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10AL51

Fifth Semester B.E. Degree Examination, June/July 2013
Management and Entrepreneurship

Time: 3 hrs. Max. Marks:100

Note: ***Answer FIVE full questions, selecting at least TWO questions from each part.***

PART – A

1 a. Define management. Write various characteristics of management. **(05 Marks)**
b. Write various roles of a manager. **(05 Marks)**
c. Explain any two important modern management approaches. **(10 Marks)**

2 a. Write differences between strategic planning and tactical planning. **(05 Marks)**
b. Explain various types of decisions. **(05 Marks)**
c. Explain various steps of planning. **(10 Marks)**

3 a. Explain the various sources of recruitment. **(05 Marks)**
b. Write advantages and disadvantages of line and staff organization. **(05 Marks)**
c. Write various principles of organization. **(10 Marks)**

4 a. Write differences between coordination and cooperation. **(05 Marks)**
b. Write differences among autocratic, participative and Free-Rein Leadership styles. **(05 Marks)**
c. Explain various methods of establishing control. **(10 Marks)**

PART – B

5 a. Write differences among Intrapreneur, Entrepreneur and Manager. **(05 Marks)**
b. Write important qualities of an entrepreneur. **(05 Marks)**
c. Explain various stages in entrepreneurial process. **(10 Marks)**

6 a. Write various characteristics of SSIs. **(05 Marks)**
b. Write functions of WTO. **(05 Marks)**
c. Explain various steps to start a SSI. **(10 Marks)**

7 a. Write functions of TECSOK. **(05 Marks)**
b. Write functions of SIDBI. **(05 Marks)**
c. Write objectives, functions and single window concept of District Industries Centre. **(10 Marks)**

8 a. Write various points to be considered for project identification. **(05 Marks)**
b. Write differences between PERT and CPM. **(05 Marks)**
c. Explain various aspects of project feasibility studies. **(10 Marks)**

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10EE52

Fifth Semester B.E. Degree Examination, June/July 2013
Signals and Systems

Time: 3 hrs. Max. Marks:100

Note: ***Answer FIVE full questions, selecting at least TWO questions from each part.***

PART – A

1 a. Explain the signals and systems with examples. **(05 Marks)**

b. Find and sketch the odd and even components of the signal shown in Fig.Q.1(b). **(05 Marks)**

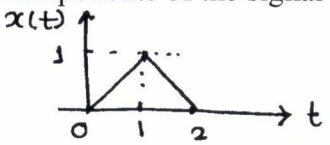

Fig.Q.1(b)

c. Determine whether the signal is periodic or nonperiodic. If periodic find the time period.

$$x(n) = \sin\left(\frac{1}{3}\pi.n\right).\cos\left(\frac{1}{3}\pi.n\right).$$ **(05 Marks)**

d. Sketch and label for each of the following signals for given signal x(t) shown in Fig.Q.1(d):
i) x(2(t – 2)); ii) x(-2t + 1). **(05 Marks)**

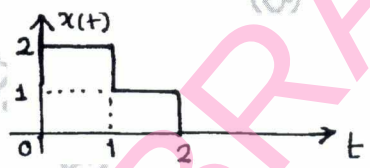

Fig.Q.1(d)

2 a. Obtain the convolution of the signals $x(t) = u(t)$, $h(t) = e^{-t}.u(t)$. **(07 Marks)**

b. A system has the input-output relation given by $y(n) = T\{x(n)\} = x(n^2)$. Determine whether the system is i) Linear; ii) Time invariant; iii) Causal; iv) Memory less; v) Stable. **(07 Marks)**

c. A system consists of several subsystems connected as shown in Fig.Q.2(c). Find the operator H relating x(t) to y(t) for the subsystem operator given by.

$H_1 : y_1(t) = x_1(t)\, x_1(t-1)$

$H_2 : y_2(t) = |x_2(t)|$

$H_3 : y_3(t) = 1 + 2\ x_3(t)$

$H_4 : y_4(t) = \cos(x_4(t))$. **(06 Marks)**

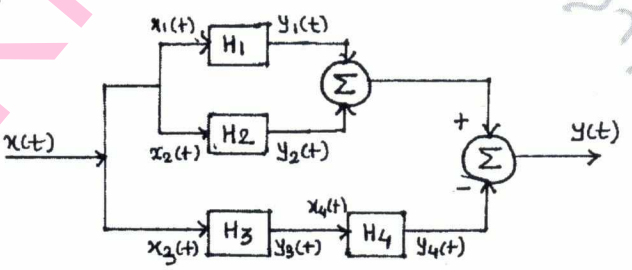

Fig.Q.2(c)

3 a. Find the step response for the LTI system represented by the impulse response

$$h(n) = \left(\frac{1}{2}\right)^n u(n).$$ **(05 Marks)**

b. Find the output of the system given by the differential equation

$$\frac{d^2y(t)}{dt^2} + 5.\frac{dy(t)}{dt} + 4y(t) = \frac{dx(t)}{dt}$$

$y(0) = 0$; $\left.\frac{dy(t)}{dt}\right|_{t=0} = 1$ and $x(t) = e^{-2t}.u(t)$. **(08 Marks)**

c. Draw the direct form I and direct form II implementation for the system described by

$$y(n)-\frac{1}{4}y(n-1)-\frac{1}{5}y(n-2)=x(n)+2x(n-1)+3x(n-2).$$ **(07 Marks)**

4 a. State and prove the time shift and the frequency shift property of Fourier series. **(08 Marks)**

b. For the signal x(t) shown in Fig.Q.4(b). Find the FS representation and draw its magnitude and phase spectra. **(06 Marks)**

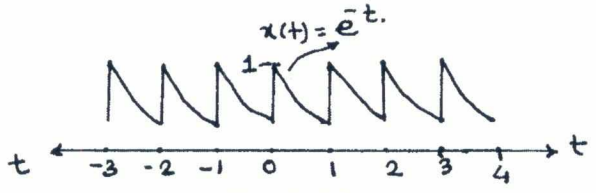

Fig.Q.4(b)

c. Find the DTFS of $x(n)=\cos\frac{\pi}{3}n$ and draw its spectrum. **(06 Marks)**

PART – B

5 a. State and prove the convolution and Parsevals property for Fourier transform. **(08 Marks)**

b. Compute the Fourier transform of the signal

$x(t) = 1 + \cos\pi t : |t| \le 1$

$= 0 \quad : |t| > 1.$ **(07 Marks)**

c. Find the DTFT of the signal x(n) = u(n) – u(n – 5). **(05 Marks)**

6 a. Find the FT representation for the periodic signal $x(t) = \cos w_{o.t}$ and draw the spectrum. **(07 Marks)**

b. Obtain the frequency response and the impulse response of the described by the difference equation.

$$y(n)+\frac{1}{2}y(n-1)=x(n)-2x(n-1).$$ **(06 Marks)**

c. State and prove low pass sampling theorem. **(07 Marks)**

7 a. What is region of convergence (ROC)? List the properties of ROC. **(06 Marks)**

b. Find the Z-transform x(z) and comment on the ROC of the following sequences:

i) $x(n)=\left(\frac{1}{2}\right)^n.u(n)+\left(\frac{1}{4}\right)^n u(n)$

ii) x(n)=u(n). **(06 Marks)**

c. State and prove the final value and initial value property for z-transform. **(08 Marks)**

8 a. Find the inverse Z-transform of the following Z-transforms:

$$x(z)=\frac{z^{-2}-3z}{z^2+\frac{3}{2}z-1} \quad : \quad ROC:\frac{1}{2}<|z|<2.$$ **(08 Marks)**

b. A causal system has input x(n) and output y(n), find the impulse response of the system, if.

$$x(n)=\delta(n)+\frac{1}{4}\delta(n-1)-\frac{1}{8}\delta(n-2)$$

$$y(n)=\delta(n)-\frac{3}{4}\delta(n-1).$$ **(08 Marks)**

c. Explain stability and causality from pole-zero pattern and ROC of the transfer function H(z). **(04 Marks)**

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10EE53

Fifth Semester B.E. Degree Examination, June/July 2013

Transmission and Distribution

Time: 3 hrs. Max. Marks:100

Note: ***Answer FIVE full questions, selecting at least TWO questions from each part.***

PART – A

1 a. Draw the line diagram of typical transmission and distribution scheme indicating voltage levels used at different stages. **(05 Marks)**

b. With a diagram, explain feeder, distributor and service mains of a distribution scheme. **(06 Marks)**

c. Write the factors affecting corona. Derive the expressions for critical disruptive voltage and visual voltage and power loss in corona. **(09 Marks)**

2 a. Derive the expression for Sag when the supports are at unequal level. State also the effects of wind and ice coating on Sag. **(10 Marks)**

b. An overhead transmission line at a river crossing is supported from two towers at heights of 40 m and 90 m above water level, the horizontal distance between the towers being 400 m. If the maximum allowable tension is 2000 kg, find the clearance between the conductor and water at a point midway between the towers. Weight of conductor is 1 kg/m. **(10 Marks)**

3 a. Explain with a neat diagram, the pin type insulator. **(06 Marks)**

b. Define string efficiency. Explain the method of improving string efficiency. **(06 Marks)**

c. In a 33 KV overhead line, there are three units in the string of insulators. If the capacitance between each insulator pin and earth is 11% of self capacitance of each insulator, find:
i) The distribution of voltage over 3 insulators and
ii) String efficiency. **(08 Marks)**

4 a. State the advantages of using underground cables for power distribution. **(04 Marks)**

b. What is meant by grading of cable? Explain capacitance grading. **(08 Marks)**

c. A single core lead sheathed cable has a conductor diameter of 3 cm, the diameter of the cable being 9 cm. The cable is graded by using two dielectrics of relative permittivity 5 and 4 respectively with corresponding safe working stresses of 30 KV/cm and 20 KV/cm. Calculate the radial thickness of each insulation and the safe working voltage of the cable. **(08 Marks)**

PART – B

5 a. What is transposition of transmission line? Calculate the inductance of 3ϕ line with unsymmetrical spacing but transposed. **(10 Marks)**

b. Find the inductance per phase per km of double circuit 3 phase line shown in Fig.Q5(b). The conductors are transposed and are of radius 0.75 cm each. The phase sequence is ABC.

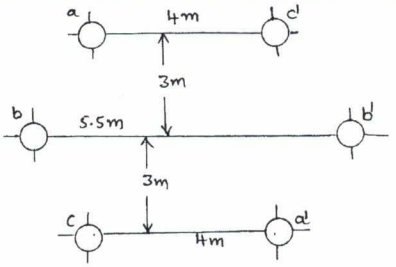

Fig.Q5(b) **(10 Marks)**

6 a. Obtain the expression for the sending end voltage and current for a long transmission line using rigorous method. **(10 Marks)**

b. A 3-phase, 50 Hz, 16 km long overhead line supplies 1000 KW at 11 KV, 0.8 pf lagging. The line resistance is 0.03 Ω per phase per km and line inductance is 0.7 mH per phase per km. Calculate the sending end voltage, voltage regulation and efficiency of transmission. **(10 Marks)**

7 a. Explain different methods to obtain 3 wire DC system. **(08 Marks)**

b. Mention the different schemes of distribution system and explain radial distribution system. **(08 Marks)**

c. Explain the requirements of a distribution system. **(04 Marks)**

8 Write short notes on:

a. ABCD constants of transmission lines

b. Insulating materials for cables

c. Stringing charts

d. Effect of high voltage in transmission system. **(20 Marks)**

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10EE54

Fifth Semester B.E. Degree Examination, June/July 2013

DC Machines and Synchronous Machines

Time: 3 hrs. Max. Marks:100

Note: ***Answer FIVE full questions, selecting at least TWO questions from each part.***

PART – A

1 a. Explain the critical resistance of a DC shunt generator. **(05 Marks)**

b. What is meant by commutation? Briefly explain the steps involved in commutation process. **(10 Marks)**

c. An 8 pole wave wound dc generator has 480 armature conductors. The armature current is 200 amps. Find the armature reaction demagnetizing and cross magnetizing ampere turns/pole if (i) Brushes are in GNA, (ii) Brushes are shifted 6° electrical from GNA. **(05 Marks)**

2 a. What is meant by back emf? Explain its significance. **(05 Marks)**

b. Derive torque equation of a DC motor. **(05 Marks)**

c. A 440 V, DC shunt motor has a no load speed of 2000 rpm. It is running at 1000 rpm at full load torque, reduced armature voltage and full field. If the load torque is reduced to 50% of rated value, with armature voltage and filed voltage held constant at previous voltages the speed increases to 1050 rpm. Find the armature voltage drop at full load. Neglect the effect of armature reaction. **(10 Marks)**

3 a. List and explain the various losses in DC machines. **(05 Marks)**

b. Derive an expression for the condition of maximum efficiency of a DC machine. **(05 Marks)**

c. A 500 V shunt motor takes 4 Amps on no load. The armature resistance including that of brushes is 0.2Ω and the filed current is 1 Amps. Estimate the output and the efficiency when the input current is (i) 20 Amps, (ii) 100 Amps. **(10 Marks)**

4 a. Explain Field's test as applied to two similar DC series motors. **(10 Marks)**

b. A 10 kW, 250 V DC shunt motor with an armature resistance of 0.8 Ω and filed resistance of 275 Ω takes 3.91 Amps, when running on no load at rated voltage and rated speed. Calculate the machine efficiency as a generator when delivering a output of 10 kW at rated voltage and speed and as a motor drawing an input of 10 kW. **(10 Marks)**

PART – B

5 a. Derive an expression for EMF equation of a alternator by considering pitch factor and distribution factor. **(05 Marks)**

b. Calculate the RMS value of line and phase induced emf of a 10 pole, 3ϕ, 50 Hz alternator with 2 slots/pole/phase and 4 conductors/slot in two layers. The coil span is 150° electrical. The flux/pole has a fundamental component of 0.15 wb and 20% third harmonic, 6% fifth harmonic component. **(10 Marks)**

c. Briefly explain salient pole and non-salient pole synchronous machines. **(05 Marks)**

6 a. Define voltage regulation alternator. With necessary diagram, explain zero power factor method to determine the voltage regulation of a alternator. **(10 Marks)**

b. A 3ϕ star connected, 1000 KVA, 2000 V, 50 Hz alternator gave the following open circuit and short circuit test readings:

Field current (Amps)	10	20	25	30	40	50
Open circuit voltage (Volts)	800	1500	1760	2000	2350	2600
Short circuit armature current (Amps)		200	250	300		

The armature effective resistance/phase is 0.2Ω. Draw the characteristics curve and determine the full load percentage regulation at 0.8 p.f. lag using mmf method. **(10 Marks)**

7 a. With usual notations derive an expression for synchronizing power and torque when two alternators are connected in parallel. **(10 Marks)**

b. Explain briefly the capability curves of synchronous generator. **(05 Marks)**

c. A 400 V, 3ϕ, star connected synchronous motor has an armature resistance of 0.2Ω/phase and synchronous reactance of 2Ω/phase. While driving a certain load it takes 25 Amps. Calculate the back emf induced in motor if it is working with 0.8 p.f. lag. **(05 Marks)**

8 Write short notes on:

a. Operating characteristics of alternator

b. Slip lest on salient pole synchronous generator

c. Power angle curve and explain reluctance power in salient pole synchronous generator

d. Method of starting of synchronous motors. **(20 Marks)**

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