I D NO.	

PRESIDENCY UNIVERSITY, BENGALURU

SCHOOL OF ENGINEERING

Weightage: 40 % Max Marks: 40 Max Time: 2hrs. 14 May 2018, Monday

ENDTERM FINAL EXAMINATION MAY 2018

Even Semester 2017-18 Course: **ECE 214 Antenna and Microwave Engineering** VI Sem. ECE

Instructions:

(i) Read the question properly and answer accordingly.

(ii) Question paper consists of 3 parts.

(iii) Scientific and Non-programmable calculators are permitted

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Part A

(6 Q x 3 M= 18 Marks)

1. Define Microwave and list the advantages of Microwaves.
2. Write about Impedance Matrix of an N-Port Microwave Network.
3. Find the scattering matrix of an inductor whose insertion loss is 0.3db and isolation of 40db.assume that the points are well matched.
4. Define Attenuator and explain how fixed attenuator will work.
5. For a directional coupler the incident power is 120W,calculate the power at the main arm if the directional coupler has a coupling factor of 40db and directivity of 20db.
6. Find the reflected power coefficient of a microwave passive component whose voltage standing wave ratio was “4”.

Part B

(1 Q x 10 M = 10 Marks)

7. Explain with neat sketch working of TWO CAVITY KLYSTRON Amplifier.

Part C

(1Q x 12 M = 12 Marks)

8. Write Short notes on waveguide Tees and derive the scattering matrix of H-Plane Tee.

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Weightage: 20% Max Marks: 20 Max Time: 1 hr. 02 April Monday 2018

TEST – 2 **SET B**

Even Semester 2017-18 Course: **ECE 214 Antenna and Microwave Engineering** VI Sem. ECE

Instruction:

(i) Read the question properly and answer accordingly.
(ii) Question paper consists of 3 parts.
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Part A

(2 Q x 2 M = 4 Marks)

1. What is the total power radiated by a small circular loop having 10 turns antenna of radius 1.5 m carrying a current of 5A at 10 MHz?
2. Find the total power radiated by antenna having radiation resistance of 25 Ohms, carrying a current of 4A.

Part B

(1 Q x 6 M = 6 Marks)

3. Derive all the necessary components of Mono Pole antenna, and find the Radiation Resistance and Maximum Directivity.

Part C

(1Q x 10 M = 10 Marks)

4. Draw the block diagram for computing fields radiated by electric and magnetic sources, and derive the expressions for vector potential ‘F’ for an Electric current Source ‘M’.

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Weightage: 20 % Max Marks: 20 Max Time: 1 hr. 23 Feb Friday 2018

TEST – 1

Even Semester 2017-18 Course: **ECE 214 Antenna and Microwave Engineering** VI Sem. ECE

Instruction:

(i) Read the question properly and answer accordingly.
(ii) Question paper consists of 3 parts.
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Part A

(2 Q x 3 M = 6 Marks)

1. Define Antenna and draw thevenin equivalent of transmission line in transmitting mode.
2. The radial component of the radiated power density of an Antenna is given by $\mathbf{W_{rad} = \hat{a}_r A_0 (\sin\theta/r^2)}$ $\mathbf{W/m^2}$,where A_0 is the peak value of the power density, θ is the usual spherical coordinate and $\hat{a}_r$ is the radial unit vector. Determine the total Radiated power.

Part B

(1 Q x 6 M = 6 Marks)

3. A lossless half-wavelength dipole antenna, with input impedance 85 Ohms, is connected to a transmission line whose characteristic impedance is 45 Ohms. Assuming that the pattern of the antenna is given approximately by $\mathbf{U = B_0 \sin\theta}$, find
   a) Maximum Gain(G_0) in dB
   b) VSWR
   c) Maximum Absolute gain of the antenna (G_{0abs}).

Part C

(1Q x 8 M = 8 Marks)

4. Define antenna Input Impedance and derive the expression for $\mathbf{P_r}$, $\mathbf{P_L}$, $\mathbf{P_g}$ and $\mathbf{P_s}$ with neat diagrams when Antenna in Transmitting Mode.
   (Diagrams-Antenna in Transmitting Mode,Thevenin equivalent and Norton equivalent).