FACULTY OF ENGINEERING

B.E. 4/4 (ECE) II – Semester (Main) Examination, May 2016

Subject: Global Positioning System (Elective – III)

Time: 3 Hours

Max. Marks: 75

Note: Answer all questions from Part A. Answer any five questions from Part B.

PART – A (25 Marks)

1. Compare GDOP and VDOP.

2. What is the significance of DOP in positioning estimation?

3. If the TEC is $1.85 \times 10^{18}$ el/m², calculate the ionospheric time delay on L1 frequency.

4. Explain about the geometry of Ellipsoid.

5. What do you mean by anti-spoofing?

6. Why L-band is selected as the GPS transmission frequency band when compared to VHF and C-band.

7. List out the salient features of WAAS

8. What are the applications of DGPS?

9. Explain how the GPS can be used in surveying.

10. What are the features of Galileo space segment?

PART – B (50 Marks)

11 a) What is the orbital period of GPS satellites and What is the inclination angle of GPS orbits with respect to equatorial Plane.

b) Explain in detail the various steps involved in satellite position determination.

12 a) Summarize the basic concepts involved in Geoids, Ellipsoid and Regional datum.

b) Discuss in detail about the atmospheric errors.

13 a) Explain how the pseudo-range between satellite and receiver (user) can be computed using code and carrier phase measurements.

b) Discuss in detail about observation data format.

14 a) What is the necessity of LAAS. Discuss the operation of LAAS with a neat architectural diagram.

b) Explain about the various types of DGPS.

15 a) Explain about space, control and user segments of GLONASS with Diagrams.

b) Discuss how GPS finds applications in land navigation.

16 a) Illustrate the concepts involved in geodetic reference systems.

b) Discuss in detail about ephemeris error and receiver measurement noise.

17 Write short notes on

a) GPS/INS Integration.

b) IGS.
FACULTY OF ENGINEERING
B.E. 4/4 (ECE) II - Semester (Main) Examination, May 2016

Subject: Real Time Operating Systems
(Elective-II)

Time: 3 Hours
Max. Marks: 75

Note: Answer all questions from Part-A and answer any five questions from Part-B.

PART - A (25 Marks)

1. Differentiate between General purpose OS and Real Time OS.
2. Mention the advantages of multi level feedback queue scheduling.
3. List out the characteristics of RTOS.
4. Mention the fundamental goals of OS.
5. Draw the process state diagram.
6. Define following terms:
   (i) Dead line (ii) Turnaround time (c) Response time (d) Waiting time
7. Compare Internal fragmentation and external fragmentation.
8. Name any three commercial RTOS.
9. Why are Page sizes always power of 2?
10. Differentiate between Hard Real Time System and Soft Real Time system.

PART - B (50 Marks)

11. (a) Briefly explain the functions of OS
    (b) Discuss about monolithic Kernel structure and Layered kernel structure OS.

12. (a) Write about Real-Time scheduling algorithm.
    (b) For the task set given below Table what is the CPU utilization? Is it schedule lable
       using (i) RM algorithm (ii) EDI algorithms. Draw the timing diagram.

<table>
<thead>
<tr>
<th>Tasks</th>
<th>Period</th>
<th>CPU Burst</th>
</tr>
</thead>
<tbody>
<tr>
<td>T1</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>T2</td>
<td>12</td>
<td>2</td>
</tr>
<tr>
<td>T3</td>
<td>15</td>
<td>3</td>
</tr>
<tr>
<td>T4</td>
<td>24</td>
<td>6</td>
</tr>
</tbody>
</table>

13. (a) Briefly explain about inter process communication.
    (b) Write about Dead lock prevention and avoidance.

14. (a) Explain page replacement policies with an example.
    (b) Discuss about Demand Paging.

15. (a) Explain Basic features of Vx-works.
    (b) Discuss about Embedded RTOS for VOIP application.

16. Write a short notes on any two of the following:
    (a) Round Robin Scheduling
    (b) Dining philosopher problem
    (c) Memory allocation algorithm

15 Marks
PART – A (25 Marks)

1. List any 5 major applications of radar.
2. What do you understand by maximum unambiguous range in radar?
3. What are the major applications of a CW radar?
4. Differentiate between MTI and pulse Doppler radar.
5. What is blind speed? And how can it be avoided.
6. Draw the various Acquisition and Scanning patterns.
7. Write notes on any 2 radar displays.
8. Differentiate between Geo Synchronous and Geo-stationary satellites.
9. Explain the Indian Scenario in communication satellites.
10. What are the various satellite data communication protocols.

PART – B (50 Marks)

11 (a) Explain the various bands of radar frequencies.
   (b) Explain the following:-
      (i) Radar Cross section
      (ii) Interaction of radar pulses.

12 (a) What are delay line cancellers? Explain how they are used in radar
       (b) Compare the different types of tracking radar.

13 (a) What is “Squint angle” in conical scanned radar.
       (b) Explain the “TTSC” satellite subsystem.

14 (a) Explain the following displays of radar
       (i) A – Scope (ii) B – Scope (iii) RHI display.

15 (a) Draw the block diagram and explain each block of MTI radar.
       (b) What is G/T ratio? Give its importance.

16 (a) Explain the various types of system noise temperatures and use a block diagram to explain the concept.
       (b) How is the power supply system designed for a spacecraft?

17 Explain the following:-
   1. Look angles. 2. Duplexer 3, Multiple frequency CW radar.

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