Hall Ticket Number :										

R-14

Code: 4G272

IV B.Tech. I Semester Supplementary Examinations November 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) Derive the expression for restriking voltage and RRRV.

   b) For a 132 KV system the reactance and capacitance up to the location of the circuit breaker is 3 ohms and 0.015 micro farads respectively. Calculate the following

      i. the frequency of transient oscillations
      ii. The maximum value of restriking voltage across the contacts of the circuit breaker.
      iii. The maximum value of RRRV

OR

2. a) Describe the construction and operation of air blast circuit breaker

   b) Enumerate the properties of SF6 which render its use in high voltage circuit breakers

UNIT–II

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

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

OR

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

   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 : $5/\sqrt{3}$

UNIT–III

5. a) Explain how to protect generators against stator and rotor faults

   b) Discuss inter-turns fault protection in generators

OR

6. a) Explain percentage differential protection in transformers

   b) Describe the working of Buchholtz relay with near diagram

UNIT–IV

7. a) Explain protection of radial and ring main feeders.

   b) Discuss the three zone protection in transmission lines

OR

8. Discuss the protection of transmission lines using carrier current protection

UNIT–V

9. a) Explain the protective characteristics of a lightning arrester against the with- stand characteristic of equipment on a voltage – time curve?

   b) Calculate the reactance of a coil suitable for a 33kV, 3-phase transmission system of which the capacitance to earth of each conductor is 4.5 μF?

OR

10. a) Explain different types of earthing the neutral point of a power system.

    b) What is horn-gap arrester? Explain how it works?

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Hall Ticket Number :										

R-14

Code: 4G37C

IV B.Tech. I Semester Supplementary Examinations November 2018

Digital Signal Processing

(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) Obtain the DTFS coefficients of x(n) = $\cos\left(\frac{16\pi}{13}n + \frac{\pi}{6}\right)$. Plot its magnitude and phase. 6M

   b) Find the N point DFT of the sequence.
   x(n) = 4 + $\cos^2(\frac{2\pi n}{N})$; n = 0,1,2,…….N-1. For N=8 8M

OR

2. a) Evaluate linear convolution of the following sequences using DFT and IDFT x(n) = {2,1} and h(n) = {1,2} 8M

   b) Prove the following properties:
   i) Convolution periodic discrete time sequences.
   ii) Time shift property of discrete time aperiodic sequence. 6M

UNIT–II

3. a) Find the Eight point DFT of the sequence, x(n) = {1,1,0,-1,-1,-1,0,1} by Decimation in frequency FFT algorithm. Use the Eight point radix-2 DIT–FFT algorithm to find the DFT of the sequence
   x(n) = {$\frac{1}{\sqrt{2}}$, 1, $\frac{1}{\sqrt{2}}$, 0, -$\frac{1}{\sqrt{2}}$, -1, -$\frac{1}{\sqrt{2}}$, 0 } 7M

   b) The DFT X(K) of sequence is given as
   X(K) = {0, $2\sqrt{2}$ (1-j),0,0,0,0,0,$2\sqrt{2}$ (1+j)}
   Determine the corresponding time sequence x(n) using DIF-FFT and draw its flow graph. 7M

OR

4. a) What are the differences and similarities between DIT and DIF – FFT algorithm? Discuss in-place computation in the case of decimation in frequency algorithm. 6M

   b) Let x(n) = $\left(1, \frac{1}{2}, \frac{1}{4}, \frac{1}{8}\right)$ and h(n) = (1, 1, 1, 1). Compute the DFTs of x(n) and h(n)by the decimation in frequency algorithm. Using the above results, evaluate the circular convolution of x(n) and h(n). 8M

UNIT–III

5. a) Design an analog Butterworth filter that has a gain of -2dB at 20rad/sec. and attenuation in excess of 10dB beyond 30 rad/sec. 7M

   b) Find H(z) using impulse invariance method for the following transfer function.
   $H_a(s) = \frac{(s+a)}{(s+a)^2 + b^2}$ 7M

OR

6. a) Design a Butterworth low pass digital filter using bilinear transformation to meet the following specification.

i) An acceptable pass band ripple of 1db

ii) A pass band edge of 0.3π rad. &

iii) Stop band attenuation of 40db or greater beyond 0.6 π rad. 8M

b) The transfer function of a system is given by

$$H(z) = \frac{\frac{1}{4}z^{-1}}{1 - \frac{3}{4}z^{-1} + \frac{1}{8}z^{-2}}$$

Realize the above using direct form I, direct form II. 6M

UNIT–IV

7. a) Explain the frequency sampling method of designing FIR filters and draw the corresponding block diagram. 7M

b) The frequency response of an FIR filter is given by

$H(\omega) = e^{-j3\omega}(1 + 1.8\cos 3\omega + 1.2\cos 2\omega + 0.5\cos\omega)$

Determine the coefficients of the impulse response h(n) of the FIR filter 7M

OR

8. a) Design a FIR low pass filter with the frequency response, using rectangular window.

$$h_d(\omega) = e^{\frac{-j\omega_c(N-1)}{2}} \quad -\tfrac{\pi}{2} \le \omega \le \tfrac{\pi}{2}$$

= 0 ; elsewhere

For N=7 7M

b) A filter is to be designed with the following desired frequency response

$$H_d(\omega) = 0 \; ; \; -\tfrac{\pi}{4} < \omega < \tfrac{\pi}{4}$$

$$= e^{-j2\omega}; \quad \tfrac{\pi}{4} < |\omega| < \pi$$

Find the frequency response of the FIR filter designed using rectangular window defined as given below: $w_R(n) = 1$; $-5 \le n \le 5$ 7M

UNIT–V

9. a) Analyse the basic concepts of spectral analysis of non-stationary signals. Explain how short-time Fourier transform used in the analysis. 7M

b) With the diagram, explain the oversampling sigma-delta A/D converter structure. 7M

OR

10. a) Why signal compression is required? With the relevant block diagram discuss the functioning of signal compression system. 7M

b) Explain the concept of single echo filter and multiple echo filter of time domain operations in musical sound processing. 7M

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Hall Ticket Number :										

Code: 4GA71

R-14

IV B.Tech. I Semester Supplementary Examinations November 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. What is Budgeting? Explain systems approach to Management.

OR

2. What is meant by Organisation Structure? Explain the various types of Organisation Structure

UNIT–II

3. Explain the objectives of Inventory Management and the need for the Inventory Control

OR

4. a) Explain Marketing Mix.
   b) Discuss about Channels of Distribution

UNIT–III

5. Explain about the basic functions of Human Resource Manager

OR

6. a) What is Performance Appraisal?
   b) Explain about Industrial Relations.

UNIT–IV

7. Briefly discuss the techniques of Investment Analysis

OR

8. Discuss the similarities and differences of PERT and CPM

UNIT–V

9. Explain about Total Quality Management and Supply Chain Management

OR

10. What is the relationship between Ethics and an organization?

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Hall Ticket Number :										

R-14

Code: 4G275

IV B.Tech. I Semester Regular Examinations November 2018

Renewable Energy Sources

(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) Compare the advantages and disadvantages between Conventional with Non-conventional energy sources. 7M

   b) Explain about the solar radiation and its measuring instruments. 7M

OR

2. a) Briefly describe the impact of solar power on environment. 7M

   b) With neat sketches, explain briefly about different measuring instruments and their applications. 7M

UNIT–II

3. a) Briefly explain about the various types of Solar Collectors with their collector efficiency. 7M

   b) With a neat sketch, explain the working of solar pond. 7M

OR

4. a) Name the various types of Solar water heating systems and explain briefly about each of them. 7M

   b) Compare different types of solar collectors. 7M

UNIT–III

5. a) List out the various factors considered for the site selection of wind energy extraction through wind turbine. 7M

   b) Describe the various methods of ocean thermal electric power generation. 7M

OR

6. Briefly explain the applications of Wind Energy and also derive the expression for power for WECS. 14M

UNIT–IV

7. a) What are the Advantages and Disadvantages of biogas generation? 7M

   b) Describe the characteristics of the materials used for different components of a power plant using geothermal energy. 7M

OR

8. a) With a neat sketch, explain the working principle and operation of geothermal generation. 7M

   b) Explain the difference between fixed dome type and floating drum type biogas plant. 7M

UNIT–V

9. a) Explain the need of Direct Energy Conversion. 7M

   b) Compare Thermo-electric generators with MHD generators. 7M

OR

10. With a neat sketch, explain the principle of operation of MHD generators. 14M

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