BASIC ELECTRICAL ENGINEERING

41. A parallel plate capacitor has a capacitance of 2μF. If one of the sides of the plate is doubled and the distance between them is halved, the capacitance of the capacitor is

(A) 1μF (B) 0.5μF

(C) 2μF (D) 8μF

42. 1 μF capacitor is connected across a 12 volt battery, its steady state current will be

(A) Zero (B) 0.001A

(C) 1mA (D) ∞

43. Two resistors each of 4 ohm are connected in parallel. The parallel combination is connected in series with a 2 ohm resistor. If this circuit is connected across a 100Volt supply, the total current drawn is

(A) 20A (B) 25A

(C) 10A (D) 16.33A

44. Current flowing through an inductor of inductance 2mH is 5A. The energy stored in the inductor is

(A) 50mJ (B) 100mJ

(C) 25mJ (D) 12.5mJ

45. A 1mA ammeter has a resistance of 100ohm. It is to be converted to 1 Amp ammeter. The value of the shunt resistance is

(A) 0.001 ohm (B) 0.1001 ohm

(C) 100000 ohm (D) 100 ohm

SPACE FOR ROUGH WORK

ENGINEERING MECHANICS

81. In SI Units ,the units of force and power are respectively

(A) Newton and watt

(B) Newton and Pascal

(C) Newton and Joule

(D) Newton and Hertz

82. A number of forces acting at a point will be in equilibrium if

(A) their total sum is zero

(B) sum of the components of this forces resolved in any two mutually perpendicular direction are equal

(C) sum of the components of the forces resolved in any two mutually perpendicular directions are zero each

(D) all the forces are having the same direction.

83. If the resultant of two forces P and Q acting at an angle θ makes an angle α with P, then

(A) $\tan \alpha = P\sin\theta / (Q - P\cos\theta)$

(B) $\tan \alpha = Q\sin\theta / (P + Q\cos\theta)$

(C) $\tan \alpha = P\sin\theta / (P + Q\tan\theta)$

(D) $\tan \alpha = Q\sin\theta / (P + Q\tan\theta)$

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MATHEMATICS

1. The solution of the differential equation $\frac{dy}{dx} = \frac{x(2\log x + 1)}{\sin y + y\cos y}$ is

   (A) $y\cos y + x^2\log x = c$

   (B) $y\sin y + x^2\log x = c$

   (C) $y\cos y + 3x^2\log x = c$

   (D) None of these

2. The differential equation $dr + (2r\cot\theta + \sin 2\theta)\,d\theta = 0$ has solution

   (A) $r\sin^2\theta + \frac{\sin^4\theta}{2} = c$

   (B) $r + \sin^2\theta + \frac{\sin^4\theta}{2} = c$

   (C) None of these

   (D) $r\sin^2\theta + \frac{\sin^4\theta}{2} = c$

3. A coil having a resistance of 15 ohms and an inductance of 10 henries is connected to 90 volts supply .The value of current after 2 seconds is

   (A) 5.345 amp (B) 5.00 amp

   (C) 45.6 amp (D) None of these

4. A real general solution of the differential equation $(x^2D^2 + 7xD + 9)y = 0$ is

   (A) $(c_1 + c_2 \ln x)x^3$

   (B) $(c_1x + c_2 \ln x)x^3$

   (C) $(c_1 + c_2 \ln x)x^2$

   (D) $(c_1 + c_2 \ln x)x^3$

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