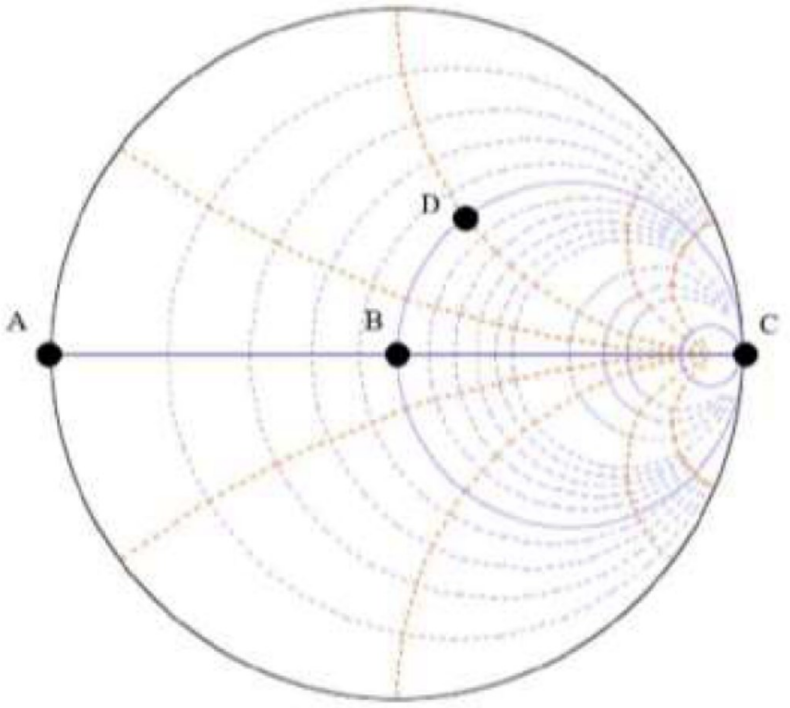
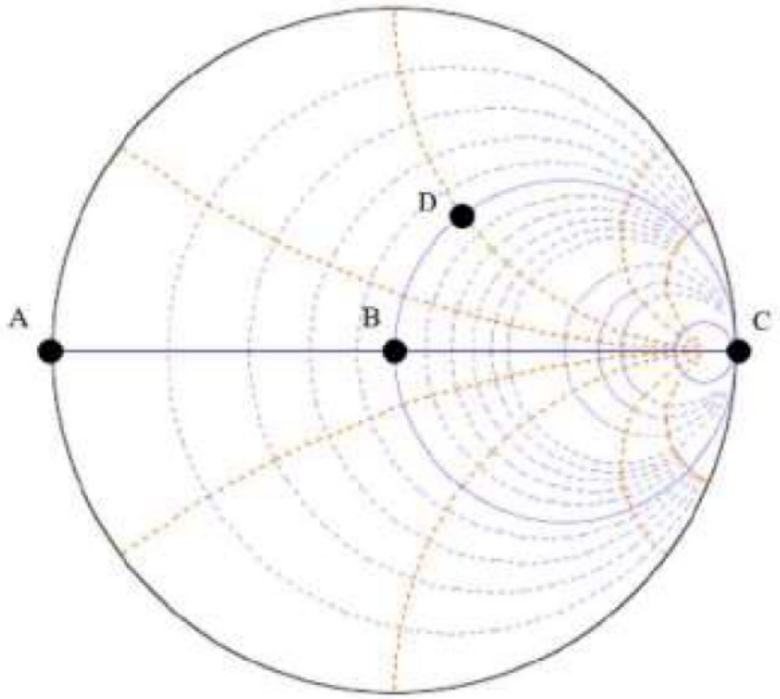
1. Consider a transmission line of characteristic impedance $Z_0 = 50\ \Omega$ terminated by a load impedance $Z_R = 0$. Which is the point of the normalized load impedance on Smith chart?



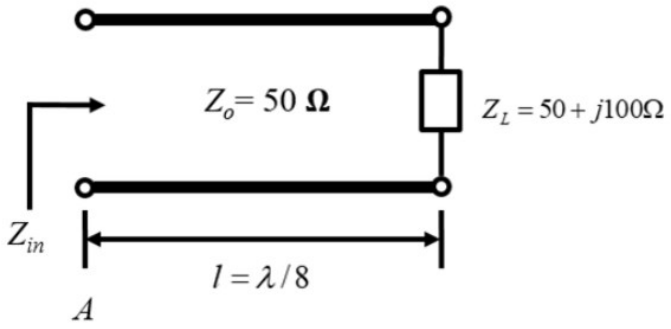
(A) A (B) B (C) C (D) D

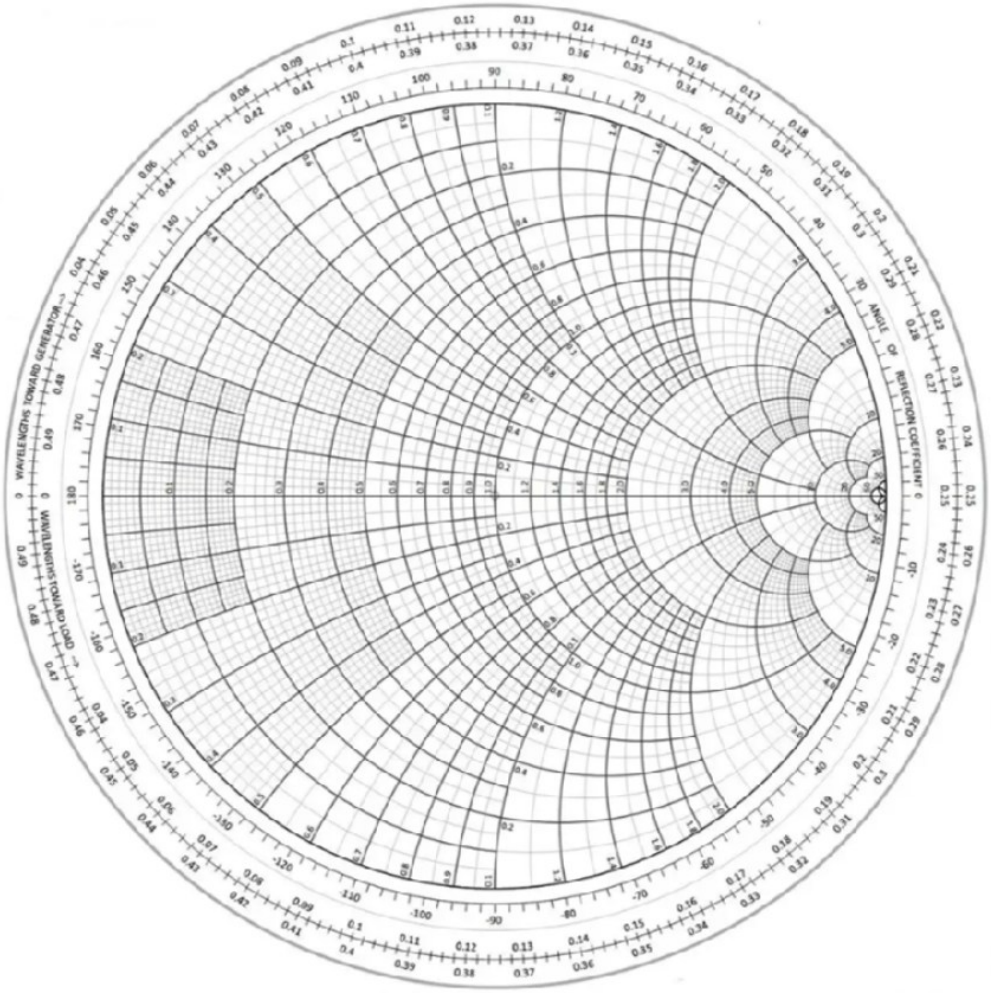
2. Consider a transmission line of characteristic impedance $Z_0 = 50\ \Omega$ terminated by a load impedance $Z_R = 50\ \Omega$. Which is the point of the normalized load impedance in Smith chart?



(A) A (B) B (C) C (D) D

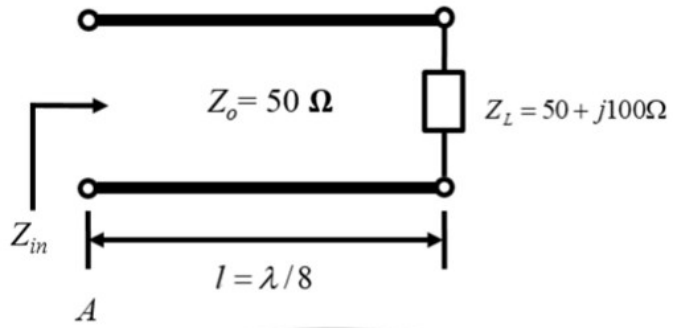
For the system shown below, find the input impedance of the point A by using the Smith chart.

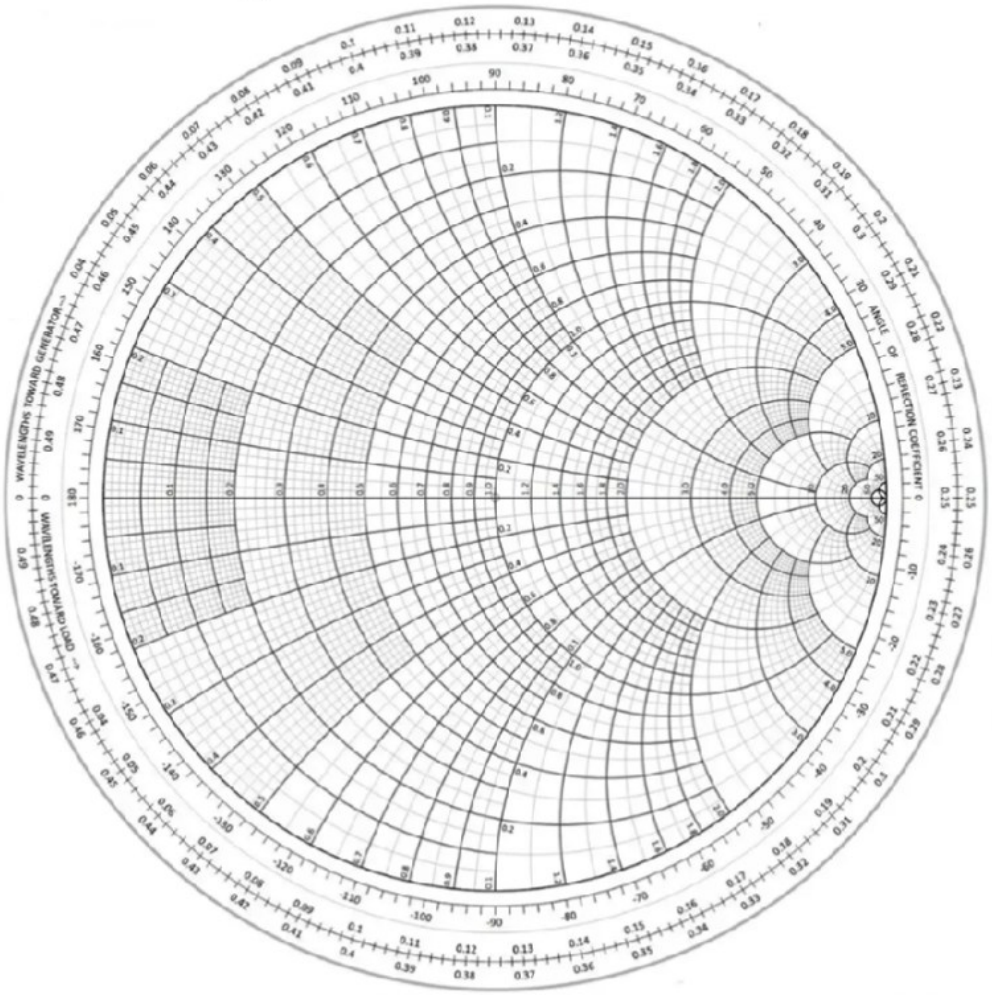




3. (A) $50 - j\ 50\ \Omega$ (B) $50 + j\ 50\ \Omega$ (C) $50 - j\ 100\ \Omega$ (D) $50 + j\ 100\ \Omega$

4. For the system shown below, find the input admittance of the point A by using the Smith chart.





(A) $4 + j8$ mS

(B) $2 + j5$ mS

(C) $4 - j8$ mS

(D) $2 - j5$ mS

5. Specify the regions on Smith chart for capacitive, inductive, and resistive loads, respectively.

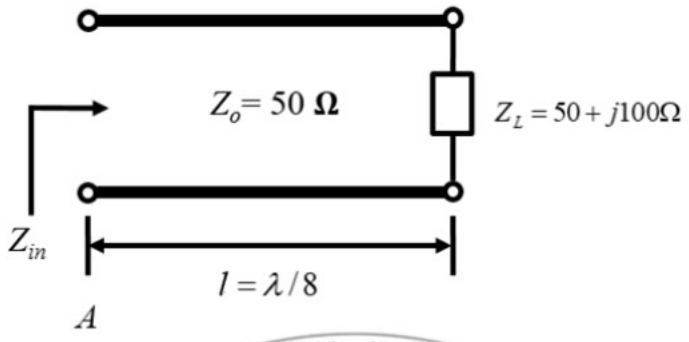
(A) Upper semicircle: inductive; lower semicircle: resistive; real axis: capacitive

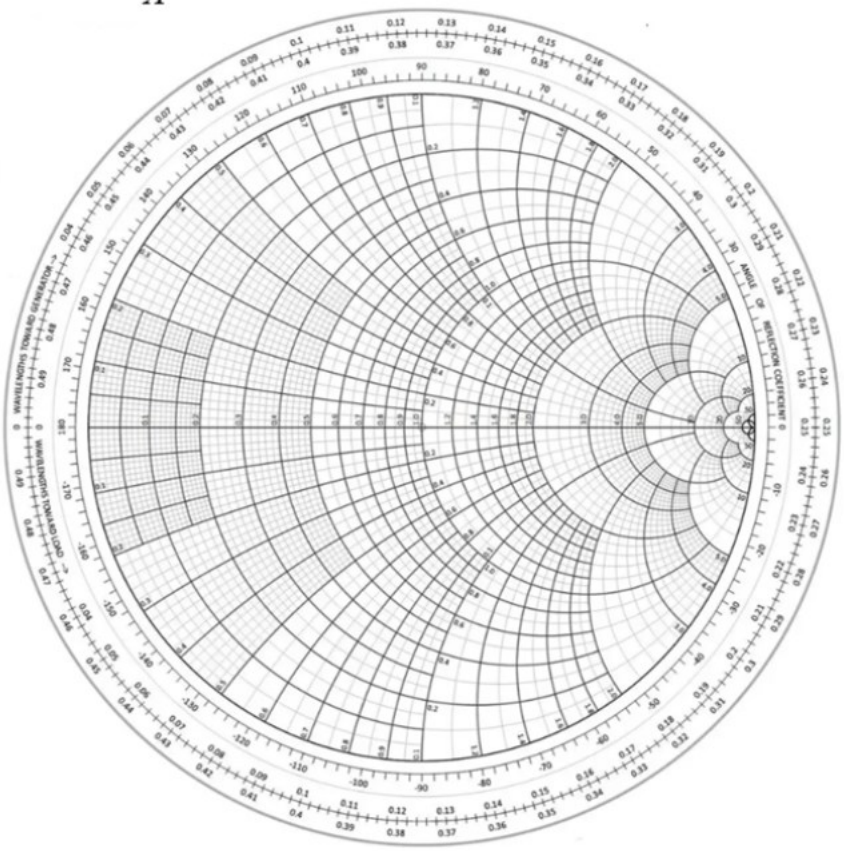
(B) Upper semicircle: inductive; lower semicircle: capacitive; real axis: resistive

(C) Upper semicircle: capacitive; lower semicircle: resistive; real axis: inductive

(D) Upper semicircle: capacitive; lower semicircle: inductive; real axis: resistive

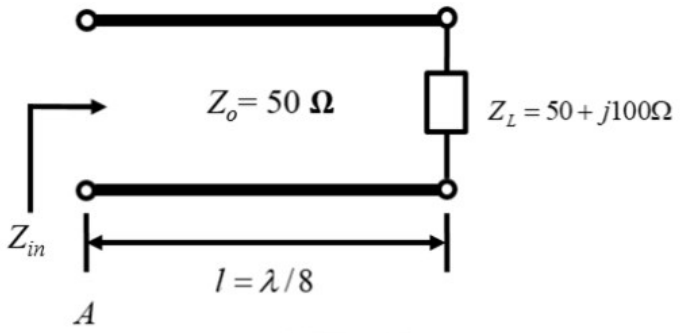
6. For the system shown below, find the reflection coefficient at the load by using the Smith chart.

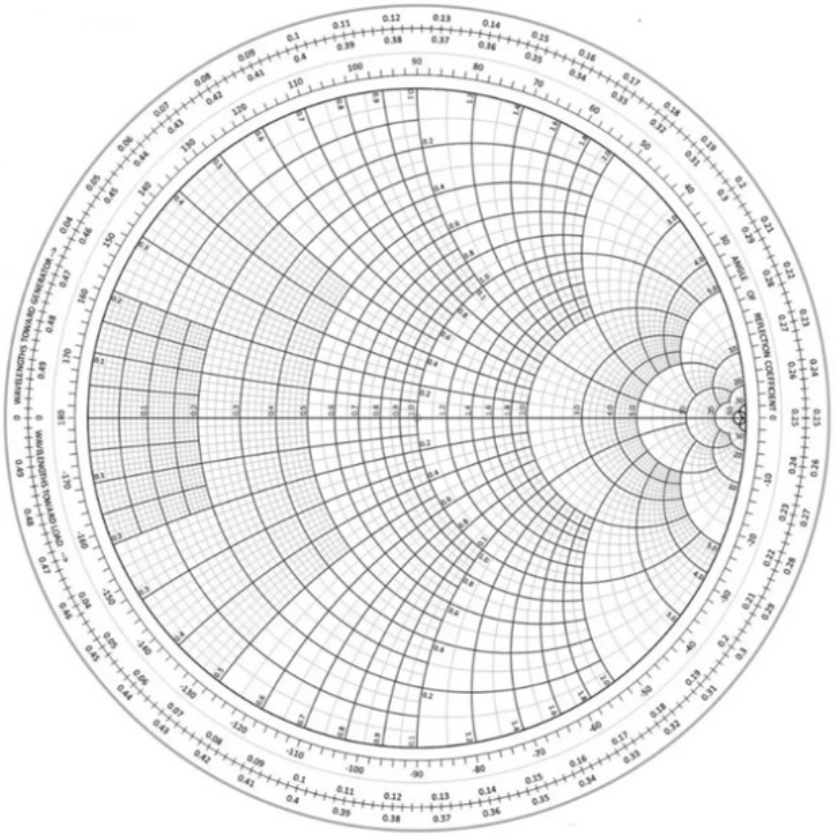




(A) $0.707\angle 45^\circ$ (B) $0.707\angle -45^\circ$ (C) $0.5\angle 45^\circ$ (D) $0.5\angle 135^\circ$

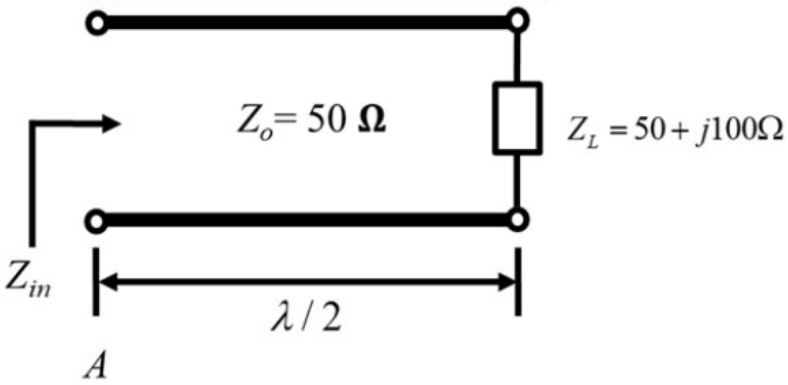
7. For the system shown below, find the standing wave ratio (SWR) on the line by using the Smith chart.

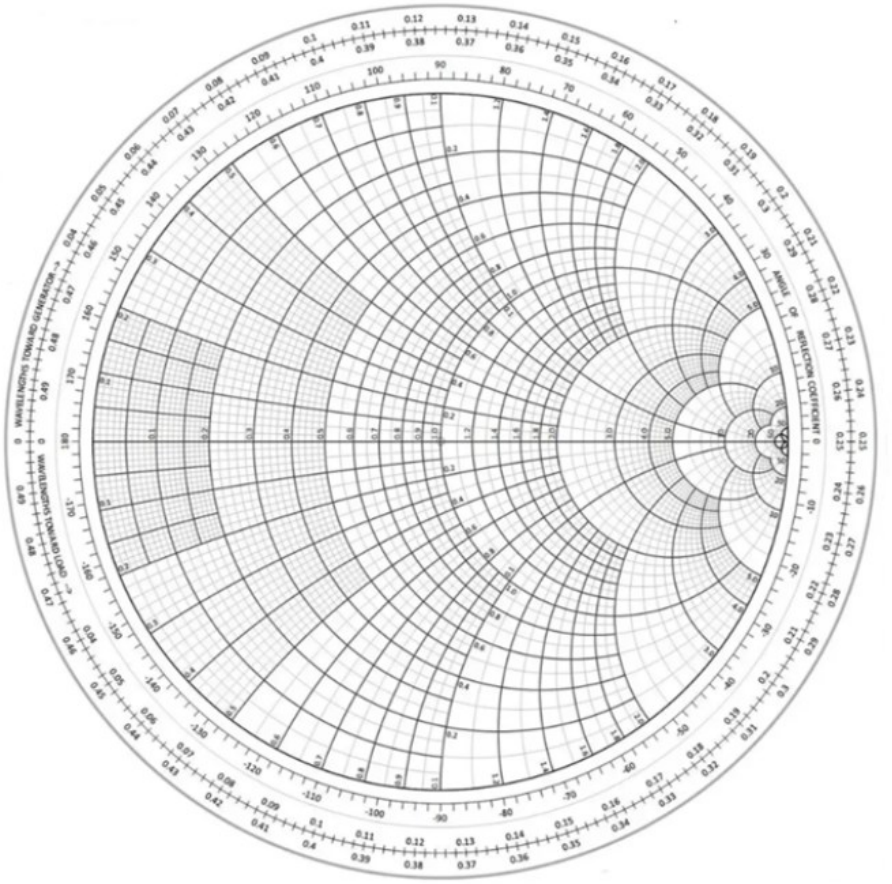




(A) 0.175 (B) 0.707 (C) 5.8 (D) 0

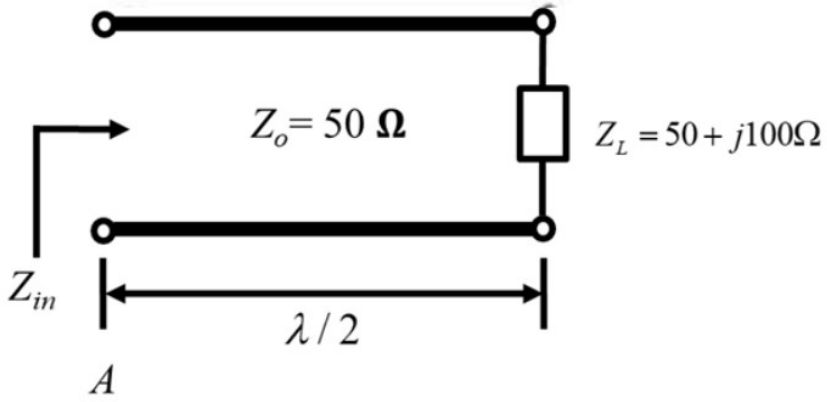
8. For the system shown below, find the distance ℓ_M between load and the point of maximum voltage wave by using the Smith chart.

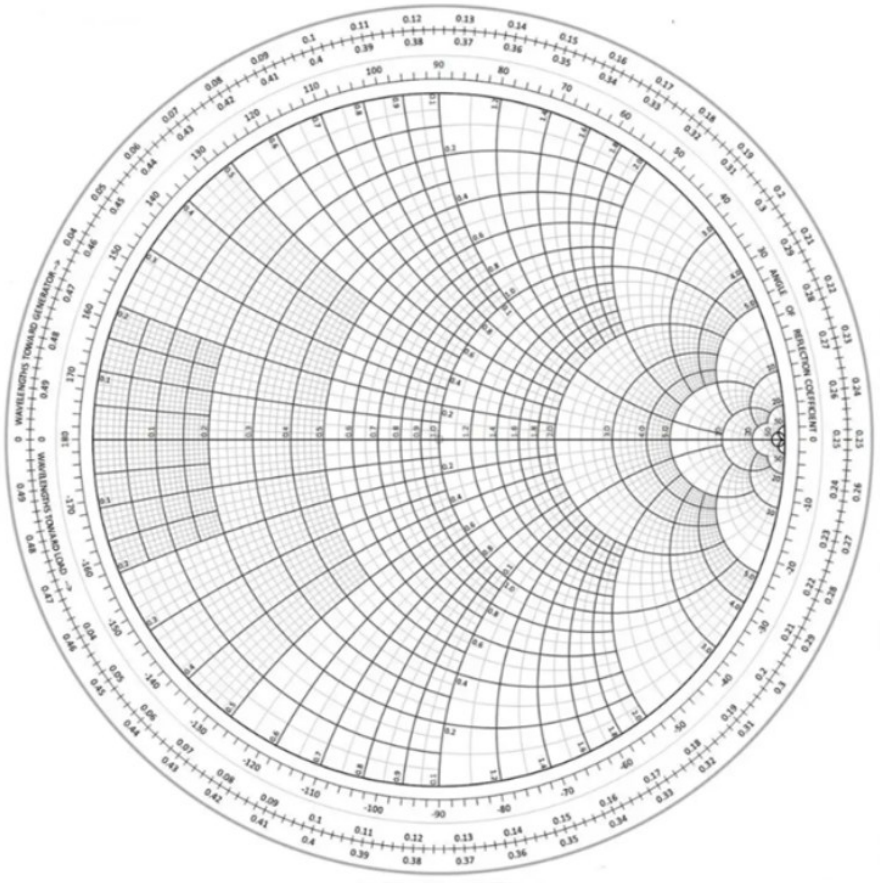




(A) $\ell_M = 0.06\lambda$ (B) $\ell_M = 0.19\lambda$ (C) $\ell_M = 0.32\lambda$ (D) $\ell_M = 0.44\lambda$

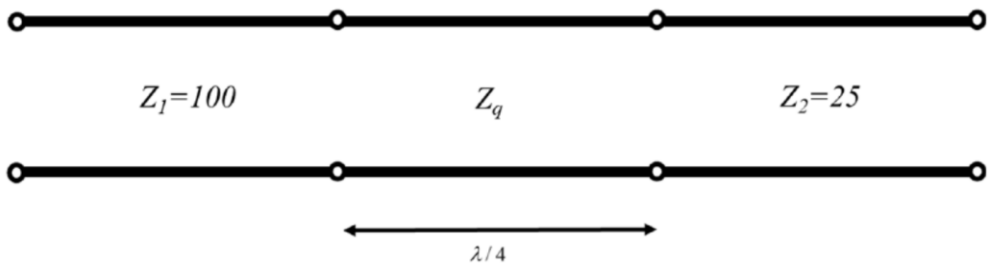
For the system shown below, find the distance ℓ_m between load and the point of minimum voltage wave by using the Smith chart.





9. (A) $\ell_m = 0.06\lambda$ (B) $\ell_m = 0.19\lambda$ (C) $\ell_m = 0.31\lambda$ (D) $\ell_m = 0.44\lambda$

10. Two transmission lines are connected together, as shown below. Please use the quarter-wave length transformer to reduce the reflection to be zero and find the SWR at the matching transmission line section



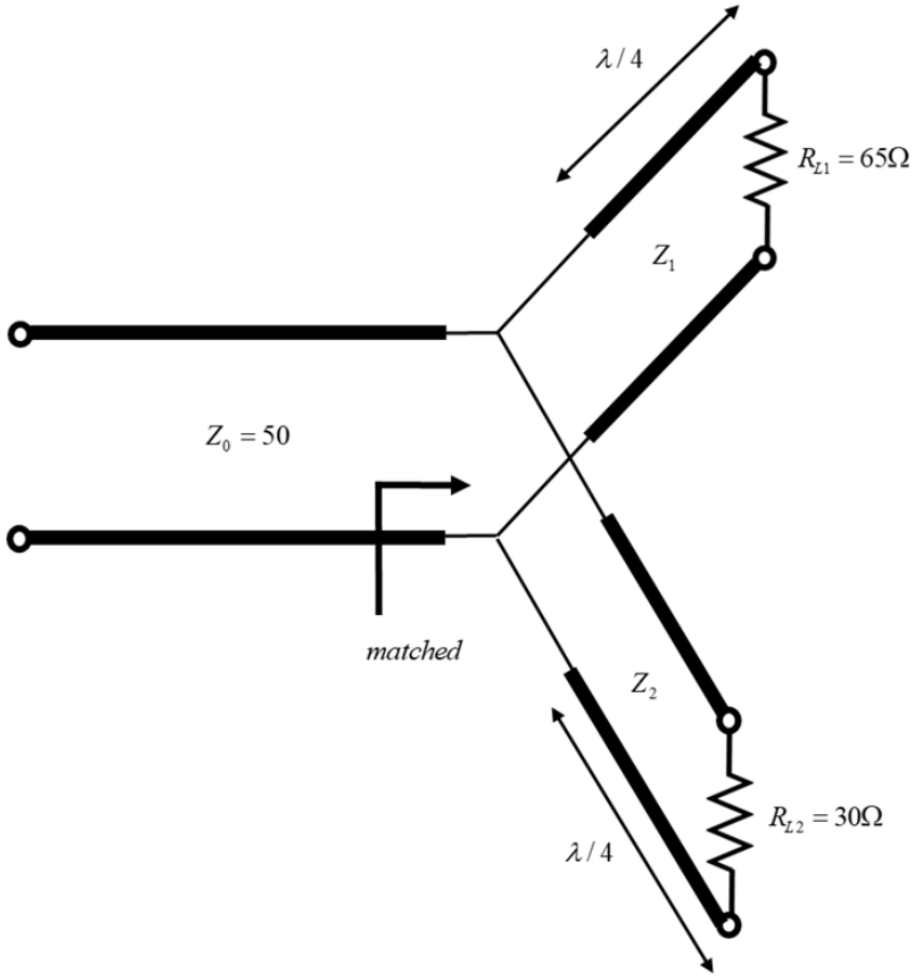
(A) $Z_q = 50$; SWR=2

(B) $Z_q = 75$; SWR=2

(C) $Z_q = 50$; SWR=3

(D) $Z_q = 75$; SWR=3

11. For the lossless system shown below, find the Z_1 and Z_2 so that the system is matched.



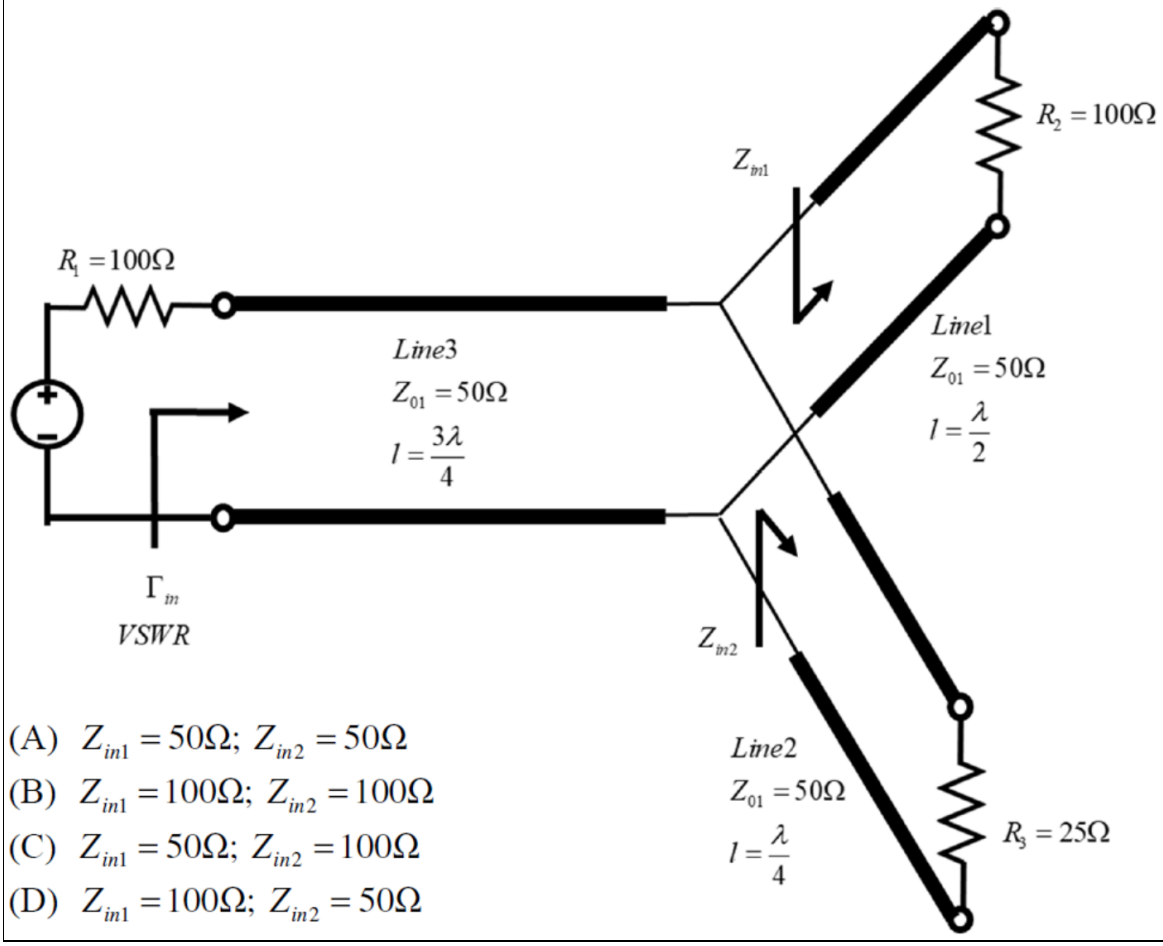
(A) $Z_1 = 50.6\Omega;\ Z_2 = 54.8\Omega$

(B) $Z_1 = 90.6\Omega;\ Z_2 = 54.8\Omega$

(C) $Z_1 = 80.6\Omega;\ Z_2 = 54.8\Omega$

(D) $Z_1 = 80.6\Omega;\ Z_2 = 90.6\Omega$

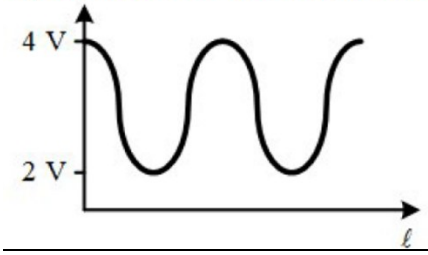
12. For the lossless transmission system shown below, find the input impedance Z_{in1} and Z_{in2}.



(A) $Z_{in1} = 50\Omega;\ Z_{in2} = 50\Omega$
(B) $Z_{in1} = 100\Omega;\ Z_{in2} = 100\Omega$
(C) $Z_{in1} = 50\Omega;\ Z_{in2} = 100\Omega$
(D) $Z_{in1} = 100\Omega;\ Z_{in2} = 50\Omega$

13.

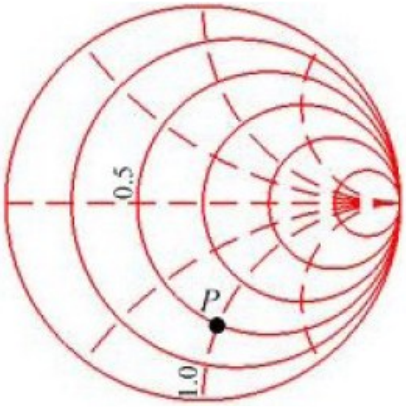
The measured standing-wave pattern of a finite transmission line terminated with load impedance Z_L is shown in the below figure. Determine which answer listed in the following is its corresponding standing-wave ratio?



(1) $SWR = 2$
(2) $SWR = 1$
(3) $SWR = \infty$

14.

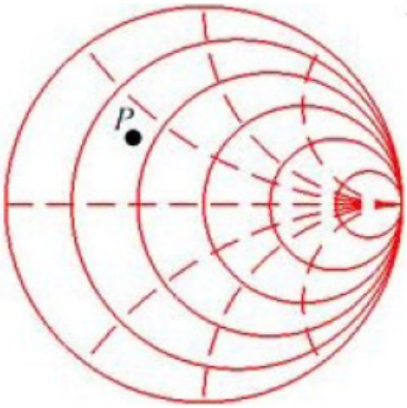
What is the impedance of the point P on the Smith chart, as shown in the figure ? The reference impedance Z_0 is 50 Ω



(1) $25 + j25\ \Omega$
(2) $25 + j50\ \Omega$
(3) $25 - j50\ \Omega$
(4) $50 - j25\ \Omega$
(5) $50 + j25\ \Omega$

15.

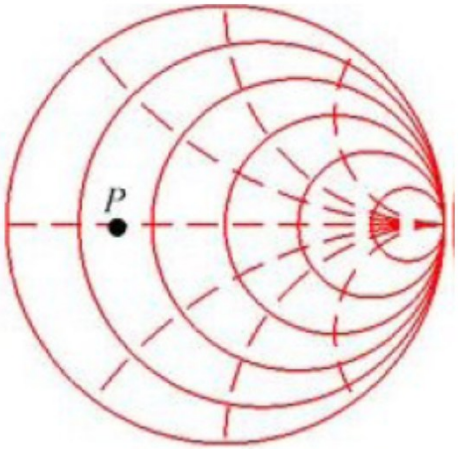
A lumped circuit represented by the point P on the Smith chart, as shown in the figure, is most likely to be



(1) an inductor
(2) a capacitor
(3) a resistor
(4) an RL circuit
(5) an RC circuit

16.

What does the point P on the Smith chart represent, as shown in the figure? The impedance is normalized to 50 Ω.



(1) a short circuit
(2) an open circuit
(3) a 17Ω resistor
(4) a 147 Ω resistor
(5) a reactive circuit

17.

Why is the impedance matching important for microwave circuits design?

(1) Just for fun
(2) For a maximum voltage transfer to the load
(3) For a maximum current transfer to the load
(4) For a maximum power transfer to the load
(5) For a maximum noise transfer to the load

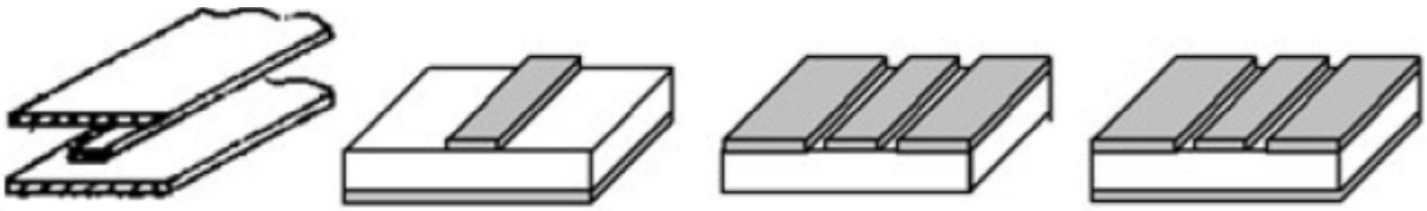
18.

The figure shows a single – stub matching circuit used to match a load to a lossless transmission line of Z_0.

Which one of the following statements is true?

(1) A purely resistive load can not be matched by using the single-stub matching circuit.
(2) A purely reactive load can not be matched by using the single-stub matching circuit.
(3) A lump *RL* load can not be matched by using the single-stub matching circuit.
(4) A lump *RC* load can not be matched by using the single-stub matching circuit.
(5) A load of impedance $Z_L = Z_0$ can not be matched by using the single-stub matching circuit.

19.



(1) stripline、microstrip、CPW、grounded CPW
(2) microstrip、stripline、CPW、grounded CPW
(3) stripline、microstrip、grounded CPW、CPW
(4) microstrip、stripline、grounded CPW、CPW

20.

一條傳輸線的終端連接一負載阻抗，若反射係數為$0.8\angle 45^{o}$，且波長為30 cm則最接近負載之電壓最小值的位置為何？

(1) 2.9 cm
(2) 5.7 cm
(3) 9.4 cm
(4) 11.2 cm

A TL with a load, and its reflection at the load is **0.8<45º**. The wavelength is **30 cm**. Where is the **nearest V_{min}** position from the load?