking a 200-turn coil changes by 0.015 Wb in 0.1 s. The average induced emf is:	60 V	15 V	120 V	30 V	○	○	○	●
270. The flux linking a 1-turn coil changes by 0.4 Wb in 2 s. The average induced emf is:	0.4 V	0.1 V	0.2 V	0.8 V	○	○	●	○
271. The flux linking a 500-turn coil changes by 0.01 Wb in 0.25 s. The average induced emf is:	40 V	20 V	10 V	80 V	○	●	○	○
272. The flux linking a 50-turn coil changes by 0.004 Wb in 0.2 s. The average induced emf is:	2 V	0.5 V	1 V	4 V	○	○	●	○

CamScanner

Questions	A	B	C	D	A	B	C	D
273. A 200-turn coil of area 3×10^{-3} m² faces a field changing from 0.1 T to 0.5 T in 0.2 s. The average emf is:	2.4 V	0.6 V	4.8 V	1.2 V	○	○	○	●
274. A single loop in a 0.5 T field (perpendicular) shrinks from 0.2 m² to 0.1 m² in 0.5 s. The induced emf is:	0.1 V	0.2 V	0.05 V	0.4 V	●	○	○	○
275. A 150-turn coil's flux rises from 2 mWb to 4 mWb in 0.1 s. The average induced emf is:	6 V	3 V	1.5 V	12 V	○	●	○	○
276. A 100-turn coil (B = 0.5 T, A = 0.02 m²) is turned from perpendicular to parallel to the field in 0.1 s. Average emf:	20 V	10 V	5 V	40 V	○	●	○	○
277. An induced emf of 2 V acts in a 20 Ω coil in series with a 80 Ω galvanometer. The current is:	0.04 A	0.01 A	0.02 A	0.08 A	○	○	●	○
278. A 150-turn coil (50 Ω) with a 100 Ω galvanometer in series gets an average emf of 3 V. The current is:	0.04 A	0.01 A	0.08 A	0.02 A	○	○	○	●
279. A 100-turn coil has a flux change of 6×10^{-3} Wb and emf 3 V. The time taken is:	0.4 s	0.1 s	0.8 s	0.2 s	○	○	○	●
280. A 50-turn coil has an average emf of 12 V when the flux changes in 0.1 s. The flux change is:	0.048 Wb	0.024 Wb	0.012 Wb	0.096 Wb	○	●	○	○
281. A coil has an average emf of 15 V from a 5×10^{-3} Wb change in 0.1 s. The number of turns is:	150	300	600	30	○	●	○	○
282. A loop in a 0.6 T perpendicular field shrinks at 1.5 m²/s. The induced emf is:	1.8 V	0.45 V	0.9 V	3.6 V	○	○	●	○
283. A single loop's flux falls from 0.01 Wb to zero in 0.25 s. The induced emf is:	0.08 V	0.02 V	0.04 V	0.16 V	○	○	●	○
284. The flux through a coil changes at 0.5 Wb/s for a 40-turn coil. The induced emf is:	0.5 V	20 V	40 V	0.0125 V	○	●	○	○
285. The flux linking a coil is constant at 0.2 Wb for 5 s. The induced emf is:	0.04 V	1 V	0 V	0.2 V	○	○	●	○
286. Magnetic force does no work on a charged particle moving in a circle because the force is:	parallel to the displacement	zero in magnitude	opposite to the velocity	perpendicular to the displacement	○	○	○	●
287. 1 weber is equivalent to:	1 T / m²	1 T m	1 N per A	1 T m²	○	○	○	●
288. The unit of magnetic flux linkage is:	T turns	Wb per second	N per A	Wb turns	○	○	○	●
289. Induced emf produced by relative motion (rotating a coil in a field) is the:	transformer effect	catapult effect	Wien effect	generator effect	○	○	○	●

CamScanner

Questions	A	B	C	D	A	B	C	D
290. Induced emf produced by changing the magnetic field of a nearby coil is the:	generator effect	catapult effect	cyclotron effect	transformer effect	○	○	○	●
291. To apply Lenz's law to an open loop, we imagine the loop to be:	cut in half	removed	closed	rotated	○	○	●	○
292. In Fleming's right-hand rule, the middle finger points along the:	magnetic field	induced current	motion	induced emf's resistance	○	●	○	○
293. In Fleming's left-hand rule, the middle finger points along the:	current	magnetic field	force	velocity	●	○	○	○
294. In Fleming's right-hand rule, the forefinger points along the:	magnetic field	motion	induced current	force	●	○	○	○
295. Which of these is a vector quantity?	magnetic flux	magnetic flux density	flux linkage	induced emf	○	●	○	○
296. A larger rate of change of flux linkage produces:	a smaller induced emf	a larger induced emf	no induced emf	a larger resistance	○	●	○	○
297. A magnetic field line density that is twice as large indicates a field that is:	weaker	stronger	unchanged	perpendicular	○	●	○	○
298. A wire at 0° or 180° to a field feels zero force because:	$\sin\theta = 1$	$\sin\theta = 0$	$\cos\theta = 0$	B = 0 there	○	●	○	○
299. A charge moving at 0° or 180° to B feels zero force because:	$\sin\theta = 1$	q = 0	$\sin\theta = 0$	B = infinite	○	○	●	○
300. The cyclotron frequency $f = qB/2\pi m$ does NOT depend on the particle's:	charge	mass	speed	field strength	○	○	●	○

Study Bees
OFFICIAL PAK

CamScanner