Unit 9 - Week 7

Course outline

How does an NPTEL online course work?

Practice Assignment

Week 1

Week 2

Week 3

Week 4

Week 5

Week 6

Week 7

- Lecture 29 : Compact MSA-I
- Lecture 30 : Compact MSA-II
- Lecture 31 : Compact MSA-III
- Lecture 32 : Tunable MSA-I
- Lecture 33 : Tunable MSA-II
- Study Material: Compact Microstrip Antenna
- Study Material: Tunable RMSA
- Quiz : Assignment-7
- Assignment-7 Solution
- Download Videos
- Weekly Feedback

Week 8

Week 9

Week 10

Week 11

Week 12

Text Transcripts

Assignment-7

The due date for submitting this assignment has passed.
As per our records you have not submitted this assignment.

Due on 2020-03-18, 23:59 IST.

1) A partially shorted MSA, as shown in Fig. 1, is designed on a substrate with ε_r = 2.55 and h = 0.16 cm with W = 4 cm, L = 4 cm and w_s = 2 cm. The resonance frequency of the antenna will be: ***2 points***

Fig. 1

- 908 MHz
- 1020 MHz
- 1870 MHz
- 2352 MHz

No, the answer is incorrect.
Score: 0
Accepted Answers:
908 MHz

2) With respect to the partially shorted MSA shown in Fig.1, if the resonance frequency of the antenna is to be decreased, then: (Assume the distance between the shorting posts to be constant) ***2 points***

- The number of shorting posts should be increased
- The number of shorting posts should be decreased
- The feed point should be moved to the right
- The feed point should be moved to the left

No, the answer is incorrect.
Score: 0
Accepted Answers:
The number of shorting posts should be decreased

3) A shorted square MSA is designed to operate at 2.45 GHz using a large substrate with ε_r = 2.55 and h = 0.16 cm as shown in Fig. 2. Approximate length L of the patch should be: ***2 points***

Fig. 2

- 4.3 mm
- 5.6 mm
- 8.8 mm
- 17.4 mm

No, the answer is incorrect.
Score: 0
Accepted Answers:
8.8 mm

4) A circular microstrip antenna (CMSA) is designed at 900 MHz on a substrate with ε_r= 2.55 and h = 0.32 cm. The radius of the patch is 6 cm. If a single shorting post is added to the patch as shown in Fig. 3, the new resonance frequency for the fundamental mode of operation will be: ***2 points***

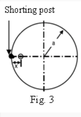

Fig. 3

- 900 MHz
- 450 MHz
- 287 MHz
- 152 MHz

No, the answer is incorrect.
Score: 0
Accepted Answers:
287 MHz

5) A slotted MSA is designed at 900 MHz as shown in Fig. 4. The slot width (w) is 3 cm and length (l) is 1 cm. If the slot length l is increased to 2 cm, keeping the slot width and other dimensions the same, the new resonance frequency will be, approximately: ***2 points***

Fig. 4

- 450 MHz
- 650 MHz
- 750 MHz
- 900 MHz

No, the answer is incorrect.
Score: 0
Accepted Answers:
900 MHz

6) Compared to conventional microstrip antennas, compact microstrip antennas have: ***2 points***

- Lower gain
- Lower bandwidth
- Higher gain
- Both lower gain and lower bandwidth

No, the answer is incorrect.
Score: 0
Accepted Answers:
Both lower gain and lower bandwidth

7) An RMSA with length L = 2 cm and width W = 3 cm is designed at 3.88 GHz on a substrate having ε_r= 3.38 and h = 0.16 cm. To tune the resonance frequency to 3.6 GHz, a stub of width w = 0.2 cm is added on one side of the radiating edge as shown in Fig. 5. Approximate length of the stub should be: ***2 points***

Fig. 5

- 0.53 cm
- 0.95 cm
- 1.33 cm
- 1.95 cm

No, the answer is incorrect.
Score: 0
Accepted Answers:
1.33 cm

Common Data for Questions 8 to 10: A dual band dual polarized rectangular MSA is designed on a substrate using orthogonal feeds as shown in Fig. 6. Substrate specifications are: ε_r = 2.55, h = 0.16 cm. Length and width of rectangular MSA are 5 cm and 7 cm corresponding to frequencies f_L and f_W, respectively.

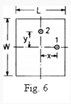

Fig. 6

8) Approximate resonance frequency (f_L) corresponding to the length is: ***2 points***

- 0.9 GHz
- 1.84 GHz
- 2.45 GHz
- 3.65 GHz

No, the answer is incorrect.
Score: 0
Accepted Answers:
1.84 GHz

9) Approximate resonance frequency (f_W) corresponding to the width is: ***2 points***

- 0.68 GHz
- 0.95 GHz
- 1.33 GHz
- 2.66 GHz

No, the answer is incorrect.
Score: 0
Accepted Answers:
1.33 GHz

10) The polarization due to Feeds 1 and 2 will be, respectively: ***2 points***

- Left hand circularly polarized, Right hand circularly polarized
- Linear, Elliptical
- Elliptical, Linear
- Linear, Linear

No, the answer is incorrect.
Score: 0
Accepted Answers:
Linear, Linear