Manmohan Technical University Office of the Controller of Examinations **Exam Year: 2082, Mangsir(Model Question)**	**Exam Roll:** …… Exam Roll in words: ……	
School: SOE	Level: BE	Invigilator's Sign: ……..
Program: BEEE	Year/Part: IV/I	Superintendent's Sign: ……
Subject: Antenna and Propagation (EG712EX)		Code No. ……

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i. Answers should be given by filling the Multiple-Choice Questions' Answer Sheet.
ii. The main answer sheet can be used for rough work.

Code No. [ ]

GROUP A *(Multiple-Choice Questions)*	**[10x1=10]**	**Time: 20 Minutes**

1. EIRP in an isotropic antenna stands for _____.
A) **Effective isotropic radiated power** B) Equivalent isotropic radiation power
C)Entropic isotropic radiated power D) Equivalent isolated radiated power

2. What is the typical radiation pattern of a half-wave dipole antenna?
A) Omnidirectional in all directions B) **Figure-eight in the horizontal plane**
C) Unidirectional D) Isotropic

3. What is the typical substrate used in microstrip antennas?
A) Copper B) Teflon
C) Silicon D) **Dielectric material**

4. . What is the primary function of a horn antenna?
A) To amplify signals B) **To convert guided waves into radiated waves**
C) To store electromagnetic energy D) To block unwanted signals

5. What is the frequency range of the UHF band?
A) 300 Hz to 3 kHz B) 3 kHz to 30 MHz
C) **300 MHz to 3 GHz** D) 3 GHz to 30 GHz

6. What is a key characteristic of ground wave propagation?
A) It travels through space without touching the Earth B) **It follows the curvature of the Earth**
C) It is only used for satellite communication D) It requires line-of-sight between transmitter and receiver

7. What is the approximate altitude of the E-layer?
A) 20–40 km B) **90–120 km**
C) 200–300 km D) 400–500 km
8. **EHF frequency range is:**
A) **30 GHz – 300 GHz** B) 3 GHz – 30 GHz
C) 300 MHz – 3 GHz D) 3 MHz – 30 MHz

9. **Which of the following is a key advantage of free space range testing?**
A) It uses water-cooled antennas B) **It provides accurate far-field measurements**
C) It blocks all electromagnetic waves D) It requires no calibration

10. **What is antenna gain a measure of?**
A) Power loss in the antenna B) Efficiency of the antenna
C) **Ability to direct radiated power in a specific direction** D) Frequency range of the antenna

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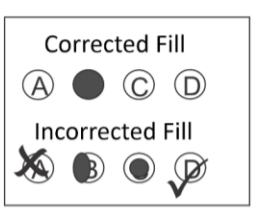
Multiple Choice Questions' Answer Sheet

Marks Secured: _____
In Words: _____
Examiner's Sign: _____ Date: _____
Scrutinizer's Marks: _____
In Words: _____
Scrutinizer's Sign: _____ Date: _____



1.	Ⓐ	Ⓑ	Ⓒ	Ⓓ		6.	Ⓐ	Ⓑ	Ⓒ	Ⓓ
2.	Ⓐ	Ⓑ	Ⓒ	Ⓓ		7.	Ⓐ	Ⓑ	Ⓒ	Ⓓ
3.	Ⓐ	Ⓑ	Ⓒ	Ⓓ		8.	Ⓐ	Ⓑ	Ⓒ	Ⓓ
4.	Ⓐ	Ⓑ	Ⓒ	Ⓓ		9.	Ⓐ	Ⓑ	Ⓒ	Ⓓ
5.	Ⓐ	Ⓑ	Ⓒ	Ⓓ		10.	Ⓐ	Ⓑ	Ⓒ	Ⓓ

Manmohan Technical University
Office of the Controller of Examinations
Exam Year: 2082, Mangsir(Model Question

School: SOE	Level: BE	Time: 3 Hours
Program: BEEE	Year/Part: IV/I	Full Marks: 50
Subject: **Antenna and Propagation (EG712EX)**		

- ✓ *Candidates are required to give their answers in their own words as far as practicable.*
- ✓ *The figures in the margin indicate **Full Marks**.*
- ✓ *Assume suitable data if necessary.*

GROUP A *(Multiple-Choice Questions in separate paper)* **[10×1=10]**

GROUP B ***(****Short Answer Questions - **Attempt Any Eight)*** **[8×2=16]**

1. Explain the Reciprocity Theorem of antenna.
2. What is a very short dipole antenna and how does its radiation pattern differ from longer dipoles?
3. What phase relationship is required between elements in an end fire array?
4. Explain how the element pattern and array factor contribute to the total radiation pattern.
5. Explain the main Features of Omnidirectional Antennas.
6. What are the applications of Directional Antennas?
7. Define ground and sky waves.
8. Describe Knife edge diffraction pattern.
9. What is the general formula used to estimate the boundary between near-field and far-field regions?

GROUP C ***(Long** Answer Questions - **Attempt Any Six)*** **[6×4=24]**

1. Explain briefly radiation mechanism in single wire antenna.

2. Consider an array of two isotropic point sources separated by a fixed distance d with **Equal Amplitude and Same Phase.** Derive the expression for the total field and explain the resulting radiation pattern. What is the direction of maximum radiation and nulls?

3. Explain the working principle and design of (a) Marconi antenna (b) Rhombic antenna.

4. Describe the construction, working principle, and design of Yagi-Uda antenna with necessary diagrams.

5. What is difference between critical frequency and maximum usable frequency?

6. Derive the expression for free space path loss propagation. Calculate free space path loss for 6 GHz frequency, if transmitter and receiver are 10,500 km line of sight apart.

7. Explain the importance of impedance matching for maximum power transfer.

THE END