

Code : 12555

Question Booklet No. 530365

Max. Marks: 100

Question Paper Code:

**A**

## Q.P. BOOKLET (ELL)

Hall Ticket No.

OMR Answer Sheet No.

Name of the Candidate : \_\_\_\_\_

Date of Examination : \_\_\_\_\_

Signature of the Candidate : \_\_\_\_\_

Signature of the Invigilator : \_\_\_\_\_

**Read the following instructions carefully before answering the questions.**

1. The Question Paper Booklet consist of 20 pages Including Cover Sheet.
2. This Booklet consist of 100 multiple choice objective type questions to be answered in 120 minutes. Each Question carries one mark. There are no negative marks for wrong answers.
3. Verify your Question Paper Booklet carefully for the pages and questions. If any discrepancy is found, ask the Invigilator to replace it with the new one.
4. Fill in the required particulars on the Question Paper Booklet with Blue / Black pen only.
5. Before answering the questions on the OMR Answer Sheet, read the instructions printed on the OMR sheet carefully.
6. Answer all the questions on the OMR Answer Sheet using only HB Pencil.
7. Calculators, Pagers, Mobile Phones, etc., are not allowed into the Examination Hall.
8. Rough work is to be done in the space provided for the purpose in the Question Paper Booklet only.
9. Handle OMR Answer Sheet carefully and do not fold or tamper with it.
10. No part of the Question Paper Booklet should be detached under any circumstances.
11. The Question Paper Booklet and OMR Answer Sheet should be handed over to the Invigilator before leaving the Examination Hall.

## **ROUGH WORK**

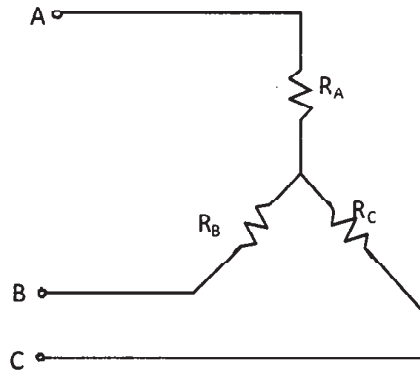


## QUESTIONS

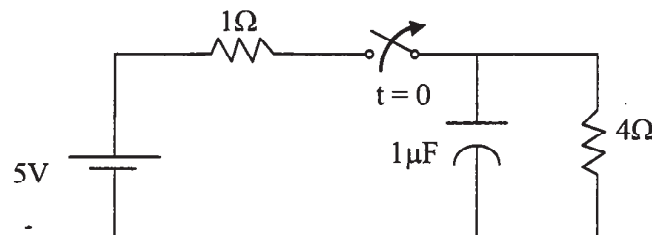
**A**

1. In a series RLC circuit at resonance, the magnitude of the voltage developed across the capacitor
  - A) Is always zero
  - B) Can never be greater than the input voltage
  - C) Can be greater than the input voltage, however, it is  $90^\circ$  out of phase with the input voltage
  - D) Can be greater than the input voltage, and is in phase with the input voltage
  
2. Two incandescent light bulbs of 40 W and 60 W rating are connected in series across the mains, then
  - A) The bulbs together consume 100 W
  - B) The bulbs together consume 50 W
  - C) The 60 W bulb glows brighter
  - D) The 40 W bulb glows brighter
  
3. A unit step voltage is applied at  $t = 0$  to a series RL circuit with zero initial conditions
  - A) It is possible for the current to be oscillatory
  - B) The voltage across the resistor at  $t = 0^+$  is zero
  - C) The energy stored in the inductor in the steady state is zero
  - D) The resistor current eventually falls to zero
  
4. Given two coupled inductors  $L_1$  and  $L_2$  their mutual inductance  $M$  satisfies
  - A)  $M = \sqrt{L_1^2 + L_2^2}$
  - B)  $M > \frac{(L_1 + L_2)}{2}$
  - C)  $M > \sqrt{L_1 L_2}$
  - D)  $M \leq \sqrt{L_1 L_2}$
  
5. A passive two port network is in a steady state. Compared to its input, the steady state output can never offer
  - A) Higher voltage
  - B) Lower impedance
  - C) Greater power
  - D) Better regulation
  
6. The minimum number of wattmeter(s) required to measure 3-phase, 3-wire balanced or unbalanced power is
  - A) 1
  - B) 2
  - C) 3
  - D) 4

7. Consider the star network shown in figure. The resistance between terminals A and B with C open is 6 ohms, between terminals B and C with A open is 11 ohms and between terminals C and A with B open is 9 ohms. Then  $R_A$ ,  $R_B$ ,  $R_C$  respectively is

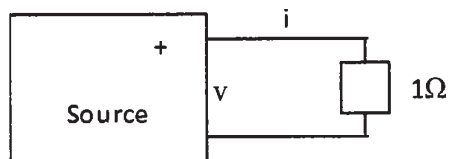


- A) 4, 2, 5      B) 2, 4, 7      C) 3, 3, 4      D) 5, 1, 10
8. A voltage wave form  $v(t) = 12t^2$  is applied across a 1H inductor for  $t \geq 0$ . With initial current through it being zero. The current through the inductor for  $t \geq 0$  is given by
- A)  $12t$       B)  $24t$       C)  $12t^3$       D)  $4t^3$
9. A two port device is defined by the following pair of equations:  $i_1 = 2v_1 + v_2$  and  $i_2 = v_1 + v_2$ . Its impedance parameters ( $z_{11}, z_{12}, z_{21}, z_{22}$ ) are given by
- A) (2, 1, 1, 1)      B) (1, -1, -1, 2)
- C) (1, 1, 1, 2)      D) (2, -1, -1, 1)
10. The period of the signal  $x(t) = 8 \sin(0.8\pi t + \frac{\pi}{4})$  is
- A)  $0.4\pi$  s      B)  $0.8\pi$  s      C) 1.25 s      D) 2.5 s
11. The switch in the circuit has been closed for a long time. It is opened at  $t = 0$ . At  $t = 0^+$ , the current through the 1 micro farad capacitor is



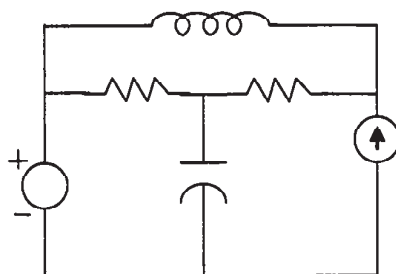
- A) 0A      B) 1A      C) 1.25A      D) 5A

12. As shown in the figure, 1 ohm resistance is connected across a source that has a load line  $v + i = 100$ . The current through the resistance is



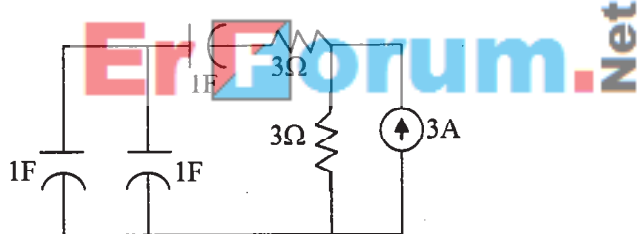
- A) 25 A      B) 50 A      C) 100 A      D) 200 A

13. The number of chords in the graph of the given circuit will be



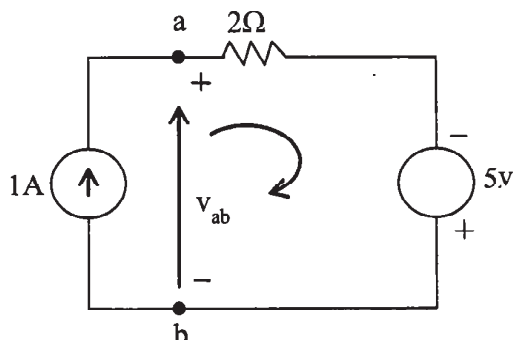
- A) 3      B) 4      C) 5      D) 6

14. The time constant for the given circuit is



- A)  $\frac{1}{9}S$       B)  $\frac{1}{4}S$       C) 4S      D) 9S

15. Assuming ideal elements in the circuit shown, the voltage  $v_{ab}$  will be



- A) -3V      B) 0V      C) 3V      D) 5V