

SUBJECT CODE NO: E-19
FACULTY OF ENGINEERING AND TECHNOLOGY
B.E.(EEP/EE/EEE) Examination Nov/Dec 2017
High Voltage Engineering
(REVISED)

[Time: Three Hours]

[Max.Marks:80]

- N.B
- Please check whether you have got the right question paper.
- i) Question no. 1 & Question no. 6 are compulsory.
 - ii) Attempt any two questions from remaining questions of each section.
 - iii) Assume suitable data wherever necessary.

Section A

- Q.1 Solve any five 10
- a) What is governing equation for the electrical potential V for triangular elements in FEM?
 - b) What is the principle of charge simulation method?
 - c) Why there is need to control electric stress in voltage equipment?
 - d) List out the various methods for estimation of electric field stresses.
 - e) State the application of insulating material in power cables.
 - f) What is difference between insulation and dielectrics?
 - g) What is treeing and tracking?
 - h) State applications of insulating materials.
- Q.2 a) Explain the procedure to control electric field intensity in HV equipment. 07
- b) What is "Finite Element Method"? Give outline of this method for solving field problems. 08
- Q.3 a) Describe the current growth phenomenon in a gas subjected to uniform electric fields. 07
- b) Explain the experimental set-up for the measurement of pre-breakdown currents in a gas. 08
- Q.4 a) Discuss the factors that influence conduction in pure liquid dielectrics and in commercial liquid dielectrics. 07

- b) Explain various theories that explain breakdown in commercial liquid dielectrics. 08
- Q.5 a) What is 'thermal breakdown' in solid dielectrics, and how is it practically more significant than other mechanisms? 07
- b) Explain the different mechanisms by which breakdown occurs in solid dielectrics in practice. 08

Section B

- Q.6 Solve any five 10
- a) State different forms of high voltages.
- b) Draw the circuit diagram of full wave rectifier.
- c) What are the limitations of series resistance micrometer?
- d) Draw schematic diagram of a generating voltmeter (rotating vane type).
- e) State causes for switching and power frequency over-voltages.
- f) Define Basic Impulse Level (BIL).
- g) Define Partial-discharge magnitude
- h) Define Disruptive Discharge Voltage.
- Q.7 a) Explain with diagrams, different types of rectifier circuits for producing high dc voltages. 07
- b) Why is Cockroft-Walton circuit preferred for voltage multiplier circuits? Explain its working with a schematic diagram. 08
- Q.8 a) Discuss briefly the different methods of measuring high dc voltages. What are the limitations of each method? 07
- b) Describe the generating voltmeter used for measuring high dc voltages. How does it compare with a potential divider for measuring high dc voltages? 08
- Q.9 a) Explain the different theories of charge formation in clouds. 07
- b) What are the mechanisms by which lightning strokes develop and induce overvoltage's 08

Q.10

on overhead power lines?

- a) Define 'complex permittivity'. What are the factors that govern the quantities 'relative permittivity' and 'loss factor'? 07
- b) What are the different power frequency tests done on insulators? Mention the procedure for testing. 08

SUBJECT CODE NO: E-50
FACULTY OF ENGINEERING AND TECHNOLOGY
B.E.(EEP/EE/EEE) Examination Nov/Dec 2017
Power System Operation & Control
(REVISED)

[Time: Three Hours]

[Max.Marks:80]

Please check whether you have got the right question paper.

- N.B
1. Q.No.1 and Q.No.6 are compulsory.
 2. Solve any two questions from remaining questions in each section.
 3. Assume suitable data wherever necessary.

Section A

- Q.1 Solve **any five** questions. 10
- a) Define d, q, o axis components
 - b) Define inertia constant and kinetic energy stored by alternator rotor.
 - c) What is meant by the synchronous impedance of an alternator?
 - d) What is meant by infinite bus bar?
 - e) Define small signal stability.
 - f) What is brushless excitation system?
 - g) What is the role of governor in power system operation and control?
- Q.2 08
- a) Derive the expression for swing equation.
 - b) Explain classical transfer function of hydraulic turbine with its speed characteristics. 07
- Q.3 08
- a) Explain with block diagram the governor with transient droop compensation.
 - b) State and explain the elements of an excitation system. 07
- Q.4 08
- a) Explain in detail the three basic functions of steam turbine controls.
 - b) What is power system stability? Explain types of power system stability in detail. 07
- Q.5 Write short notes on: 05
- a) State space representation 05
 - b) SMIB configuration 05
 - c) Automatic voltage regulator 05

Section B

- Q.6 Solve **any five**: 10
- a) What is incremental cost
 - b) How shunt capacitors provide reactive power for voltage control.
 - c) What is static VAR system
 - d) What is AGC
 - e) What is the function of economic load dispatch
 - f) What is SCADA
 - g) What is different types of reactive power compensation.

Q.7	a) Explain production and absorption of reactive power in power system equipment's.	08
	b) Explain any three methods of voltage control with schematic diagram in detail.	07
Q.8	a) Explain the roles of SCADA system in energy management system.	08
	b) Explain the application of shunt capacitors to distribution system.	07
Q.9	a) Explain in detail the energy management system and its implementation steps.	08
	b) Derive the expression for short term hydro thermal scheduling problem.	07
Q.10	Write short notes on:	
	a) ULTC transformer	05
	b) Synchronous condensers	05
	c) Maintenance scheduling	05

Total No. of Printed Pages:2

SUBJECT CODE NO:- E_84
FACULTY OF ENGINEERING AND TECHNOLOGY
B.E.(EEP/EE/EEE) Examination Nov/Dec 2017
Renewable Energy
(REVISED)

[Time: Three Hours]

[Max.Marks:80]

- N.B
- Please check whether you have got the right question paper.
- i) Use suitable data if required.
 - ii) Solve Question no.1 from section A and Question no.6 from Section B are compulsory.
 - iii) Solve any two question from remaining questions from each sections A and B.

Section A

- Q.1 Solve any five from the following 10
- (a) Define Solar energy
 - (b) What is meant by pitch angle
 - (c) What is the flat plate collector? Write its function.
 - (d) What is solar pond
 - (e) What is the type of generator used in wind power plant?
 - (f) Define solar altitude angle
 - (g) Define a fuel cell
 - (h) What are the components of solar water heater?
- Q.2 (a) What are the important differences between renewable and non-renewable source. 08
- (b) Explain with a neat sketch the working principle of standalone solar system. 07
- Q.3 (a) Explain the horizontal axis wind mill briefly. 08
- (b) Explain the main applications of wind energy. 07
- Q.4 (a) What do you understand by aerodynamics, explain. 07
- (b) Enumerate the different type of concentrating type collectors. 08
- Q.5 (a) Write short note on solar radiation. 08
- (b) Explain the merits and limitations of wind energy. 07

Section B

- Q.6 Solve any five from the following 10
- (a) What are the Constituents of biogas
 - (b) What is geothermal power
 - (c) What is the use of gasifies in Biogas
 - (d) Write various types of fuel cells.
 - (e) What is see back thermo electric effect
 - (f) What is meant by pyrolysis
 - (g) Write advantages of tidal power plant

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(h) Write the components of tidal power plant.

- Q.7 (a) What are the advantages and limitations of wave energy conversion 08
(b) What are the factors affecting biogas generation. 07
- Q.8 (a) What are the main types of OTEC power plants? Explain any one. 08
(b) What are the MHD generators? Explain its working. 07
- Q.9 (a) Explain the applications of geothermal energy. 08
(b) Explain the classification of Biogas plants. 07
- Q.10 (a) Explain the operation of IC engines with biogas and discuss their performance characteristics. 08
(b) Write short note on geothermal sources. 07

Total No. of Printed Pages:2

SUBJECT CODE NO:- E-143
FACULTY OF ENGINEERING AND TECHNOLOGY
B.E.(EEP/EE/EEE) Examination Nov/Dec 2017
Elective-II: Electrical Power Quality
(REVISED)

[Time: Three Hours]

[Max.Marks:80]

Please check whether you have got the right question paper.

N.B

- i) Question 1 & 6 are compulsory.
- ii) Solve any two Question in each section from remaining.

Section A

- Q.1 Solve any five (each two marks)** 10
- a) Define Electrical Power Quality
 - b) State two reasons for increased concerned about Power Quality.
 - c) What are causes of Long duration voltage variations?
 - d) Define voltage Flicker & voltage fluctuation.
 - e) What is need of locating harmonic sources?
 - f) Differentiate Linear and Non – Linear loads.
 - g) What is Voltage Sag / swell both.
 - h) Define D.C. off set.
- Q.2** 08
- a) What is need of estimation of voltage sag & Explain different sources of voltage sag.
 - b) Explain the impact of Power – Quality. 07
- Q.3** 07
- a) Explain various causes of Ferro – resonance in Distribution system. How to deal the Ferro – resonance Problems.
 - b) Explain the different compensation schemes to mitigate voltage sags. 08
- Q.4** 08
- a) Why there is need for over voltages protection for various equipment's and explain remedies to be taken.
 - b) What are the two important Harmonic indices used in power system. Explain Total Demand Distortion. 07
- Q.5 Write short note on any three.** 15
- a) CBEMA characteristics
 - b) Evaluation procedure for EPQ.
 - c) Discuss Oscilloscope. Multimeters & wiring grounding.
 - d) IEEE 519 standard

Section B

Q.6	Solve any five (each two marks)	10
	<ul style="list-style-type: none"> a) Enlist different problems of grounding. b) Explain the terms – i) inter harmonics. c) Define reliability indices d) Write the functions of Oscilloscope. e) What is characteristics of Line monitors. f) Write reasons of degradation of reliability. g) State objectives of PQ monitoring. h) Write reasons of grounding. 	
Q.7	<ul style="list-style-type: none"> a) How does lightening causes transients to appear in power system. b) What are the conditions to be fulfilled in Shunt filter design system? 	<div>08</div> <div>07</div>
Q.8	<ul style="list-style-type: none"> a) Define SAIFI and SAIDI, reliability indices. How these are important in monitoring PQ. b) Define and explain the term active; Reactive and apparent power under non – sinusoidal conditions. 	<div>07</div> <div>08</div>
Q.9	<ul style="list-style-type: none"> a) Describe static VAR compensation using thyristor controlled reactor. b) Discuss in detailed about flicker meter & its application. 	<div>07</div> <div>08</div>
Q.10	Write short notes (Any three)	15
	<ul style="list-style-type: none"> a) Data Loggers b) Calculation methods of voltage sag c) Mitigation of transients d) Passive & Active filter comparison 	

Total No. of Printed Pages:2

SUBJECT CODE NO: E-144
FACULTY OF ENGINEERING AND TECHNOLOGY
B.E.(EEP/EE/EEE) Examination Nov/Dec 2017
Elective-II: Electric Traction & Utilization
(REVISED)

[Time: Three Hours]

[Max.Marks:80]

N.B

- Please check whether you have got the right question paper.
- i) Q.1 & Q.6 are compulsory.
 - ii) Solve any two questions from section A and B excluding compulsory questions.
 - iii) Assume suitable Data.

Section A

- | | | |
|-----|--|----|
| Q.1 | Attempt any five. <ul style="list-style-type: none">a) Define Traction.b) Give the principle of DC generator.c) Give the principle of DC motor.d) What is the function of flywheel drive?e) Define sag and Tension.f) What are the different component of traction substation?g) Draw the characteristics of traction motors.h) Give the function of SCR. | 10 |
| Q.2 | a) Explain single phase high frequency AC system. | 08 |
| | b) Explain signalling interference in telecommunication system. | 07 |
| Q.3 | a) Explain AC electric locomotive with block diagram. | 08 |
| | b) Explain constructional details of DC traction motors with neat diagram. | 07 |
| Q.4 | a) Explain suitability of series motor for traction duty. | 08 |
| | b) Give the classification of Electric traction. Explain any one. | 07 |
| Q.5 | a) Write a short note on Repulsion motor. | 08 |
| | b) Write a short note on Induction motor. | 07 |

Section B

Q.6	Attempt any five	10
	a) What are the different traction motor control methods?	
	b) What is Duty cycle?	
	c) What is the use of interlocks?	
	d) Draw speed time curve of Train movement and braking.	
	e) Give the difference between electric and mechanical braking system.	
	f) What are the difference types of Air – Conditioning system?	
	g) What type of machine used in domestic Refrigerator and Why? Explain.	
	h) What are the different factors affecting the speed of train.	
Q.7	a) Explain series – parallel controllers.	08
	b) Explain Room Air conditioner system in detail.	07
Q.8	a) Explain Master controllers.	08
	b) Explain Tractive effort calculations.	07
Q.9	a) Explain Rheostatic braking system.	08
	b) Explain use of Metadyne and Megavolt.	07
Q.10	a) Write a short note on Regenerative braking.	08
	b) Write a short note on Water cooler.	07

Total No. of Printed Pages:3

SUBJECT CODE NO: E-203
FACULTY OF ENGINEERING AND TECHNOLOGY
B.E.(EEP/EEE/EE) Examination Nov/Dec 2017
Electrical Drives
(REVISED)

[Time: Three Hours]

[Max.Marks:80]

Please check whether you have got the right question paper.

- N.B
- i. Q. 1 from section A and Q.6 from section B are compulsory.
 - ii. Attempt any two questions from Q.2 to Q.5 and Q.7 to Q.10.
 - iii. Assume suitable data where necessary.
- Q.1 Attempt any five. 10
- a) What are the disadvantages of electrical drives?
 - b) What is meant by load equalization?
 - c) What are the choices of electrical drives?
 - d) What are the three component of load torque?
 - e) What are the drawbacks of rectifier fed Dc drives.
 - f) What are the advantages of closed loop control system?
- Q.2 a) Derive the expression to find equivalent load torque and equivalent inertia of loads in translational and Rotational Motion. 07
- b) A motor is required to drive the take up roll on a plastic strip line. The mandrel on which the strip is wound is 15cm in diameter and strip builds up to a roll 25cm in diameter. Strip tension is maintained constant at 1000N. The strip moves at uniform speed of 25 m/s. The motor is coupled to mandrel by a reduction gear with $a = 0.5$. The gears have an approximate efficiency of 87% at all loads. Determine the speed and power rating of the motor required for this application. 08
- Q.3 a) Explain the operation of closed loop speed control scheme with inner current control loop. 08
- b) Explain the dual converter control of dc separately excited motor. 07

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- Q.4 a) What is breaking in D.C Motor drive and explain various electrical breaking scheme of dc drives. 07
- b) A 200 volts, 875rpm, 150A separately excited DC motor has an armature resistance of 0.06Ω . It is fed from a single phase fully controlled rectifier with an ac source of 220 volts, 50Hz, assuming Continuous condition. 08
- Calculate.
- 1) Firing angle for rated torque and 750 rpm
- 2) Motor speed $\alpha = 160^\circ$ and rated torque.

Q.5 Write short notes.

- i) Current sensing and speed sensing in electrical drivers. 05
- ii) Single- phase half controlled rectifier control of d. c. motor. 05
- iii) Multiquadrant operation of electrical drives. 05

SECTION B

- Q.6 Attempt any five. 10
- a) What is meant by soft start?
- b) What are the disadvantages of Induction motor operation with unbalanced supply voltages?
- c) Why the control of a three-phase induction motor is more difficult than D.C motor.
- d) Mention two modes employed in variable frequency control of synchronous motor drive.
- e) Give the some applications of load- commutated inverter fed synchronous motor drive.
- f) What are the applications of BLDC motor drive?

- Q.7 a) Explain in detail the static rotor resistance control in induction motor drive. 07
- b) A 440v, 3ϕ , 50 Hz, 6 Pole, 945 rpm. Delta connected induction motor has the following parameters referred to stator: 08
- $R_s = 2\Omega$, $R_r' = 2\Omega$, $X_s = 3\Omega$, $X_r' = 4\Omega$

When driving a fan load at rated voltage it runs at rated speed. The motor speed is controlled by stator voltage control.

Determine :

- i) Motor terminal voltage
- ii) Motor current
- iii) Motor torque
- For 800 rpm.

Q.8 a) Explain the fundamental principle of slip power recovery scheme. Draw and explain the circuit of static scherbius drive. 08

b) What is the basic difference between true synchronous mode and self-controlled mode for variable frequency control of synchronous motor drive? 07

Q.9 a) Describe the operation of brushless d.c. motor drive. State special features of BLDC motor drive. 07

b) A 10MW, 3Phase, 11kv, Y-connected 6 pole, 50Hz, 0.92 P.F (leading) synchronous motor has 08

$X_s = 8.5 \Omega$ and $R_s = 0$. Rated field current 52A.

Machine is controlled by variable frequency control at constant v/f ratio up to the base speed and at constant voltage above the base speed determine,

i) Torque and field current for the rated armature current, 750 rpm and 0.82 leading power factor.

Q.10 Write short note.

i) Load commutated inverter fed synchronous motor drive. 05

ii) Application and advantages of AC – drives. 05

iii) PWM controlled induction motor drive. 05

Total No. of Printed Pages:2

SUBJECT CODE NO: E-243
FACULTY OF ENGINEERING AND TECHNOLOGY
B.E.(EEP/EE/EEE) Examination Nov/Dec 2017
Power System Protection
(REVISED)

[Time: Three Hours]

[Max.Marks:80]

Please check whether you have got the right question paper.

- N.B
- i) Q.No.1 and Q.No.6 are compulsory.
 - ii) Solve any Two questions from section A & B each, excluding compulsory questions.
 - iii) Assume Suitable data if Necessary.

Section A

- Q.1 **Attempt any five.** 10
- a) Classify relays based on relay timing.
 - b) What do you mean by Reach in distance relay?
 - c) Define operating force and restraining force.
 - d) Give Difference between C.T. & P.T.
 - e) State Application of Static relay.
 - f) Explain Working principle of differential relay.
 - g) Define Current Setting & Pickup level.
- Q.2 a) Derive Torque Equation for Induction type relay. 07
b) Determine the time of operation of 5 amps 3 second over current relay having Current setting 08 of 130% & time setting multiplier of 0.7 connected to a supply Circuit through a 400/5 C.T. When a circuit carries fault current of 4000 amp (Consider time of operation 3.5 second)
- Q.3 a) State the type of functional relay & Explain Induction type directional Over current relay. 07
b) Explain in details Percentage differential relay with its advantages. 08
- Q.4 a) Explain Different types of faults occurred in alternator. 07
b) Explain harmonic restraint relay. 08
- Q.5 **Write a short note on**
- a) Merz Price Protection 05
 - b) Negative Sequence relay 05
 - c) Restricted Earth fault Protection 05

Section B

Q.6	Attempt any five	10
	<ul style="list-style-type: none"> a) Define making capacity & Breaking capacity of Circuit Breaker. b) What is difference between recovery voltage & arc voltage? c) What is Arc Phenomenon? d) State Application & Properties of SF6 Circuit Breaker. e) Explain ELCB. f) State the factors on which Arc resistance is depends. g) Classify oil circuit breaker. 	
Q.7	<ul style="list-style-type: none"> a) Explain in details Vacuum circuit breaker. b) Explain in details Bus Bar Protection system. 	07 08
Q.8	<ul style="list-style-type: none"> a) Explain in details Microprocessor based impedance relay. b) Explain in details Air circuit breaker. 	07 08
Q.9	<ul style="list-style-type: none"> a) An 11 KV 500 MVA circuit breaker suddenly closes on to a top fault determine <ul style="list-style-type: none"> i) Symmetrical breaking current ii) Asymmetrical breaking current assuming 50% of D.C. Component iii) The peak making current iv) Short time current rating b) Derive the expression for RRRV & Maximum value of RRRV. 	07 08
Q.10	Write a short note on	
	<ul style="list-style-type: none"> a) Protection of substation against direct stroke b) MCB c) Surge Absorber 	05 05 05

SUBJECT CODE NO:- E-284
FACULTY OF ENGINEERING AND TECHNOLOGY
B.E.(EEE/EEP/EE) Examination Nov/Dec 2017
Digital Signal Processing
(REVISED)

[Time: Three Hours]

[Max.Marks:80]

Please check whether you have got the right question paper.

N.B

- 1) Solve Any three questions from each section.
- 2) Assume suitable data wherever necessary.

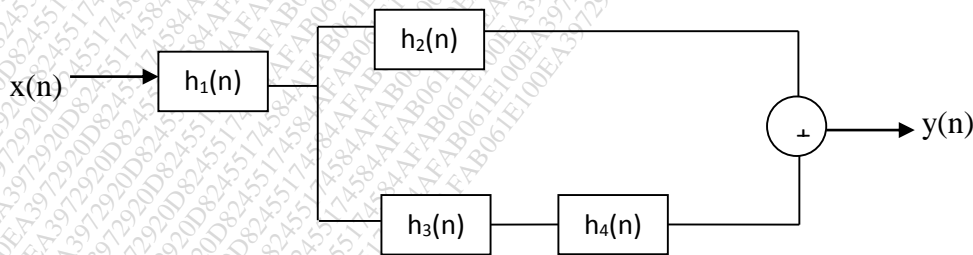
Section A

Q.1 Solve.

- 1) Define power and energy signals. 03
- 2) State properties of discrete time sinusoids. 03
- 3) Define quantization noise and resolution. 03
- 4) What is minimum sampling frequency of $x(t) = 4 \cos 100\pi t$ to avoid aliasing. 01
- 5) State properties of convolution. 03

- Q.2
- a) Perform the following operation on $x(n) = \{1,2,3,4,5,4,3,2,1\}$ that time scaling by 2 and $\frac{1}{2}$. 06
 - b) Determine the response of following system to the input signal $x(n) = |n|$ $-3 \leq n \leq 7$
 $= 0$ otherwise
 - i) Moving average filter
 - ii) Accumulator.

- Q.3
- a) Compute convolution. $y(n) = x(n) * h(n)$ of following signals. $x(n) = \{0,1,4,-3\}$ 06
 \uparrow
 and $h(n) = \{1,0,-1,-1\}$
 \uparrow
 - b) Consider the interconnection of LTI system as shown in fig.



- a) Express the overall impulse response in terms of $h_1(n), h_2(n), h_3(n)$ and $h_4(n)$. 01
- b) Determine $h(n)$, when- 06

$$h_1(n) = \{1,2,1\}$$

$$h_2(n) = \{1,1,2\}$$

$$h_3(n) = \{2,1,1\}$$

$$h_4(n) = \{2,2,1\}$$

Q.4	a) Draw and explain block-diagram of Digital signal processing.	06
	b) State and explain three characterizing properties of 'Discrete Time signals'	07
Q.5	Write short note on- (any two)	14
	1) Classification of systems	
	2) Correlation	
	3) Advantages of digital over analog signal processing.	
Section B		
Q.6	Solve-	
	a) When the DFT $x(k)$ of a sequence $x(n)$ is real and when it is imaginary?	03
	b) Differentiate between linear and circular convolution.	03
	c) What is the order of filter if	01
	$y(n) = \sum_{k=0}^{N-1} x(k)h(n-k)$	
	d) What is the ROC of infinite anticausal signals.	01
	e) State what is twiddle factor & what is its importance.	03
	f) What is meant by pole and zero.	02
Q.7	a) Find L_1 – point DFT of $x(n) = \{1, -2, 3, 4\}$	06
	b) Determine IDFT of $x(k) = \{1, -2, -j, 0, -2 + j\}$	07
Q.8	a) Determine the inverse Z- transform of $x(z) = \frac{z^2}{0.5 - 1.5z + z^2}$ for ROC $ z < 0.5$ using long division method.	07
	b) Compute convolution $x(n)$ of the signals. $x_1(n) = \{1, -2, 1\}$, $x_2(n) = 1$ $0 \leq n \leq 5$ $= 0$ elsewhere	06
Q.9	a) Establish relation between DFT and z-transform.	06
	b) State properties of DFT. Prove at least three properties in detail.	07
Q.10	Write short note on. (any two)	14
	1) Inverse Z-transform by partial fraction method.	
	2) FIR. Filter structures.	
	3) Signal flow graphs.	

Total No. of Printed Pages:2

SUBJECT CODE NO: E-325
FACULTY OF ENGINEERING AND TECHNOLOGY
B.E.(EEP/EEE/EE) Examination Nov/Dec 2017
Industrial Automation
(REVISED)

[Time: Three Hours]

[Max.Marks:80]

Please check whether you have got the right question paper.

N.B

- i) Q.1 & Q.6 are compulsory.
- ii) Solve any two questions from remaining questions of each section.
- iii) Solve total 3-questions from each section.

SECTION – A

- Q.1 Solve any five:** 10
- a) Define Industrial Automation.
 - b) Draw basic control cycle diagram.
 - c) What is meant by actuator?
 - d) What is tackler diagram?
 - e) What is role of controller in Automation?
 - f) What is the role of Actuator in Automation?
- Q.2** 07
- a) Explain concept of Hierarchy of Automation in details.
 - b) What is meant by Modbus? How it is used in Automation system? Give example. 08
- Q.3** 07
- a) With neat sketches Explain working of the modern control of 3-ph I.N. Star-Delta starter.
 - b) How PLC can be used to protect AC motor from over loading? Explain with neat sketch. 08
- Q.4** Draw basic SCADA system Architecture block diagram, naming each block & Explain function & significance of each Block. 15
- Q.5 Write short notes on any three:** 15
- i) Mechanical Actuators
 - ii) Communication standards Rs232 & Rs485
 - iii) Trending function in SCADA
 - iv) Access control

SECTION – B

- Q.6 Solve any five:** 10
- What do you mean by H/w & S/w type interfaces?
 - What is communication Protocol?
 - What do you mean by Field buses?
 - What are types of control systems?
 - Name the control technologies used in Automation.
 - What is supervisory control?
- Q.7** 07
- Explain Operation & control of inter connected Power System by SCADA.
- Q.8** 08
- Explain working of multiplexers & their role in SCADA.
- Q.8** 07
- What do you mean by Distributed control system? Draw its architecture & show system elements.
- Q.9** 08
- How many types of H/w & S/w interfaces are used in SCADA system & Explain working of any one.
- Q.9** 07
- Explain working of HMI with neat sketches.
- Q.10** 08
- What is significance of Data Highways in DCS? Explain in details.
- Q.10 Write short notes on any three:** 15
- Remote sensing Terminal
 - Types of Displays in DCS
 - High speed inputs
 - Archiving

Total No. of Printed Pages:2

SUBJECT CODE NO: E-397
FACULTY OF ENGINEERING AND TECHNOLOGY
B.E.(EEP/EE/EEE) Examination Nov/Dec 2017
Elective-I: Industrial Management
(REVISED)

[Time: Three Hours]

[Max.Marks:80]

Please check whether you have got the right question paper.

- N.B
1. Q.No.1 & 6 are compulsory.
 2. Attempt any two questions from each section from remaining.

Section A

- | | | |
|-----|--|--------------|
| Q.1 | Attempt <u>any five</u> from following. | 10 |
| | <ol style="list-style-type: none">a) Define planning in two sentences.b) Define human resource & its specialtyc) Define marketing & its core concept.d) Define CPM /PERT.e) Define sale fore castingf) Define material managementg) Define principles of HRM.h) Define principle of mat. Management | |
| Q.2 | <ol style="list-style-type: none">a) Described operation management and co-related with other depts.b) Define & explain various techniques of production planning. |
07
08 |
| Q.3 | <ol style="list-style-type: none">a) What are types and characteristics of incentive? Explain in detail.b) Explain process of market research? |
07
08 |
| Q.4 | <ol style="list-style-type: none">a) Differential between direct/ indirect taxes with examples.b) What is meant by PERT? Explain any one method adopted. |
07
08 |
| Q.5 | <ol style="list-style-type: none">a) Differentiate fundamentally between 'marketing' & 'sales' in context of management.b) Elaborate Decision making process in detailed. |
07
08 |

Section B

- Q.6 Attempt any five from following. 10
- a) Define purchasing as management function.
 - b) Define standards in terms of management.
 - c) Write Indian Factory Act.
 - d) Define MIS as a decision support.
 - e) What is SEZ? State in two-three sentences.
 - f) Define need & expectation in management perspective.
 - g) Define TQM.
 - h) What is cost of quality?
- Q.7 08
- a) What is Quality Management System approach in ISO concept?
 - b) What is total Quality Management & essential of TQM? 07
- Q.8 07
- a) What is different buying techniques? Explain any one in detail.
 - b) List out quality obstacles & comment on any two of them. 08
- Q.9 07
- a) Distinguish between cost /price & value.
 - b) Explain LPP and discuss its techniques & limitations. 08
- Q.10 07
- a) How to overcome transportation problem by Operation Research.
 - b) Write in detail about testing standards & code the testing of electrical equipment standards of power transformer. 08

Total No. of Printed Pages:2

SUBJECT CODE NO:- E-398
FACULTY OF ENGINEERING AND TECHNOLOGY
B.E.(EEE/EEP/EE) Examination Nov/Dec 2017
Elective-I: Flexible AC Transmission System
(REVISED)

[Time: Three Hours]

[Max.Marks:80]

Please check whether you have got the right question paper.

- N.B
- i. Q. No. 1 & Q. No. 6 are compulsory
 - ii. Attempt any two questions from each section from the remaining questions.
 - iii. Assume suitable data, whenever necessary

Section A

- Q.1 Solve any five questions 10
- i) What are the objectives of FACTS
 - ii) What limits the loading capability
 - iii) List the shunt connected controllers
 - iv) What is TCSC
 - v) Define SVC
 - vi) What is the necessity of compensation
 - vii) What is the cause for voltage instability
 - viii) What are the different types of storages
- Q.2 07
- a) Explain different methods to control power flow in meshed system
 - b) What are the objectives of static shunt compensator and explain transient stability improvement 08
- Q.3 07
- a) Explain in brief the basic types of FACTS controllers
 - b) Explain the construction and working of 1- \emptyset full wave bridge types FACTS converter 08
- Q.4 07
- a) Explain the working of TSC-TCR with neat diagram and wave forms
 - b) Explain indirect and direct output voltage control scheme of switching converter type VAR generator 08
- Q.5 Write a short note on 05
- a) Opportunities of FACTS 05
 - b) UPFC 05
 - c) Power oscillation damping in shunt compensation 05

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Section B

- Q.6** Solve any five question **10**
- i) State uses of series compensation
 - ii) What is IPFC
 - iii) What is bang-bang control
 - iv) State salient features of UPFC
 - v) What is use of braking resistor
 - vi) How TCBR is used to improve the transient stability
 - vii) What is meant by system compensation
 - viii) Define passive & active VAR control
- Q.7**
- a) Explain the working of GTO thyristor controlled series capacitor with diagram and wave forms **07**
 - b) Explain how series compensation can be used for power oscillation damping and sub synchronous oscillation damping **08**
- Q.8**
- a) Explain how power oscillation damping can be achieved by using voltage and phase angle regulation **07**
 - b) Explain the basic control of TCBR **08**
- Q.9**
- a) What is NGH-SSR damping scheme explain with circuit diagram **07**
 - b) Explain UPFC back to back voltage source converter **08**
- Q.10** Write a short note on
- a) TSSC **05**
 - b) Power flow control by phase angle regulators **05**
 - c) Sub synchronous Resonance **05**

Total No. of Printed Pages:2

SUBJECT CODE NO: E-400
FACULTY OF ENGINEERING AND TECHNOLOGY
B.E.(EEP/EE/EEE) Examination Nov/Dec 2017
Elective-I: Digital System Design
(REVISED)

[Time: Three Hours]

[Max.Marks:80]

Please check whether you have got the right question paper.

- N.B
- i. Q. No. 1 and Q. No. 6 are compulsory
 - ii. Attempt any two question from Q. 2 to Q.5 and Q. 7 to Q.10
 - iii. Assume suitable data if required

Section A

- Q.1 Attempt any two questions. 10
- a) Draw IV characteristics of NMOS and PMOS in three region.
 - b) What is mean by substrate bias voltage? Explain its effect.
 - c) What are the basic steps of fabrication of MOSFETS?
 - d) Dynamic power consumption in CMOS.
- Q.2 a) Draw and explain transfer characteristics of CMOS inverter in detail. 08
- b) What is pass transistor? What is effect they are connected in cascaded? 07
- Q.3 a) Draw and explain 4 input NAND gate using static CMOS. 07
- b) Describe dynamic CMOS logic in detail 08
- Q.4 a) What are the types of Design rule of CMOS layout? Explain it. 08
- b) Describe N-well process. 07
- Q.5 Write short note on (Any three) 15
- 1) Channel Length Modulation
 - 2) Transmission Gate
 - 3) DIBL
 - 4) Layout of CMOS inverter

Section B

- Q.6 Attempt any two 10
- a) Describe elements of VHDL
 - b) What is need of configuration? Explain with example
 - c) Define fault coverage. Explain the example
 - d) Write features of FPGAS
- Q.7 a) Draw VLSI Design flow and explain in detail 08
- a) Write VHDL code for BCD to seven segment display 07
- Q.8 a) Define functions. What are the types of functions? Explain in detail 08
- b) Write the difference between mealy and moore with example. 07
- Q.9 a) Draw architecture of boundary scan and describe in detail. 08
- b) What are the types of fault model? And explain stuck at 1 and stuck at 0 fault model. 07
- Q.10 Write short notes on (Any three) 15
- a) TAP controller
 - b) Architecture of CPLD
 - c) Concurrent & sequential statements
 - d) Attributes

Total No. of Printed Pages:2

SUBJECT CODE NO:- E-401
FACULTY OF ENGINEERING AND TECHNOLOGY
B.E.(EEE/EEP/EE) Examination Nov/Dec 2017
Elective-I: Recent Trends in Power Systems
(REVISED)

[Time: Three Hours]

[Max.Marks:80]

- N.B Please check whether you have got the right question paper.
- i) Q.1 & Q.6 are compulsory.
 - ii) Solve any two from section A & B excluding compulsory questions.
 - iii) Assume suitable data.

SECTION A

- Q.1 Attempt any five.** 10
- a) Define substation.
 - b) What is interconnection system?
 - c) What are the advantages of interconnection system?
 - d) What are the advantages of Automation in substation?
 - e) What is the function of Grid?
 - f) Explain the concept Smart Meters.
 - g) What are the components of smart meters?
 - h) What are the communication methods used for meter reading.
- Q.2** 08
a) Explain phase shifting transformer.
07
b) Explain Geographic information system.
- Q.3** 08
a) Explain Phase Measurement system.
07
b) Explain outage management system.
- Q.4** 08
a) Explain Smart Storage in detail.
07
b) Explain Real Time pricing.
- Q.5** 08
a) Write a short note on smart grid?
07
b) Write a short note on Feeder Automation.

SECTION B

- Q.6 Attempt any five.** 10
- a) What is solar cell & solar module?
 - b) Define micro grid.
 - c) What are the advantages of PV system?
 - d) Define Array.
 - e) What is the function of filter?
 - f) What is the function of flywheel?
 - g) What are the different types of energy storage system?
 - h) Define fuel cell.

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- Q.7 a) Explain Grid interactive system. 08
b) Explain building integrated PV system. 07
- Q.8 a) Explain the concept captive power generation in detail. 08
b) Explain characteristics of PV system. 07
- Q.9 a) Explain shunt and series filters. 08
b) Explain super conducting magnetic energy storage system. 07
- Q.10 a) Write a short note on Array design. 08
b) Write a Short note on present status of solar power generation. 07

Total No. of Printed Pages:2

SUBJECT CODE NO: E-422
FACULTY OF ENGINEERING AND TECHNOLOGY
B.E.(EEP/EE) Examination Nov/Dec 2017
Microcontrollers & Applications
(OLD)

[Time: Three Hours]

[Max.Marks:100]

- N.B
- Please check whether you have got the right question paper.
- i) Solve any three questions from each section.
 - ii) Figures to the right indicates full marks.
 - iii) Assume suitable data, if necessary.

Section A

- Q.1 a) Draw the internal architecture of 8086 processor and explain in brief execution unit and bus interface unit. 08
- b) Explain PSW register of 8086. 08
- Q.2 a) Determine the physical address resulting from the following instruction. 08
- i. MOV DI, [BP + SI]
 - ii. MOV DI, [BX + 100h]
 - iii. MOV [BP + DI + 5], AH
 - iv. MOV AL, [5036]
- BP = 7000h, SI = 0350h, SS = 8000h, BX = 4FFFh, DS = 2000h, DI = 6A00h
- b) Write a program using 8086 to add two 16 bit number stored in NUM1 and NUM2. Store the result in NUM3. 08
- Q.3 a) Explain 8255 interfacing with 8086. 08
- b) Draw memory organization structure of 8086 & Explain. 08
- Q.4 a) Explain lock facility of 8086 based system. 08
- b) Draw & Explain architecture of coprocessor. 08
- Q.5 **Write short note on the following (any three)** 18
- a) Memory segmentation
 - b) Stack of 8086
 - c) PUSH & POP instruction
 - d) Steeper motor interfacing using 8086

Section B

- Q.6 a) Explain pin diagram of 8051. 08
b) Draw & Explain the architecture of 8051. 08
- Q.7 a) Explain in details about the programming of 8051 timer. 08
b) Mention the SFR register used in timer operation. Explain. 08
- Q.8 a) Write an ALP for finding maximum value in an array. 08
b) Explain few specification of Atmel 89XX. 08
- Q.9 a) Draw a interfacing diagram of DAC with 8051 microcontroller and write a program to generate a triangular waveform using a DAC. 08
b) Write an ALP using 8051 microcontroller to rotate stepper motor anticlockwise continuously. 08
- Q.10 **Write short note on the following (any three):** 18
a) Features of 8051 Microcontroller
b) Alternative function of port 3 of 8051 microcontroller
c) Difference between Microprocessor and Microcontroller
d) Describe the function of pin 1) PSEN 2) ALE