Code No: M0223/R07 **Set No. 1**

IV B.Tech I Semester Supplementary Examinations, March 2013
POWER SYSTEM OPERATION AND CONTROL
(Electrical & Electronics Engineering)

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. Draw flow chart for economic scheduling with out considering line losses. [16]
2. Derive the coordination equations for economic scheduling including the effect of network losses in a purely thermal system and explain the λ - iteration method of solving them with the help of flow chart. [16]
3. Determine the daily water used by hydro plant and daily operating cost of thermal plant with the load connected for total 24 hrs and the total load connected is 300MW and generation of thermal plant is 200MW and also generation of hydro plant is 310MW. [16]
4. Two generating stations A and B have full load capacities of 500MW and 210MW respectively. The inter connector connecting the two stations has an induction motor / synchronous generator (plant C) of full load capacity 50 MW near station A percentage changes of speeds of A, B and C are 5,4 and 2.5 respectively. The loads on bus bars A and B are 250MW and 100MW respectively. Determine the load taken by the set C and indicate the direction of power flow. [16]
5. Two generating stations A and B have full load capacities of 200 MW and 75 MW respectively. The inter connector connecting the two stations has an induction motor/synchronous generator (plant C) of full load capacity of 25 MW. Percentage changes in speeds of A, B and C are 5, 4 and 3 respectively. The loads on the bus bars of A and B are 75 MW and 30 MW respectively. Determine the load taken by the set C and indicate the direction in which the energy is flowing. [16]
6. Two interconnected areas 1 and 2 have the capacity of 200MW and 500MW respectively. The incremental regulation and damping torque co-efficient for each area on its own base are 0.2 pu and 0.08 pu respectively. Find the steady state change in system frequency from a nominal frequency of 50 Hz and the change in steady state tie-line power following a 750MW change in load of area 1. [16]
7. For an isolated power system with integral control has the following data:
   Rating of the generator P_r=100 MW
   Nominal operating load P_D=50 MW
   Inertia constant H=5.0 sec
   Speed regulation of the governor R=2.5 Hz/ pu MW
   If the load would increase 1 pu for 1 % frequency increase and area is controlled by an integral controller, estimate the critical magnitude of the gain when the load is increased by 10 MW. [16]

8. The load at receiving end of a three-phase, over head line is 25.5 MW, power factor 0.8 lagging, at a line voltage of 33 kV. A synchronous compensator is situated at receiving end and the voltage at both the ends of the line is maintained at 33 kV. The line has a resistance of 4.5 ohms per phase and inductive reactance (line to neutral) of 20 ohms per phase. Calculate the maximum value of power that can be transmitted if the thermal rating of the line is not exceeded. Assuming that without compensation, the line was fully loaded, hence the current under the new condition is unchanged. [16]

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Code No: M0223/R07 **Set No. 2**

IV B.Tech I Semester Supplementary Examinations, March 2013
POWER SYSTEM OPERATION AND CONTROL
(Electrical & Electronics Engineering)

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) Explain the following terms with reference to power plants: Heat input - power output curve, Heat rate input, Incremental input, Generation cost and Production cost.
   (b) What are the methods of scheduling of generation of steam plants? Explain their merits and demerits? [8+8]

2. 100 MW, 150 MW and 280 MW are the ratings of three units located in a thermal power station. Their respective incremental costs are given by the following equations:
   dc1/dp1 = Rs(0.15p1 + 12);
   dc3/dp3 = Rs(0.21p3 + 13)
   dc2/dp2 = Rs(0.05p2 + 14)
   Where P_1, P_2 and P_3 are the loads in MW. Determine the economical load allocation between the three units, when the total load on the station is 300 MW. [16]

3. In a two plant operation system, the Hydro plant is operate for 12 hrs. during each day and the hydro plant is operate all over the day. The characteristics of the steam and hydro plants are
   $C_T = 0.3\ P_{GT}{}^2 + 20\ PGT + 5$ Rs/hr
   $W_H = 0.4 P_{GH}{}^2 + 20\ PGH$ m^3/ sec
   When both plants are running, the power flow from steam plant to load is 300 MW and the total quantity of water is used for the hydro plant operation during 12 hrs is 180×10^6 m^3. Determine the generation of hydro plant and cost of water used. [16]

4. An inter connector with inductive reactance of 25 ohms and negligible resistance of two units of generation with voltages are 33KV and 30KV at its ends. The load of 6MW is to be transferred from 33KV to 30KV side of a inter connector determine the power factor of power transmitter and other necessary conditions between two ends. [16]

5. (a) Two generators rated 250 MW and 500 MW are operating in parallel. The droop characteristics of their governors are 4 % and 5 % from no load to full load If the nominal frequency is 50 Hz at no load, how would a load of 750 MW be shared between them? What is the system frequency?
   (b) What is area control error? What are the various control strategies? [8+8]

6. (a) What are the advantages of inter connected operation of power systems? Explain.

   (b) Two areas of a power system network are interconnected by a tie-line, whose capacity is 500 MW, operating at a power angle of 35^0. If each area has a capacity of 5000 MW and the equal speed regulation of 3 Hz/Pu MW, determine the frequency of oscillation of the power for step change in load. Assume that both areas have the same inertia constants of H = 4 sec. [8+8]

7. Obtain an expression for steady state response of a load frequency controller with integral control. How it is different from with out integral control. [16]

8. What is load compensation? Discuss its objectives in power system. [16]

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Code No: M0223/R07 **Set No. 3**

IV B.Tech I Semester Supplementary Examinations, March 2013
POWER SYSTEM OPERATION AND CONTROL
(Electrical & Electronics Engineering)

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. Two units each of 200 MW in a thermal power plant are operating all the time throughout the year. The maximum and minimum load on each unit is 200 MW and 50 MW respectively. The incremental fuel characteristics for the two units are given as
$\frac{dC_1}{dP_{G1}}$ = 15 + 0.08 P_{G1} Rs./ MWhr
$\frac{dC_2}{dP_{G2}}$ = 13 + 0.1 P_{G2} Rs./ MWhr
If the total load varies between 100 MW and 400 MW, find the incremental fuel cost and allocation of load between two units. [16]

2. The fuel cost functions in Rs./hr. for two thermal plants are given by

C_1=420+9.2P_1+0.004P_1^2, 100 ≤ P_2≤200
C_2=350+8.5P_2+0.0029P_2^2, 150≤P_3≤500

Where P_1, P_2, P_3 are in MW and plant outputs are subjected to the following limits, Determine the optimal scheduling of generation if the total load is 640.82MW. Estimate value of λ = 12Rs. /MWh
$P_{L(pu)}$ = 0.0346$P_{1(pu)}{}^2$+0.00643 $P_{2(pu)}{}^2$. [16]

3. In a two plant operation system, the Hydro plant is operate for 12 hrs. during each day and the hydro plant is operate all over the day. The characteristics of the steam and hydro plants are
C_T = 0.3 $P_{GT}{}^2$+20 PGT + 5 Rs/hr
W_H =0.4$P_{GH}{}^2$+20 PGH m^3/ sec
When both plants are running, the power flow from steam plant to load is 300 MW and the total quantity of water is used for the hydro plant operation during 12 hrs is 180×10^6 m^3. Determine the generation of hydro plant and cost of water used. [16]

4. A 125 MVA turbo alternator operator on full load at 50 Hz. A load of 50 MW is suddenly reduced on the machine. The steam valves to the turbine commence to close after 0.5 sec. due to the time lag in the governor system. Assuming inertia constant H= 6 kW- sec per kVA of generator capacity, calculate the change in frequency that occurs in this time. [16]

5. (a) What are the basic requirements of a load frequency control problem?
(b) A 500 MVA synchronous generator operates on full load at a frequency of 50 Hz. The load is reduced to 400 MW. The stem valve begins to operate with

a time lag of 0.5 seconds. Determine the change in frequency if H=5 kW-sec per kVA. [8+8]

6. In the block diagram of a two area interconnected system, the system 2 represents a system so large that it is effectively an "infinite bus". The inertia constant M_2 is much greater than inertia constant M1 and the frequency deviation in system 2 is zero. The frequency of the tie is 1 pu on a 1000 MW base. Initially, the tie power flow is zero. System 1 has an inertia constant (M_1) of 10 on the same base. Load damping and governor action are neglected. Determine the equation for the tie-line power flow swings for a sudden short in area 1 that causes an instantaneous power drop of 0.02 pu (2%), which is restored instantly. Assume that ΔP_L(s)= - 0.02, and find the frequency of oscillation and maximum angular deviation between area 1 and area 2. [16]

7. For an isolated power system with integral control has the following data:
   Rating of the generator P_r=100 MW
   Nominal operating load P_D=50 MW
   Inertia constant H=5.0 sec
   Speed regulation of the governor R=2.5 Hz/ pu MW
   If the load would increase 1 pu for 1 % frequency increase and area is controlled by an integral controller, estimate the critical magnitude of the gain when the load is increased by 10 MW. [16]

8. What is load compensation? Discuss its objectives in power system. [16]

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Code No: M0223/R07 **Set No. 4**

IV B.Tech I Semester Supplementary Examinations, March 2013
POWER SYSTEM OPERATION AND CONTROL
(Electrical & Electronics Engineering)

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. Two units each of 200 MW in a thermal power plant are operating all the time throughout the year. The maximum and minimum load on each unit is 200 MW and 50 MW respectively. The incremental fuel characteristics for the two units are given as
$\frac{dC_1}{dP_{G1}} = 15 + 0.08\ P_{G1}$ Rs./ MWhr
$\frac{dC_2}{dP_{G2}} = 13 + 0.1\ P_{G2}$ Rs./ MWhr
If the total load varies between 100 MW and 400 MW, find the incremental fuel cost and allocation of load between two units. [16]

2. Give algorithm for economic allocation of generation among generators of a thermal system taking into account transmission losses. Give steps for implementing this algorithm and also derive necessary equations. [16]

3. Explain different constraints to be considered for mathematical modeling of hydro thermal scheduling. [16]

4. Two generators rated 200 MW and 400 MW are operating in parallel. The droop characteristics of their governors are 4% and 5% respectively from no load to full load. Assuming that the generators are operating at 50 Hz at no load, how would a load of 600 MW be shared between them? If the load reduces to 400MW how it will be shared among the generators and what will be the system frequency. Assume free governor operation the speed changes of a governor are reset so that the load of 400MW is shared among the generators at 50Hz in the ratio of their ratings. What are the no load frequencies of the generators. [16]

5. (a) Two generators rated 250 MW and 500 MW are operating in parallel. The droop characteristics of their governors are 4 % and 5 % from no load to full load If the nominal frequency is 50 Hz at no load, how would a load of 750 MW be shared between them? What is the system frequency?
   (b) What is area control error? What are the various control strategies? [8+8]

6. Two areas are connected via an inter tie line. The load at 50 Hz, is 15000 MW in area 1 and 35000 in area 2. Area 1 is importing 1500 MW from area 2. The load damping constant in each area is B=1.0 and the regulation R=6 % for all units. Area 1 has a spinning reserve of 800 MW spread over 4000 MW of generation capacity and area 2 has a spinning reserve of 1000 MW spread over 10000 MW generation. Determine, with the supplementary control, the steady state frequency, generation and load of each area and tie-line power for the following cases:

(a) Loss of 500 MW generation in area 1, carrying parts of spinning reserve.

(b) Loss of 1500 MW generation in area 1, not carrying spinning reserve.

(c) Tripping of tie-line, assuming no change to inter change schedule of supplementary control.

(d) Tripping of tie-line, and changing schedule of supplementary control to zero. [16]

7. (a) Explain economic dispatch control problem in detail.

   (b) Explain how the frequency error in the load frequency control problem is reduced to zero. [8+8]

8. A regional step-down substation is connected with a power center via a single circuit 110 kV line, 80 km long having a resistance of 28 ohms and reactance of 34 ohms. The maximum rated load (MVA) of the substation is S_D=22+j20. The operating conditions of power consumers require that at this load voltage drop across the line should not exceed 6 %. In order to reduce the voltage drop, standard single phase 0.66 kV, 40 kVAR capacitors are to be switched in series in each phase of the line as shown in figure 8. Determine the required number of capacitors, rated voltage and installed capacity of the capacitor bank. Make these calculations disregarding the power loss in the line. [16]

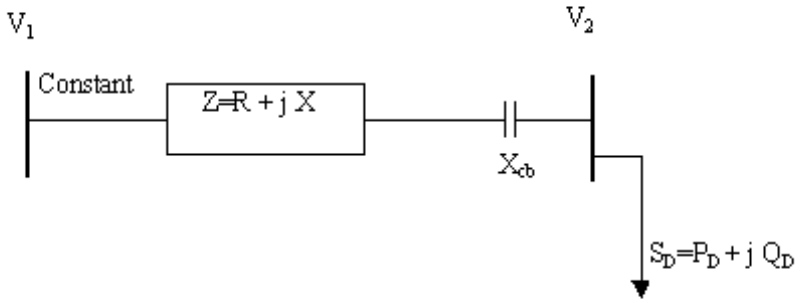

Figure 8

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Code No: M0323/R07 **Set No. 1**

IV B.Tech I Semester Supplementary Examinations, March 2013
INSTRUMENTATION AND CONTROL SYSTEMS
(Common to Mechanical Engineering and Automobile Engineering)
Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) What are primary, secondary and tertiary transducers? Explain by means of examples.
   (b) Draw the sketch of bourdon tube pressure gauge and draw its functional block diagram labeling all functional blocks and signals. [8+8]
2. (a) Explain by means of neat sketches, the use of helical potentiometers for displacement measurement.
   (b) Explain by means of neat sketches, the working principle of pressure thermometers. [6+10]
3. (a) What is a differential pressure cell?
   (b) Elucidate the basic principle of operation of McLeod vacuum gauge with necessary diagram.
   (c) List the limitations of a McLeod vacuum gauge used to measure pressure. [2+10+4]
4. Describe the construction details and working principle of Variable area meter. What are the its applications, advantages and limitations? [16]
5. (a) Explain the construction, working, advantages and disadvantages of a Photoelectric Tachometer
   (b) How is measurement of vibrations on large structures done? Explain the method in detail. [8+8]
6. (a) What is gauge factor?
   (b) Show that in a wire resistance strain gauge, the value of gauge factor can be attributed to the resistance change due to changes in gauge wire length, its cross sectional area and receptivity. Under what conditions, does the following relation hold good.
   F=1+2μ where F is the gauge factor and is the passion?s ratio [2+14]
7. (a) Explain with a diagram a pendulum scale of multi lever type.
   (b) Explain the method of measuring of force using a pneumatic load cell. [8+8]
8. (a) Explain with neat block diagram of closed loop positioned system.
   (b) Describe with neat sketch the closed loop speed control system. [6+10]

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Code No: M0323/R07 **Set No. 2**

IV B.Tech I Semester Supplementary Examinations, March 2013
INSTRUMENTATION AND CONTROL SYSTEMS
(Common to Mechanical Engineering and Automobile Engineering)
Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. Discuss the dynamic response characteristics of second order instruments to step input. What are peak time and peak overshoot? [16]

2. (a) What are pyrometers? Indicate their working principles.
   (b) By means of neat sketches, explain the working of linear variable differential transformer (LVDT). [6+10]

3. (a) Describe the working principle of a Bourdon pressure gauge.
   (b) Explain constructional details of McLeod pressure gauge. [8+8]

4. What are the different direct methods available for the measurement of liquid level. Explain any two of them. [16]

5. (a) Explain the working of a toothed rotor variable reluctance tachometer. Explain its Advantages.
   (b) What is the basic difference in design and application between vibrometer and accelerometer? [8+8]

6. (a) Explain the principle of operation of electrical resistance strain gauges and their merits and demerits.
   (b) Compare the Wheatstone bridge circuit and ballast circuit for strain measurement. [8+8]

7. (a) With neat sketch explain the working principle of Mechanical humidity sensing absorption hygrometer.
   (b) sketch and explain the constructional details and working of a dew point meter. [8+8]

8. (a) State the advantages of a closed loop system.
   (b) A constant water level is to be maintained in a boiler. Suggest a suitable automatic level control system with a block diagram and explain its working. [6+10]

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Code No: M0323/R07 **Set No. 3**

IV B.Tech I Semester Supplementary Examinations, March 2013
INSTRUMENTATION AND CONTROL SYSTEMS
(Common to Mechanical Engineering and Automobile Engineering)
Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. Show that mercury in glass thermometer is a first order instrument. How can be the time constant value reduced and sensitivity value increased for the thermometer? [16]

2. (a) Explain various methods used for reference junction compensation in thermocouples.
   (b) Explain the construction and working of a thermometer to measure temperatures above 700^0C. [8+8]

3. (a) Name a few applications of pressure measurement.
   (b) What is the difference between atmospheric pressure and absolute pressure?
   (c) Illustrate, pressure classification with suitable examples. [2+4+10]

4. Explain the construction, working and applications of the following types of flow Meters:
   (a) Magnetic flow meter
   (b) Turbine flow meter. [8+8]

5. (a) Explain the difference between a speed counter, tachoscope and tachometer.
   (b) Name the different mechanical tachometers. Sketch and explain the working of a centrifugal tachometer. [6+10]

6. (a) Describe the properties of materials used for strain gauges.
   (b) Draw a simple strain gauge element and mark active and inactive direction.
   (c) Explain the two arm and four arm conditions used for strain measurement. [4+4+8]

7. (a) How is relative humidity measured using hygrometer.
   (b) Describe with neat sketch, explain the working principle of Sling hygrometer. [8+8]

8. (a) Identify the components, input and output and describe the operation of a biological control system consisting of a human being reaching the push button of an electric bell.
   (b) Distinguish between open-loop and closed-loop control systems with the help of a suitable diagram .Illustrate your answer using block diagram schematics. [8+8]

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Code No: M0323/R07 **Set No. 4**

IV B.Tech I Semester Supplementary Examinations, March 2013
INSTRUMENTATION AND CONTROL SYSTEMS
(Common to Mechanical Engineering and Automobile Engineering)
Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. Explain the dynamic response characteristics of first order instruments to step, ramp and sinusoidal inputs. [16]

2. (a) Differentiate between rare metal thermocouples and base metal thermocouples.
   (b) Design a measurement system for displacement measurement using LDR (Light dependent resistor) as sensor. [6+10]

3. (a) Describe the working principle of a Bourdon tube pressure gauge.
   (b) A U tube differential gauge is attached to two sections A & B in a horizontal pipe in which oil of specific gravity 0.8 is flowing. The deflection of mercury in the gauge is 60 cm, the level nearer to A begin the lower one. Calculate the difference of pressure in N/m^2 between the sections A&B. [8+8]

4. Explain the construction, working and applications of the following types of flow Meters:
   (a) Magnetic flow meter
   (b) Turbine flow meter. [8+8]

5. (a) Describe the working principle of Fly ball tachometer.
   (b) What are the different methods of converting vibration into a voltage? Explain any one in detail. [8+8]

6. (a) Explian the method of measuring force using strain gauge.
   (b) Why bridge circuit is necessary for a strain gauge? Explain how the bridge circuit is used with a strain gauge. [8+8]

7. (a) Explain the method of measuring force using a pneumatic load cell.
   (b) Describe the working principle of hydraulic load cell. [8+8]

8. (a) Explain with neat block diagram of closed loop positioned system.
   (b) Describe with neat sketch the closed loop speed control system. [6+10]

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Code No: M0422 **R07** **Set No. 1**

IV B.Tech I Semester Supplementary Examinations, March 2013
RADAR SYSTEMS
(ELECTRONICS AND COMMUNICATION ENGINEERING)

Time : 3 hours **Max. Marks :80**

Answer any Five Questions
All Questions carry equal marks
*****

1. a) Explain the working principle of a pulsed Radar system?
   b) A pulsed radar working in L-band at 1.2GHz has an antenna with a gain of 30dB and a transmitted power of 3KW. If it is defined to detect a target with a cross section of 15 square meter and a minimum detectable signal is 100dBm. What is the maximum range of the radar? [8+8]

2. Write short notes on
   i) Envelope Detector ii) False-alarm Time & False-alarm Probability [8+8]

3. a) Explain the working principle of a CW Radar?
   b) Explain the need of Isolation between Transmitter and Receiver? [8+8]

4. a) With suitable block diagram explain about beat frequency up & down?
   b) Explain about Multi frequency CW Radar? [8+8]

5. a) What is a Blind speed? Explain in detail?
   b) What are the limitations of MTI Radar? [8+8]

6. Explain about
   i) Tracking Range ii) Acquisition system [8+8]

7. Derive the signal-to- noise ratio of a Match filter? [16]

8. Explain in detail about all designing techniques of a Duplexer? [16]

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Code No: M0422 **R07** **Set No. 2**

IV B.Tech I Semester Supplementary Examinations, March 2013
RADAR SYSTEMS
(ELECTRONICS AND COMMUNICATION ENGINEERING)

Time : 3 hours **Max. Marks :80**

Answer any Five Questions
All Questions carry equal marks
*****

1. a) Derive the basic Radar range equation?
   b) A ground-based air-surveillance radar operates at a frequency of 1.3GHz. Its maximum range is 200nmi for the detection of a target with a cross section of 1 square meter. Its antenna is 12m wide by 4m high and the antenna aperture efficiency is 0.65. The receiver minimum detectable signal is 0.1pico Watts. Determine the following
   a) A_e in square meter & Gain b) Transmitted power
   c) PRF to achieve a $R_{\text{max unamb}}$ of 200nmi d) Horizontal beamwidth
   e) Average power if ῖ is 2µsec f) duty cycle [8+8]

2. a) Discuss in detail the effect of Radar cross section of targets by considering different shapes of targets. [12]
   b) What is a Creeping wave? Explain? [4]

3. a) Explain the working principle of a side band Super heterodyne receiver?
   b) Calculate the Doppler frequency of a stationary CW Radar Transmitting at 4GHz when a moving target approaches the radar with a radial velocity of 90 km/hour. [8+8]

4. a) Explain the working principle of FM-CW altimeter?
   b) Discuss the necessity of frequency modulation while detecting moving targets. [8+8]

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Code No: M0422 **R07** **Set No. 2**

5. Explain in detail, the working principle of range-gated Doppler filters. [16]

6. Explain the following
   i) Box car generator ii) AGC in tracking radar receiver. [8+8]

7. a) Derive the impulse response characteristics for a matched filter.
   b) Describe the different types of feeds used in radar antenna? [8+8]

8. Write short notes on
   i) Displays ii) Noise figure & temperature [10+6]

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Code No: M0422 **R07** **Set No. 3**

IV B.Tech I Semester Supplementary Examinations, March 2013
RADAR SYSTEMS
(ELECTRONICS AND COMMUNICATION ENGINEERING)

Time : 3 hours **Max. Marks :80**

Answer any Five Questions
All Questions carry equal marks
*****

1. a) Discuss Radar frequency bands & Range?
   b) Explain in detail about peace & war applications of a Radar? [8+8]

2. Explain about System losses in Radar? [16]

3. a) Explain working principle of Non- Zero IF CW doppler radar?
   b) Explain about IF Doppler filter bank? [8+8]

4. Discuss all possible measurement errors in FM-CW Radar? [16]

5. a) Explain Butterfly effect?
   b) What is the difference between MTI & Pulse Doppler radar [8+8]

6. Explain the working principle of 2- angle coordinate amplitude comparison Mono pulse tracking radar. [16]

7. a) Explain the principle and process of correlation detection?
   b) Discuss the efficiency of non-Matched filters with non-white noise? [8+8]

8. a) Explain Visual displays to view radar echo signals in all types of radar systems?
   b) Explain in detail any one of receiver protector device? [8+8]

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Code No: M0422 **R07** **Set No. 4**

IV B.Tech I Semester Supplementary Examinations, March 2013
RADAR SYSTEMS
(ELECTRONICS AND COMMUNICATION ENGINEERING)

Time : 3 hours **Max. Marks :80**

Answer any Five Questions
All Questions carry equal marks

*****

1. a) Explain the working principle of basic Radar?
   b) Explain i) Resolution ii) Radar wave form [8+8]

2. Explain i) Integration of Rdar Pulse
   ii) PRF and Range ambiguities [8+8]

3. a) Explain, Receiver band width requirements
   b) Discuss differences between basic Radar and CW Radar [8+8]

4. Explain i) 3 pulse canceller.
   ii) Staggered PRF [8+8]

5. Explain i) Sign of the radial velocity
   ii) MTI Radar with power –amplifier Transmitter [8+8]

6. a) Discuss Limitations of low–angle tracking
   b) Explain Types of Tracking Systems [8+8]

7. a) Explain the principle and characteristics of a matched filter?
   b) Derive the overall noise figure of N-stage Cascade network in dB's [8+8]

8. Explain the necessity and function of TR & ATR circuit with suitable diagram [16]

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Code No: N0521 **R07** **Set No. 1**

IV B.Tech. I Semester Supplementary Examinations, March - 2013

NETWORK PROGRAMMING

(Common to Computer Science & Engineering and Information Technology)

Time: 3 Hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. a)Writethe differences between TCP & UDP.
   b) Explain use of TIME_WAIT State.

2. a)Write a server program using TCP protocol which returns Client IP address and Port number.
   b) Discuss the generic socket address structure,IPV4 socket address structure,IPV6 socket address structure.

3. a) Explain difference between wait() and waitpid().
   b) Write a "C" program for TCP echo server.

4. a) Explain any five socket option for Generic socket.
   b) Explain the five I/O model with suitable diagrams.

5. a) Explain about Lack of flow control with UDP.
   b) Describe the important functions of UDP echo server.

6. a) Explain the use of uname function with an example?
   b) Discuss the use of gethostbyname function with an example?

7. a) What are the advantages of message queues? Explain the APIs for system V message queues.
   b) Write a program to lock a file and record using semaphore.

8. Explain in detail the various issues needed to be considered to make the use of RPC transparent to the application.

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Code No: N0521 **R07** **Set No. 2**

IV B.Tech. I Semester Supplementary Examinations, March - 2013

NETWORK PROGRAMMING

(Common to Computer Science & Engineering and Information Technology)

Time: 3 Hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

****

1. a) Draw neat sketch diagram for TCP state transition diagram.
   b) Differentiate between iterative and concurrent server.

2. Explain about various elementary TCP Socket Functions. With near diagram.

3. a) Explain briefly the byte order conversion functions.
   b) Write a "C" program for TCP echo client.

4. a) With suitable diagrams differentiate the five I/O models.
   b) When is socket said to be ready for reading and writing data. Identify and discuss theconditions.

5. a) Discuss the effect of UDP not having any flow control.
   b) Explain with a sample code how a connected UDP socket can be used to determine the outgoing interface.

6. Explain the following functions
   a) gethostbyname
   b) uname

7. a) What is semaphore ? Explain how locking can be achieved with semaphores?
   b) What is pipe? How are Pipes are different from FIFO's?

8. Describe the Transparency issues of RPC with example

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Code No: N0521 **R07** **Set No. 3**

IV B.Tech. I Semester Supplementary Examinations, March - 2013
NETWORK PROGRAMMING
(Common to Computer Science & Engineering and Information Technology)

Time: 3 Hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks
****

1. a) Write use of port number & Explain different types of port number.
   b) Explain about buffer sizes and limitations of TCP & UDP Protocols.

2. a) If TCP client doesn't call bind, how will the address be bound to the client socket?
   b) Explain value-result parameter passing mechanism with diagram.

3. a) How does server handle Zombie child process?
   b) Write a "C" program for TCP server to convert a string received from client into uppercase.

4. a)Explain SO_LINGER SOCKET option.
   b) Explain nagle's algorithm.

5. Write a program to echo message using UDP.

6. Explain about
   a) DNS b) uname function

7. a) What is file locking? Explain different types of file locking?
   b) Briefly explain various methods of Inter process communication?

8. Write about the following
   a) Terminal line discipline
   b) r login

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Code No: N0521 **R07** **Set No. 4**

IV B.Tech. I Semester Supplementary Examinations, March - 2013

NETWORK PROGRAMMING

(Common to Computer Science & Engineering and Information Technology)

Time: 3 Hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

****

1. a) Explain TCP connection establishment (three way handshake) and TCP connection termination (four way handshake).
   b) Explain client server example for concurrent server.

2. a) Justify the need for the functions getsocketname and getsockpeername.
   b) Explain byte manipulation functions. Give the syntax of each.

3. a) Write a "C" program for TCP server to reverse string received from client.
   b) Write steps performed when server is crashing and rebooting.

4. a) What is the difference between select () and poll ()? Explain the functionsgetsockopt and setsockopt with arguments.
   b) Write "C" program to implement TCP echo server using select().

5. a)Write the function to echo lines on a datagram socket and explain.
   b) Write briefly about lost data gram.

6. What are the four types of network-related information that an application might want to look up? Also mention the keyed lookup functions provided by them.

7. a) Explain about File and Record Locking?
   b) Explain how semaphores are used to synchronize the access to the shared memory segments?

8. Discuss about terminal modes and control terminals?

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