

本科目不可以使用計算機

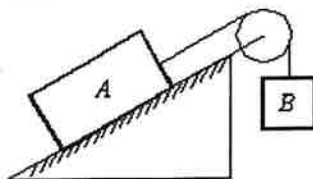
本科目試題共 8 頁

選擇題(單選題，共 50 題，一題 2 分，答錯不扣分)：

1. An object starts from rest at the origin and moves along the x axis with a constant acceleration of 4 m/s^2 . Its average velocity as it goes from $x = 2 \text{ m}$ to $x = 8 \text{ m}$ is:
(A) 1 m/s (B) 2 m/s (C) 3 m/s (D) 5 m/s (E) 6 m/s
2. A ball is thrown horizontally from the top of a 20-m high hill. It strikes the ground at an angle of 45° . With what speed was it thrown? Use $g = 10 \text{ m/s}^2$.



- (A) 14 m/s (B) 20 m/s (C) 28 m/s (D) 32 m/s (E) 40 m/s
3. The speed of a particle moving in a circle 2.0 m in radius increases at the constant rate of 6.0 m/s^2 . At an instant when the magnitude of the total acceleration is 10.0 m/s^2 , what is the speed of the particle?
(A) 3.0 m/s (B) 4.0 m/s (C) 5.0 m/s (D) 6.0 m/s (E) 8.0 m/s
 4. Block A, with a mass of 10 kg, rests on a 30° incline. The coefficient of kinetic friction is 0.20. The attached string is parallel to the incline and passes over a massless, frictionless pulley at the top. Block B, with a mass of 8.0 kg, is attached to the dangling end of the string (take $\sqrt{3} \approx 1.7$ and $g = 10 \text{ m/s}^2$). The acceleration of B is:



- (A) 0.72 m/s^2 , up (B) 0.72 m/s^2 , down (C) 2.6 m/s^2 , up (D) 2.6 m/s^2 , down (E) 0 m/s^2
5. Block A, with mass m_A , is initially at rest on a horizontal floor. Block B, with mass m_B , is initially at rest on the horizontal top surface of A. The coefficient of static friction between the two blocks is μ_s . Block A is pulled with a horizontal force. It begins to slide out from under B if the force is greater than:
(A) $m_A g$ (B) $m_B g$ (C) $\mu_s m_A g$ (D) $\mu_s m_B g$ (E) $\mu_s (m_A + m_B) g$
 6. As a 2.0-kg object moves from $(2\hat{i} + 5\hat{j}) \text{ m}$ to $(6\hat{i} - 2\hat{j}) \text{ m}$, the constant resultant force acting on it is equal to $(4\hat{i} - 3\hat{j}) \text{ N}$. If the speed of the object at the initial position is 4.0 m/s , what is its kinetic energy at its final position?
(A) 62 J (B) 53 J (C) 73 J (D) 86 J (E) 24 J
 7. A certain pendulum consists of a 1.5-kg mass swinging at the end of a string (length = 2.0 m). At the lowest point in the swing the tension in the string is equal to 20 N. To what maximum height above this lowest point will the mass rise during its oscillation? Take $g = 10 \text{ m/s}^2$
(A) 77 cm (B) 50 cm (C) 63 cm (D) 33 cm (E) 95 cm
 8. A 10-g bullet moving horizontally with a speed of 2.0 km/s strikes and passes through a 4.0-kg block moving with a speed of 4.0 m/s in the opposite direction on a horizontal frictionless surface. If the block is brought to rest by the collision, what is the kinetic energy of the bullet as it emerges from the block?
(A) 0.51 kJ (B) 0.29 kJ (C) 0.80 kJ (D) 0.13 kJ (E) 20.0 kJ

第 1 頁

背面有題，請繼續作答。

本科目不可以使用計算機

本科目試題共 8 頁

9. A wheel of radius R is mounted on a frictionless, horizontal axle that is perpendicular to the wheel and passes through the center of mass of the wheel. A light cord wrapped around the wheel supports a object of mass m . If released from rest with the string taut, the object is observed to fall with a downward acceleration of 4.0 m/s^2 . If the moment of inertia (of the wheel) about the given axle is written as βmR^2 , then $\beta = ?$ Take $g = 10 \text{ m/s}^2$.
(A) 1.0 (B) 1.5 (C) 2.0 (D) 3.0 (E) 3.5
10. A merry-go-round of radius $R = 2.0 \text{ m}$ has a moment of inertia $I = 250 \text{ kg}\cdot\text{m}^2$, and is rotating at 10 rpm. A child whose mass is 25 kg jumps onto the edge of the merry-go-round, heading directly toward the center at 6.0 m/s. The new angular speed (in rpm) of the merry-go-round is approximately
(A) 10 (B) 9.2 (C) 8.5 (D) 7.1 (E) 6.4
11. The figure shows a uniform rod (length $L = 1.0 \text{ m}$, mass $m = 2.0 \text{ kg}$) suspended from a pivot a distance $d = 0.25 \text{ m}$ above its center of mass. If the angular frequency for small oscillations is ω , then ω^2 , in $(\text{rad/s})^2$, is approximately (Given the moment of inertia about a perpendicular axis through the center of mass is $I_{\text{CM}} = mL^2/12$ and take $g = 10 \text{ m/s}^2$)
(A) 1.0 (B) 6.25 (C) 2.25 (D) 17.1 (E) 12.25
- 
12. A ball of mass m_B is released from rest and acquires velocity of magnitude v_B before hitting the ground. The ratio of the kinetic energy the Earth (mass m_E) acquires to the kinetic energy the ball acquires is
(A) 0. (B) $\left(\frac{m_B}{m_E}\right)^2$. (C) $\frac{m_B}{m_E}$. (D) 1. (E) $\frac{m_E}{m_B}$.
13. An asteroid revolves around the Sun with a perihelion 0.5 AU and an aphelion of 7.5 AU. What is its period of revolution? Knowing that 1AU is the average radius of the Earth orbit around the Sun
(A) 4 years (B) 8 years (C) 16 years (D) 32 years (E) 64 years
14. A 3.0-kg block is on a horizontal surface. The block is at rest when, at $t = 0$, a force (magnitude $P = 12 \text{ N}$) acting parallel to the surface is applied to the block causing it to accelerate. The coefficient of kinetic friction between the block and the surface is 0.20. At what rate is the force P doing work on the block at $t = 2.0 \text{ s}$? Take $g = 10 \text{ m/s}^2$.
(A) 54 W (B) 48 W (C) 42 W (D) 59 W (E) 24 W
15. Star X is 200 light-years away from the Earth. Astronauts Joe and Mary, both at age of 30, travel together to star X in a spaceship that moves with constant speed of $\sqrt{0.9999}c$. When they reach star X, what is the age of Joe observed by Mary?
(A) Joe and Mary are already dead since it takes about 200 years to get there.
(B) Joe is still about 30 years old since it takes less than 3 months to get there.
(C) Joe is about 32 years old.
(D) Joe is about 35 years old
(E) Joe is 50 years old.
16. A bubble having a volume of 1.00 cm^3 is released from the bottom of a water tank where the depth is 10.0 m. What will the volume of the bubble be when it reaches the surface? The temperature of the water at the surface is 27.0°C , whereas it is 57.0°C at the bottom. (The density of water is $1.00 \times 10^3 \text{ kg/m}^3$. Take $g = 10 \text{ m/s}^2$ and $1 \text{ atm} = 1.0 \times 10^5 \text{ Pa}$)
(A) 1.10 cm^3 (B) 2.20 cm^3 (C) 1.45 cm^3 (D) 1.65 cm^3 (E) 1.35 cm^3
17. Liquid metal of mass $m \text{ kg}$ at 500 K is mixed with the same liquid metal of same mass at 1500 K.

本科目不可以使用計算機

本科目試題共 8 頁

Given the specific heat of the metal is c cal/K, find the change in entropy (in cal/K) of the system. Take $\ln 2 = 0.70$, $\ln 3 = 1.10$, $\ln 4 = 1.40$, $\ln 5 = 1.61$.

(A) $+2.0 mc$ (B) $+0.6 mc$ (C) $-1.0 mc$ (D) $+0.3 mc$ (E) $-0.21 mc$

18. A 5.23-g pebble is dropped from a 300-m building. If it reaches a terminal velocity of 40 m/s, and the rest of the energy is converted to heating the coin, what is the change in temperature (in $^{\circ}\text{C}$) of the coin? (The specific heat of pebble is $400 \text{ J/kg}\cdot^{\circ}\text{C}$. Take $g = 10 \text{ m/s}^2$.)
(A) 8.5 (B) 2.8 (C) 5.5 (D) 21 (E) 0.5

19. While temperature is kept constant, if consider only translational and rotational motion, what is the total energy of 1 liter (10^{-3} m^3) of nitrogen gas with pressure of 1 atm (take $1 \text{ atm} = 10^5 \text{ Pa}$)?
(A) 0.1 kJ (B) 0.15 kJ (C) 0.2 kJ (D) 0.25 kJ (E) 0.35 kJ

20. n moles of ideal gas of pressure P and volume V undergoes an irreversible expansion with final pressure is $P/3$ and volume $3V$. With R is the universal gas constant, find the entropy exchange of the process.
(A) 0 (B) $nR \ln 3$ (C) $3 nR$ (D) $nR \ln 6$ (E) $6 nR$

21. An object hangs from a spring balance. The balance indicates 30 N in air and 20 N when the object is submerged in water. What mass of the object would weigh 20N by the balance when the object is submerged in a liquid with a density that is half that of water? Take $g = 10 \text{ m/s}^2$.
(A) 20 N (B) 25 N (C) 30 N (D) 35 N (E) 40 N

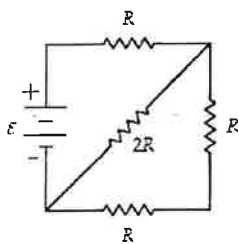
22. Water is streaming downward from a faucet opening with an area of $3.0 \times 10^{-5} \text{ m}^2$. It leaves the faucet with a speed of 5.0 m/s. The cross-sectional area of the stream 0.55 m below the faucet is how many 10^{-5} m^2 : (Take $g = 10 \text{ m/s}^2$.)
(A) 1.5 (B) 2.0 (C) 2.5 (D) 3.0 (E) 3.5

23. A police crime lab is trying to determine whether someone was murdered or died as a result of an accident. He was struck in the temple by a 4.00 kg sculpture that is alleged to have fallen off a bookcase. The sculpture presumably fell a distance of 1.80 m and the corner that struck him had an area of 0.240 cm^2 . If the time for the sculpture to stop was 1.00 ms, take $g = 10.0 \text{ m/s}^2$, the pressure on his temple, in N/m^2 , was
(A) 1.00×10^4 (B) 1.50×10^5 (C) 1.50×10^6 (D) 1.00×10^9 (E) 1.25×10^9

24. A venturi tube may be used as the inlet to an automobile carburetor. If the 2.0-cm diameter horizontal pipe narrows to a 1.0-cm diameter, what is the pressure drop in the constricted section for an airflow of 2.0 m/s in the 2.0-cm section? ($\rho = 1.2 \text{ kg/m}^3$.)
(A) 70 Pa (B) 85 Pa (C) 95 Pa (D) 20 Pa (E) 36 Pa

25. Determine the minimum area of a flat ice floe 1.0 meter thick if it is to support a 2 000-kg car above seawater. ($\rho_{\text{ice}} = 920 \text{ kg/m}^3$, $\rho_{\text{sea}} = 1 020 \text{ kg/m}^3$.)
(A) 20 m^2 (B) 40 m^2 (C) 60 m^2 (D) 80 m^2 (E) 100 m^2

26. At what rate is thermal energy being generated in the $2R$ -resistor when $\varepsilon = 12 \text{ V}$ and $R = 3.0 \Omega$?



(A) 12 W (B) 24 W (C) 6.0 W (D) 3.0 W (E) 1.5 W

27. A charged capacitor stores energy U . Without connecting this capacitor to anything, dielectric

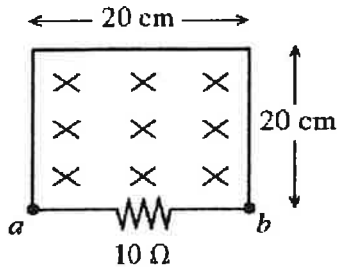
本科目不可以使用計算機

本科目試題共 8 頁

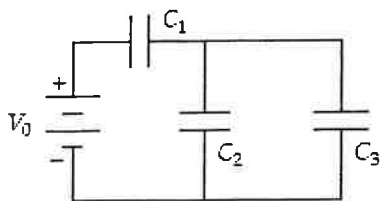
having dielectric constant K is now inserted between the plates of the capacitor, completely filling the space between them. How much energy does the capacitor now store?

(A) $2KU$ (B) KU (C) U (D) U/K (E) $U/(2K)$

28. As shown in the figure, a wire and a $10\text{-}\Omega$ resistor are used to form a circuit in the shape of a square, 20 cm by 20 cm . A uniform but nonsteady magnetic field is directed into the plane of the circuit. The magnitude of the magnetic field is decreased from 1.50 T to 0.50 T in a time interval of 63 ms . The average induced current and its direction through the resistor, in this time interval, are closest to



- (A) 63 mA , from b to a . (B) 38 mA , from b to a . (C) 63 mA , from a to b .
 (D) 38 mA , from a to b . (E) 95 mA , from a to b .
29. A transverse wave traveling along a string transports energy at a rate r . If we want to double this rate, we could
 (A) increase the amplitude of the wave by a factor of 8.
 (B) increase the amplitude of the wave by a factor of 4.
 (C) increase the amplitude of the wave by a factor of 2.
 (D) increase the amplitude by a factor of $\sqrt{2}$.
 (E) increase the amplitude by a factor of $\sqrt{8}$.
30. A tube open at one end and closed at the other end produces sound having a fundamental frequency of 350 Hz . If you now open the closed end, the fundamental frequency becomes
 (A) 87.5 Hz . (B) 175 Hz . (C) 350 Hz . (D) 700 Hz . (E) 1400 Hz .
31. A solid nonconducting sphere of radius R carries a charge Q distributed uniformly throughout its volume. At a certain distance rl ($rl < R$) from the center of the sphere, the electric field has magnitude E . If the same charge Q were distributed uniformly throughout a sphere of radius $2R$, the magnitude of the electric field at the same distance rl from the center would be equal to
 (A) $E/8$. (B) $E/2$. (C) $2E$. (D) $8E$. (E) E .
32. Determine the energy stored in C_2 when $C_1 = 15\text{ }\mu\text{F}$, $C_2 = 10\text{ }\mu\text{F}$, $C_3 = 20\text{ }\mu\text{F}$, and $V_0 = 18\text{ V}$.



- (A) 0.72 mJ (B) 0.32 mJ (C) 0.50 mJ (D) 0.18 mJ (E) 1.60 mJ
33. A charge per unit length given by $\lambda(x) = bx$, where $b = 12\text{ nC/m}^2$, is distributed along the x axis from $x = +9.0\text{ cm}$ to $x = +16\text{ cm}$. If the electric potential at infinity is taken to be zero, what is the electric potential at the point P on the y axis at $y = 12\text{ cm}$?
 (A) 5.4 V (B) 7.2 V (C) 9.0 V (D) 9.9 V (E) 16 V
34. A 16-nC charge is distributed uniformly along the x axis from $x = 0$ to $x = 4\text{ m}$. Which of the

本科目不可以使用計算機

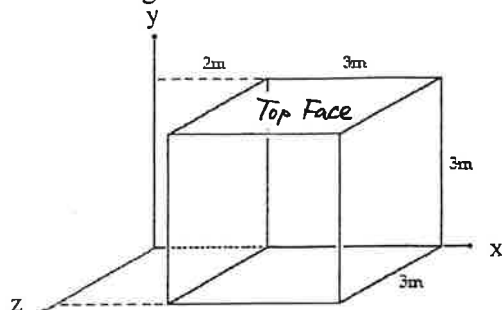
本科目試題共 8 頁

following integrals is correct for the magnitude (in N/C) of the electric field at $x = +10$ m on the x axis?

(A) $\int_0^4 \frac{36dx}{(10-x)^2}$ (B) $\int_0^4 \frac{154dx}{(10-x)^2}$ (C) $\int_0^4 \frac{36dx}{x^2}$ (D) $\int_6^{10} \frac{154dx}{x^2}$

(E) none of these

35. The electric field in the region of space shown is given by $\vec{E} = (8\hat{i} + 2\hat{j})$ N/C where y is in m. What is the magnitude of the electric flux through the top face of the cube shown?



(A) $90 \text{ N} \cdot \text{m}^2/\text{C}$ (B) $6.0 \text{ N} \cdot \text{m}^2/\text{C}$ (C) $54 \text{ N} \cdot \text{m}^2/\text{C}$ (D) $12 \text{ N} \cdot \text{m}^2/\text{C}$ (E) $126 \text{ N} \cdot \text{m}^2/\text{C}$

36. A charge per unit length given by $\lambda(x) = bx$, where $b = 12 \text{ nC/m}^2$, is distributed along the x axis from $x = +9.0$ cm to $x = +16$ cm. If the electric potential at infinity is taken to be zero, what is the electric potential at the point P on the y axis at $y = 12$ cm?

(A) 5.4 V (B) 7.2 V (C) 9.0 V (D) 9.9 V (E) 16 V

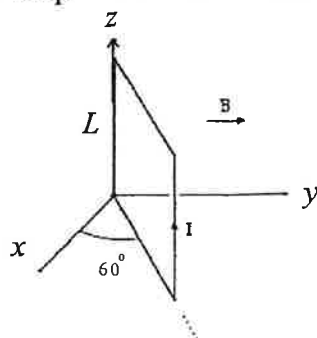
37. When a cube is inscribed in a sphere of radius r , the length L of a side of the cube is $L = \sqrt{\frac{4}{3}} r$. If a positive point charge Q is placed at the center of the spherical surface, the ratio of the electric flux Φ_{sphere} at the spherical surface to the flux Φ_{cube} at the surface of the cube is

(A) $\frac{4}{3}$ (B) $\sqrt{\frac{4}{3}}$ (C) 1 (D) $\sqrt{\frac{3}{4}}$ (E) $\frac{3}{4}$

38. For the potential $V = 3x^2z - 2yz^3$, what is the corresponding electric field at the point (2,2,2)?

(A) $-24\hat{i} + 16\hat{j} + 36\hat{k}$ (B) $12\hat{i} - 16\hat{j} - 16\hat{k}$ (C) $24\hat{i} - 16\hat{j} - 36\hat{k}$ (D) $-6\hat{i} + 2\hat{j} + 6\hat{k}$
(E) The correct answer is not given.

39. A square loop ($L = 0.20$ m) consists of 50 closely wrapped turns, each carrying a current of 0.50 A. The loop is oriented as shown in a uniform magnetic field of 0.40 T directed in the positive y direction. What is the magnitude of the torque on the loop?



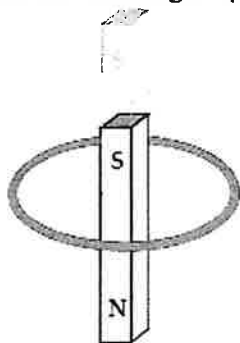
direction. What is the magnitude of the torque on the loop?

本科目不可以使用計算機

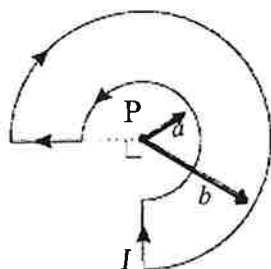
本科目試題共 8 頁

(A) $0.21 \text{ N} \cdot \text{m}$ (B) $0.20 \text{ N} \cdot \text{m}$ (C) $0.35 \text{ N} \cdot \text{m}$ (D) $0.12 \text{ N} \cdot \text{m}$ (E) $1.73 \text{ N} \cdot \text{m}$

40. A bar magnet is dropped from above and falls through the loop of wire shown below. The north pole of the bar magnet points downward towards the page as it falls. Which statement is correct?



- (A) The current in the loop always flows in a clockwise direction.
 (B) The current in the loop always flows in a counterclockwise direction.
 (C) The current in the loop flows first in a clockwise, then in a counterclockwise, direction.
 (D) The current in the loop flows first in a counterclockwise, then in a clockwise, direction.
 (E) No current flows in the loop because both ends of the magnet move through the loop.
41. What is the magnitude of the magnetic field at point P if $a = R$ and $b = 2R$?



- (A) $\frac{9\mu_0 I}{16R}$ (B) $\frac{3\mu_0 I}{16R}$ (C) $\frac{\mu_0 I}{4R}$ (D) $\frac{3\mu_0 I}{4R}$ (E) $\frac{3\mu_0 I}{8R}$

42. A long wire carries a current of 3.0 A along the axis of a long solenoid (radius = 3.0 cm , $n = 900$ turns/m, current = 30 mA). What is the magnitude of the magnetic field at a point 2.0 cm from the axis of the solenoid? Neglect any end effects.

(A) $34 \mu\text{T}$ (B) $64 \mu\text{T}$ (C) $30 \mu\text{T}$ (D) $45 \mu\text{T}$ (E) $4.0 \mu\text{T}$

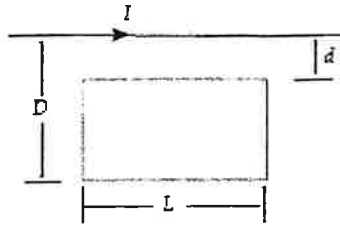
43. A uniform magnetic field is applied perpendicular to the plane of a 60-turn circular coil with a radius of 6.0 cm and a resistance of 0.60Ω . If the magnetic field increases uniformly from 0.20 T to 1.8 T in 0.20 s , what is the magnitude of the emf induced in the coil?

(A) 7.2 V (B) 5.4 V (C) 9.2 V (D) 12 V (E) 16 V

本科目不可以使用計算機

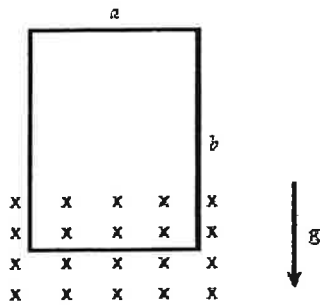
本科目試題共 8 頁

44. A loop of wire (resistance = $2.0\text{ m}\Omega$) is positioned as shown with respect to a long wire which carries a current. If $d = 1.0\text{ cm}$, $D = 6.0\text{ cm}$, and $L = 1.5\text{ m}$, what current (I) is induced in the loop

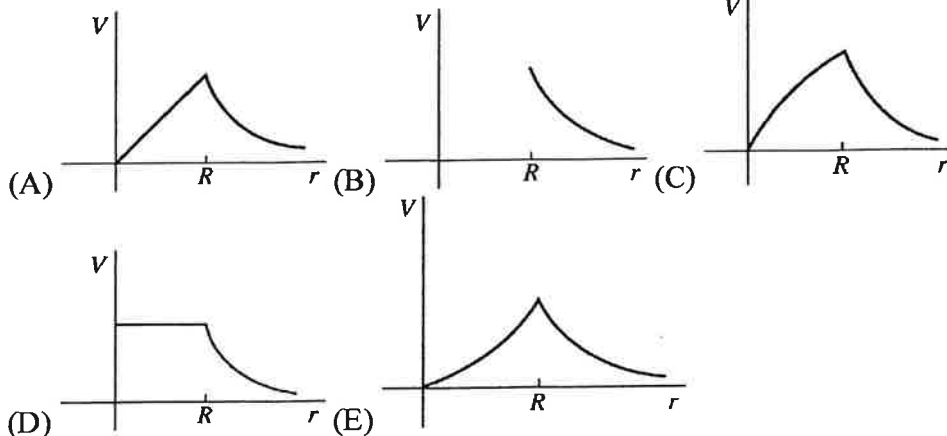


at an instant when the current in the wire is increasing at a rate of 100 A/s

- (A) 34 mA (B) 30 mA (C) 27 mA (D) 38 mA (E) 0.50 mA
45. A conducting rectangular loop of mass M , resistance R , and dimensions $a \times b$ is allowed to fall from rest through a uniform magnetic field which is perpendicular to the plane of the loop. The loop accelerates until it reaches a terminal speed (before the upper end enters the magnetic field). If $a = 2.0\text{ m}$, $B = 6.0\text{ T}$, $R = 40\text{ }\Omega$, and $M = 0.60\text{ kg}$, what is the terminal speed?



- (A) 1.6 m/s (B) 20 m/s (C) 2.2 m/s (D) 26 m/s (E) 5.3 m/s
46. A conducting sphere of radius R carries an excess positive charge and is very far from any other charges. Which one of the following graphs best illustrates the potential (relative to infinity) produced by this sphere as a function of the distance r from the center of the sphere?

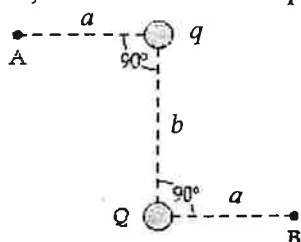


47. A conducting sphere is charged up such that the potential on its surface is 100 V (relative to infinity). If the sphere's radius were twice as large, but the charge on the sphere were the same, what would be the potential on the surface relative to infinity?
- (A) 50 V (B) 25 V (C) 100 V (D) 200 V (E) 150 V

本科目不可以使用計算機

本科目試題共 8 頁

48. Point charges q and Q are positioned as shown. If $q = +2.0$ nC, $Q = -2.0$ nC, $a = 3.0$ m, and $b = 4.0$ m, what is the electric potential difference, $V_A - V_B$?



- (A) 8.4 V (B) 6.0 V (C) 7.2 V (D) 4.8 V (E) 0 V
49. Addition of a metal slab of thickness a between the plates of a parallel plate capacitor of plate separation d is equivalent to introducing a dielectric with dielectric constant κ between the plates. The value of κ is
(A) $(d-a)/d$ (B) d (C) $d-a$ (D) $d/(d-a)$ (E) d/a .
50. The magnitude of the magnetic field at point P for a certain electromagnetic wave is 2.12 μT . What is the magnitude of the electric field for that wave at P ? ($c = 3.0 \times 10^8$ m/s)
(A) 636 N/C (B) 745 N/C (C) 5.23 $\mu\text{N/C}$ (D) 6.36 $\mu\text{N/C}$ (E) 7.45 $\mu\text{N/C}$

國立中興大學111學年度
醫學院學士後醫學系招生考試選擇題參考答案

科目：英文

題號	答案	題號	答案	題號	答案	題號	答案	題號	答案
1.	D	2.	C	3.	E	4.	E	5.	A
6.	B	7.	C	8.	B	9.	B	10.	C
11.	C	12.	A	13.	E	14.	C	15.	A
16.	D	17.	A	18.	E	19.	C	20.	A
21.	A	22.	C	23.	A	24.	B	25.	A
26.	D	27.	C	28.	C	29.	D	30.	A
31.	C	32.	D	33.	D	34.	A	35.	C
36.	D	37.	C	38.	E	39.	E	40.	E
41.	C	42.	B	43.	E	44.	C	45.	C
46.	B	47.	D	48.	D	49.	B	50.	D
51.	E	52.	C	53.	B	54.	B	55.	B
56.	E	57.	C	58.	B	59.		60.	

科目：物理

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

科目：化學

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

科目：普通生物及生化概論

題號	答案	題號	答案	題號	答案	題號	答案	題號	答案
1.	A	2.	B	3.	A	4.	E	5.	D
6.	C	7.	E	8.	D	9.	E	10.	C
11.	A	12.	B	13.	E	14.	C	15.	B
16.	C	17.	D	18.	E	19.	C	20.	A
21.	C	22.	E	23.	D	24.	B	25.	B
26.	A	27.	B	28.	D	29.	D	30.	A
31.	C	32.	B	33.	C	34.	B	35.	E
36.	D	37.	A	38.	D	39.	A	40.	A
41.	B	42.	E	43.	E	44.	C	45.	D
46.	D	47.	A	48.	C	49.	D	50.	B
51.	B	52.	C	53.	A	54.	B	55.	C
56.	C	57.	D	58.	D	59.	C	60.	D
61.	B	62.	D	63.	A	64.	A	65.	A
66.	C	67.	B	68.	C	69.	C	70.	C

國立中興大學 111 學年度學士後醫學系招生考試試題參考答案疑義釋疑公告

科目	題號	疑義答覆	釋疑結果
英文	15	1. 本題題幹第一句提到「科學家已指出飢餓不僅僅是某種狀況」(“Scientists have shown that hunger isn’t just something _____.”)。句中「飢餓不僅僅是…」一語透露下一句關於飢餓狀況的訊息，將與第一句相對。針對飢餓狀況，題幹第二句進一步指出「童年時期經歷之飢餓狀況具有漣漪效應，我們也才正開始理解。」(“Hunger during childhood can have a ripple effect that we are only just beginning to understand.”)，句中「漣漪效應」正是與第一句意思相對的主要關鍵訊息。「漣漪效應」(a ripple effect)意指“a spreading, pervasive, and usually unintentional effect or influence”，亦即童年時期經歷之飢餓狀況會延伸、擴大。透過第二句回頭理解第一句，顯示飢餓狀況不僅僅是短暫的、一時的。 2. 本題為單選選擇題，作答者需按題幹文意，從選項中挑出最適切者，(A) transient 為其中最適切選項。 本題及公布之答案均無誤，維持原公布之答案。	維持原答案 (A)
	49	本題為考卷印製問題，無法判斷此題答案，本題送分。	本題送分
	56	根據閱讀測驗 Passage C 第二段敘述：The most famous feat was that he was willing to cut partial skin of his wife (née Marjorie Learner 連瑪玉), another missionary to Taiwan, under her suggestion, to graft onto an adolescent patient Chou Chin-Yao to prevent his skin ulcers around his knee from deterioration and eventual amputation.文中 under her suggestion 文意乃連接 he was willing to cut partial skin of his wife 而來，即 he was willing to cut partial skin of his wife under her suggestion；意指蘭醫師為進行該次手術，割下其妻連瑪玉皮膚，乃經連瑪玉建議，但此建議僅針對該手術。文章他處並未提及連瑪玉鼓勵蘭醫師從事異體移植手術。 本題及公布之答案均無誤，維持原公布之答案。	維持原答案 (E)

科目	題號	疑義答覆	釋疑結果
物理	16	本題因題目數字誤植，故沒有答案，本題送分。	本題送分
	21	本題雖可以理解題意來計算，但為顧及考試公平性，本題送分。	本題送分
	30	本題為正確答案誤植，答案更正為(D)。	答案更正為(D)
	35	本題因正確答案不在選項中，本題送分。	本題送分

科目	題號	疑義答覆	釋疑結果
化學	5	確實在題意上及圖形上可能造成誤解，雖然在假設一定情況下，正確答案應為(D)。不過此題答(D)或(E)可給分。	答案更改為(D)或(E)
	4	此題目主要是判斷何者化合物可以溶於水(soluble)， PbCl_2 在加熱狀態下雖然可部分溶於水，但在加熱狀態下許多化合物皆可部分溶於水，所以此題維持答案(A) CaS 可完全溶於水	維持原答案(A)
	6	此題因為(B)選項打字錯誤，可能造成無法判斷，因此此題送分。	本題送分
	10	由於考生是根據實際熔點去做答案判斷，但此題目是詢問若根據離子鍵理論(離子之間作用力越強則有較高熔點及沸點)何者應有較高熔點？則 MgF_2 應為正確答案，因此決定此題目答案可以為(B)或(D)。	答案更改為(B)或(D)
	15	若是從沸點思考確實答案應為(E)，不過若是從分子間作用力思考， NH_3 還是有氫鍵作用力，在某個溫度下可能蒸氣壓會比 BCl_3 高，因此決定此題目答案可以為(A)或(E)。	答案更改為(A)或(E)
	23	氫標準電極確實是在定義上為零，故本題答案(C)也算對，因此答案更改為(C)或(D)	答案更改為(C)或(D)
	28	因最右下第8個化合物答案上可能有所爭議，故決定答案(A)(4個)或(B)(5個)皆給對。	答案更改為(A)或(B)
	37	因第5個步驟之反應得到的產物可能為(A)或(B)，但因爭議較大，經討論過後此題送分。	本題送分

科目	題號	疑義答覆	釋疑結果
普通生物及生化概論	8	因為 glyceraldehyde-3-phosphate/ dihydroxyacetone phosphate 可藉 isomerase 轉換所以選項(A)亦可。	答案更改為 (A)或(D)
	10	此題依據期刊論文提出 Vitiman B6 亦有抗氧化之功能，惟該期刊結果乃依據老鼠之動物實驗結果所下之結論，因此 Vitiman B6 於抗氧化之功能仍有待最後確認，基於此一疑義，因此本題送分。	本題送分
	13	本題為正確答案誤植，答案更正為(B)。	答案更正為 (B)
	18	此題釋疑點在於”change of a single base in the non-coding region of a gene “是否符合 silent mutation 的定義。但實際上還是必須確保產生的蛋白質沒有產生改變，例如 splicing site 的 mutation 是有可能發生 exon skipping 和氨基酸序列缺失。	維持原答案 (E)
	22	此題依據 Principles of Biochemistry Leininger 8 edition 內容，認為 Crispr/Cas9 利用 single strand break (SSB)引起 Homologous recombination (HR)來進行基因編輯。該課本的圖以及文字描述省略了細節部分，實際上利用修改過 Cas9 蛋白(Cas9 Nickase) 能夠產生 single strand break，但必須利用 2 個在不同鏈且距離不能太遠的 SSB 來引起 Double strand break (DSB)。SSB 一般是無法引發 HR 的。因此，即使是利用 Cas9 nickase 依然是透過 DSB 所引起 NHEJ 或是 HR 來進行基因組編輯。	維持原答案 (E)
	27	此題釋疑點在於 lactose 不會直接與 lac repressor 結合，必須先轉換為 allolactose，是否能夠認為是 allosteric regulator。本題出題老師採用對 regulator 的廣義解釋：lactose 具有對 lac repressor 進行 allosteric regulation 能力，亦可視為 regulator。採用狹義解釋 regulator 專指結合在蛋白上的分子，在本題中不會產生答案，且針對該分子的名稱並不統一(modulator, effector, regulator)，因此維持原答案	維持原答案 (B)
	28	此題釋疑點在於 RNA interference 是不是 epigenetic regulation Epigenetic regulation 是指 DNA 序列不變的情況下調控基因表現，但基因表現指的是從 DNA 到 RNA 過程。RNA interference 則是利用影響 RNA 來調控蛋白質或是 RNA 其他 RNA 功能。容易產生誤解的地方在於有一小部分 non-coding	維持原答案 (D)

		RNA 被認為具有調控基因表現的能力，但一般不會認為是 RNA interference。	
	30	本題為正確答案誤植，答案更正為(D)。	答案更正為(D)
	39	本題為正確答案誤植，答案更正為(E)。	答案更正為(E)
	40	步驟 V 為 translocation step to start a new fatty acid synthesis cycle. 因此(A)是本題適合的答案。	維持原答案(A)
	42	在 urea cycle 中並無 Gln 直接參與。	維持原答案(E)
	65	$\psi_p + \psi_s = -0.3 \text{ MPa}$ $-0.5 \text{ MPa} (\psi_s) + (\psi_p) = -0.3 \text{ MPa}$ $\psi_p = +0.2 \text{ MPa}$ 調整答案為(B)	答案更正為(B)
	66	減少中間宿主 Freshwater snail 的數量，可有效降低 blood flukes 的感染率 調整答案為(B)	答案更正為(B)