

Subject Code: 1504802

K.S.R.M.COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA

**B.Tech. VIII Semester (R15)**

**ECE**

**Model Paper**

**Subject: SATELLITE COMMUNICATIONS**

Time: 3 Hours

Max.Marks:70

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Answer any five questions, choosing one question from each unit.  
All questions carry equal marks.

**UNIT-I**

1. (a) Explain the history of satellite communication. 10M  
(b) Explain the applications of satellite communications. 4M

**OR**

2. (a) What are the kepler's three laws of planetary motion? 7M  
(b) Explain orbital effects in communication system performance. 7M

**UNIT-II**

3. Write in detail attitude and orbit control systems(AOCS). 14M

**OR**

4. (a) Explain telemetry, tracking, command and monitoring in satellite systems. 7M  
(b) Write about spacecraft antennas. 7M

**UNIT-III**

5. Explain basic transmission theory. 14M

**OR**

6. Discuss about the following. 14M  
(a) System noise temperature  
(b) G/T ratio for earth station.

**UNIT-IV**

7. (a) Explain the Demand Access Multiple Access. 7M  
(b) Explain the TDMA frame structure. 7M

**OR**

8. Define multiple access techniques and explain briefly. 14M

**UNIT-V**

9. Explain about various equipment used in earth station for its satisfactory operation. 14M

**OR**

10. Explain the small earth station antennas. 14M

**Sub Code No: 1504808**  
**K.S.R.M.COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA**  
**B.Tech. VIII Semester (R15)**

**ECE**  
**Model Paper**  
**SUB: BIOMEDICAL INSTRUMENTATION**

**Time: 3 Hours**

**Max.Marks:70**

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Answer any five questions, choosing one question from each unit.

All questions carry equal marks.

**Unit I**

1. (a). Explain components of medical instrumentation system. (7)
- (b). Explain any two Bio-signals and characteristics. (7)

**Or**

2. Explain Static and dynamic characteristics of medical instruments. (14)

**Unit II**

3. Explain Conduction through nerve to neuro-muscular junction. (14)

**Or**

4. (a). Explain Resting Potential Generation and Propagation of Action Potential. (9)
- (b). Explain the structure and characteristics of human cell. (5)

**Unit III**

5. (a). Differentiate between microelectrodes and Needle electrodes. (7)
- (b). Explain body surface electrodes. (7)

**Or**

6. (a). Discuss the mechanical function of the heart with necessary diagram. (7)
- (b). What is defibrillator? Explain dc defibrillator with necessary diagram. (7)

**Unit IV**

7. (a). Explain the working principle of electromagnetic blood flow meter with suitable diagram. (7)
- (b). Explain shortwave diathermy technique. (7)

**Or**

8. (a). Explain ECG machine operation and its specifications. (7)
- (b). Explain with a neat diagram operation of spirometer. (7)

**Unit V**

9. Explain following electrical shock prevention techniques. (14)
- (a). Grounding
- (b). Double insulation
- (c). Ground fault interrupter

**Or**

10. Discuss the different types of electric shock on human body. (14)

**Subject Code: 1504801**

**K.S.R.M.COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA**

**B.Tech. VIII Semester (R15)**

**ECE**

**Model Paper**

**Subject: CELLULAR AND MOBILE COMMUNICATIONS**

**Time: 3 Hours**

**Max.Marks:70**

Answer any five questions, choosing one question from each unit.

All questions carry equal marks.

**UNIT-I**

1. (a) What are the limitations of conventional Mobile Telephone System? 4M
- (b) With a neat sketch, explain the operation of a cellular system. 10M

**OR**

2. Write short notes on: (a) Hand off mechanism with diagrams; (b) Cell Splitting 14M

**UNIT-II**

3. (a) Derive the expression for received power  $P_r$  in the wave propagating from land to mobile over land. 10M
- (b) The distance between two fixed stations is 20Km. The effective antenna height at one end is 100m. Find the effective antenna height at the other end at 850 MHz to receive maximum power. 4M

**OR**

4. (a) Tabulate standard conditions and correction factors at the base station and at mobile unit. 7M
- (b) Explain propagation in near-in distance. 7M

**UNIT-III**

5. (a) Write short notes on Umbrella pattern antennas. 4M
- (b) Explain the design of a directional antenna system. 10M

**OR**

6. (a) What is the effect of lowering antenna height in various cases? 7M
- (b) Explain the Real - time co-channel interference measurement. 7M

**UNIT-IV**

7. (a) Explain the concept of channel sharing and borrowing. 7M
- (b) Write short notes on channel assignment. 7M

**OR**

8. (a) Explain how the handoff is initiated. 7M
- (b) Write short notes on MAHO and soft handoff. 7M

**UNIT-V**

9. (a) Explain the GSM architecture. 8M
- (b) Explain about the GSM Channels. 6M

**OR**

10. Explain the following: 14M
- (a) CDMA
- (b) TDMA

**Subject code:** 1504803

**K.S.R.M. COLLEGE OF ENGINEERING (Autonomous), KADAPA**

**B.Tech. VIII Semester (R15)**

**ECE**

**Model Paper**

**Subject: RADAR SYSTEMS**

**Time: 3 Hours**

**Max. Marks: 70**

Answer any five questions; choose **ONE** question from each unit.

**UNIT-I**

1. a) Derive and explain simple radar equation. 6M  
b) Compute the maximum detectable range of a radar system specified below: 4M  
Operating wavelength = 3.2 cm, Peak pulse transmitted power = 500 kW, Minimum detectable power =  $10^{-3}$  W, Effective area of the antenna =  $5 \text{ m}^2$ , Radar cross-sectional area of the target =  $20 \text{ m}^2$ .

**(OR)**

2. Justify the requirement of integration of radar pulses to improve target detection process and explain in detail. List the applications of radars. 14M

**UNIT-II**

3. Explain in detail about RADAR duplexers with neat sketches. 14M

**(OR)**

4. (a) Explain TWT RF Amplifier with a neat sketch. 7M  
(b) Discuss various types of radar displays. 7M

**UNIT-III**

5. Explain Range and Doppler measurement of a target using FM-CW radar. 14M

**(OR)**

6. Explain the following briefly  
(i) Delay line canceller 5M  
(ii) Staggered pulse repetition frequencies 4M  
(iii) Sequential lobing 5M

**UNIT-IV**

7. a) Write about the errors in direction finding. 9M  
b) Explain in detail about Goniometer. 5M

**(OR)**

8. (a) Explain about LF/MF Four course radio Range. 7M  
(b) Explain about VOR receiving equipment. 7M

**UNIT-V**

9. Explain in detail about 14M  
i) LORAN – A ii) Decca Navigation System

**(OR)**

10. (a) Explain about DME and write its operation in detail. 7M  
(b) Write about TACAN equipment. 7M

10. Discuss the different types of electric shock on human body.

(14)

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