Hall Ticket Number :

Code: 4G37C

R-14

IV B.Tech. I Semester Supplementary Examinations May 2018
Digital Signal Processing
(Electrical & Electronics Engineering)

Max. Marks: 70   Time: 3 Hours

Answer *all five* units by choosing one question from each unit (5 x 14 = 70 Marks)
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UNIT–I

1. a) Explain in detail about the
    i) Linearity
    ii) Shift Invariant properties of Linear Shift Invariant (LSI/LTI) Discrete Time systems.   7M

    b) Determine the circular convolution of the signals x(n)=[1, 2, 2,1] and h(n)=[1 , 2 , 3]. Also find the linear convolution using zero padding.   7M

OR

2. Find the DFT of the sequence x(n) = {1,1,1}for i) N=4 , ii) N=8; Plot |X(k)| and Angle(X(K)) and compare the result.   14M

UNIT–II

3. a) Explain steps used in DIT - FFT algorithm.   7M

    b) Determine an 8 point DFT of the sequence x(n) ={1,2,3,4,4,3,2,1} using DIT – FFT algorithm.   7M

OR

4. a) Compute the 4-point DFT of the sequence x(n) using direct method where x(n)=[0,1,2,3].   7M

    b) Find the Z-Transform of the following

    $$i)x(n) = n(a)^{n-1}u(n) \qquad ii)x(n) = (r)^{n} \sin(\check{S}_{0}n)u(n)$$.   7M

UNIT–III

5. a) Design a Chebyshev filter for the given specifications, using Impulse Invariant method
    $0.8 \leq |H(e^{jw})| \leq 1$ for $0 \leq \omega \leq 0.2\pi$
    $|H(e^{jw})| \leq 0.2$ for $0.6\pi \leq \omega \leq \pi$.   7M

    b) Realize the IIR system described by the difference equation y(n) = -0.1y (n-1) +0.72 y(n - 2) + 0.7 x(n) – 0.252 x(n - 2) in parallel form.   7M

OR

6. a) List out the important properties of linear phase FIR filters.   7M

    b) Realize the causal linear phase FIR filter with the transfer function $H(z) = 2/3 + z^{-1} + 2/3 z^{-2}$.   7M

UNIT–IV

7. Design an ideal LPF whose desired frequency response is
    $H_d (e^{jw}) = 1$ for $-\pi/3 \leq \omega \leq \pi/3$ and
    $= 0$ for $\pi/3 \leq |\omega| \leq \pi$ using Hanning window.   14M

OR

8. a) Compare FIR and IIR digital filters.   7M

    b) Explain FIR filter design using Fourier Series method.   7M

UNIT–V

9. Derive an expression for Linear phase FIR filter with Symmetric Impulse response wit odd length.   14M

OR

10. a) Discuss Radar Signal Processing using DSP.   7M

    b) Explain over sampling D/A converter.   7M

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Code: 4G271

R-14

IV B.Tech. I Semester Supplementary Examinations May 2018
Fundamentals of HVDC & FACTS Devices
(Electrical and Electronics Engineering)

Max. Marks: 70   Time: 3 Hours
Answer *all five* units by choosing one question from each unit (5 x 14 = 70 Marks)
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UNIT–I

1. a) Explain the technological development of modern trends in dc transmission   7M
    b) State the advantages and disadvantages of dc transmission system with following
       economics, reliability, performance   7M

OR

2. a) Explain how the economic choice of voltage level selected in dc transmission system
       for a same power transmission.   7M
    b) Draw the equivalent circuits of rectifier and inverter configurations and explain.   7M

UNIT–II

3. a) Explain the starting and stopping of DC link in HVDC system.   7M
    b) Explain the firing angle control of converter in HVDC system.   7M

OR

4. Explain about reactive power requirements at steady state and sources of reactive
    power static var systems.   14M

UNIT–III

5. a) Explain the modeling of DC network converters in HVDC system.   7M
    b) What is the need of transmission interconnection and explain how FACTS devices
       related to interconnection.   7M

OR

6. a) Write short notes on following approaches
       (i) Simultaneous approaches   (ii) Sequential approaches   7M
    b) Explain power flow and dynamic stability of a transmission interconnection considering
       simple two-machine system draw the relevant phasor diagrams and derive necessary
       equations.   7M

UNIT–IV

7. a) Explain the necessity of shunt compensation for midpoint voltage regulation and
       voltage stability   7M
    b) Explain direct output voltage control of STATOM with help of neat block diagram   7M

OR

8. a) Draw and explain operating v – i area of STATOM with fixed inductor.   7M
    b) Explain the concept of series compensation considering voltage stability and power
       oscillating damping.   7M

UNIT–V

9. a) With neat block diagram explain overall UPFC control structure.   7M
    b) Explain control region of the attainable real power P and receiving end reactive power
       demand Q with a UPFC controlled transmission line at   = 0º, 30º.   7M

OR

10. Explain the basic operating principles of UPFC and also explain in detail about overall
    UPFC control structure with help of neat block diagram.   14M
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Code: 4GA71

R-14

IV B.Tech. I Semester Supplementary Examinations May 2018
Management Science
(Common to EEE & CSE)

Max. Marks: 70   Time: 3 Hours
Answer *all five* units by choosing one question from each unit (5 x 14 = 70 Marks)
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UNIT–I

1. a) Discuss the functions of management.

    b) Explain the elements of scientific management as outlined by F.W.Taylor

OR

2. a) Define organization. What are the principles of organization?

    b) Discuss the merits and demerits of line and staff form of organization.

UNIT–II

3. a) What are the objectives of inventory control?

    b) A company is requiring 10,000 units of raw material per annum. The cost per order is
        estimated to be Rs.50. The storage cost is estimated to be Rs.15 per unit inventory.
        Compute i) EOQ ii) No of Oder to placed per annum

OR

4. a) What are the different levels of channels of distribution?

    b) Explain its importance in marketing.

UNIT–III

5. a) What is human resource management? What it significance?

    b) What are the off the job training methods?

OR

6. a) Explain the advantages and disadvantages of Job Evaluation

    b) Compare and contrast Job Evaluation Vs Merit rating.

UNIT–IV

7. a) Discuss the scope of financial management.

    b) Explain the importance of financial management

OR

8. a) Explain the following terms :
        i) Normal time ii) Normal cost iii) Crash time iv) Crash cost

    b) A project includes the following activities

Activity	Normal duration (days	Normal Cost (Rs)	Crash time (Days)	Crash cost (Rs)
1-2	9	8000	7	10000
1-3	5	5000	3	8000
2-3	7	7000	5	8600
2-4	8	6000	6	7000
3-5	6	9000	4	11,400

The overhead costs are Rs.1300 per day. Determine the optimum cost and optimum
duration of the project.

UNIT–V

9. a) Explain the Importance of the Enterprise Resource planning (ERP)

    b) Why Ethics required for a manager, what is unethical in your opinion and list few
        examples of unethical practices of Managers.

OR

10. a) Explain the Importance of the TQM in organization.

    b) How does Just-In-Time help the manufacturing system to improve productivity?

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IV B.Tech. I Semester Supplementary Examinations May 2018
Switch Gear and Protection
(Electrical and Electronics Engineering)

Max. Marks: 70   Time: 3 Hours
Answer *all five* units by choosing one question from each unit (5 x 14 = 70 Marks)
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UNIT–I

1. a) Describe the construction and operation of a minimum oil circuit breaker?   7M

    b) Discuss the Principle of arc interruption in air blast-circuit breaker   7M

OR

2. a) A 11 kV, 50Hz alternator is connected to a system which has inductance and capacitance per phase of 10mH and 0.01 μF respectively. Determine i) the maximum voltage across the breaker contacts ii) Frequency of transient oscillation   iii) The average RRRV   iv) The maximum RRRV   8M

    b) Explain the process of current chopping in SF_6 breakers?   6M

UNIT–II

3. a) Explain what is meant by primary protection and backup protection?   6M

    b) Define the terms (i) Pick up value   (ii) Reset value (iii) Operating time and (iv) Reset time?   8M

OR

4   a) Classify the various types of over current relays and give their applications along with approximate characteristics?   6M

    b) A 3-phase 66/11 kV star-delta connected transformer is protected by Merz-price protection system. The CTs on the LT side have a ratio of 420/5 amp. Show that the CTs on the HT side will have a ratio of $70 : 5/\sqrt{3}$ 8M

UNIT–III

5. a) A 11kV, 100MVA alternator is provided with differential protection. The percentage of winding to be protected against phase to ground fault is 85%. The relay is set to operate when there is 20% out of balance current. Determine the value of resistance in the neutral to ground connection?   7M

    b) Discuss suitable protection schemes which are used for (i) rotor earth fault (ii) rotor open circuit of a synchronous generator?   7M

OR

6. a) A 40 MVA, 3-phase 220/132 kV transformer is star/delta connected. Find the CT rations on the two sides of the transformer for differential protection of the transformer. Draw the diagram for the same. Assume fault is more than 115% of full –load current and relay setting current is 5A.   7M

    b) What is the principle of harmonic restraint relay? Explain its application?   7M

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UNIT–IV

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7. a) Draw the schematic diagram of the carrier current protection scheme of lines. Also explain its working Principle? 7M

   b) Describe the protection of ring mains feeder with an example? 7M

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OR

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8. a) Describe the trip circuit diagram of 3-zone distance relay is used for the protection of a transmission line, why 3-zones are necessary? 7M

   b) What is the draw back of differential overcurrent protection for bus-bars and how it is overcome? 7M

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UNIT–V

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9. a) Describe the construction, Principle of operation of valve type lightning arresters? 9M

   b) A 132 kV, 3-phase, 50 Hz transmission line 192km long consists of three conductors of effective diameter 20mm arranged in a vertical plane with 4m spacing and regularly transposed. Find the inductance and KVA rating of the arc suppression coil? 5M

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OR

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10. a) What is the purpose of earthing? Distinguish between system earthing and equipment earthing. 7M

    b) Why is insulation coordination required in a large power system? What is meant by BIL of an equipment? 7M

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