2013 - 2014
B. TECH. AUTUMN (III SEMESTER) EXAMINATION
(ELECTRONICS ENGINEERING)
HIGHER MATHEMATICS - I
(AM-251)
Credits: 04

Max. Marks: 60

Note: Answer all questions.
Start each part from a new page.

1. (a) If \( \vec{F} = x \hat{i} + y \hat{j} + z \hat{k} \), show that,
   (i) \( \text{div} (\vec{F} \phi) = 3 \phi + \vec{F} \cdot \text{grad} \phi \)
   (ii) \( \text{div} (\frac{\vec{F}}{\phi}) = 0 \)

(b) Find the directional derivative of \( \nabla (\vec{F} \cdot \nabla \phi) \) at the point \( P (1, -2, 1) \) in the
direction of the normal to surface \( xy^2z = 3x + z^2 \) at \( P \),
Where \( \phi = 2x^3 y^2 z^4 \).

(c) Find the value of \( m \) for which the vector \( \vec{n} \vec{r} \) is sileacidal, where
\[ \vec{r} = x \hat{i} + y \hat{j} - zk \]

(c') Show that the vector field given by
\[ \vec{A} = (2xy + z^2) \hat{i} + (2yz + x^2) \hat{j} + (2x^2 + y^2) \hat{k} \]
is irrotational. Find scalar function \( f \) such that \( \vec{A} = \text{grad} f \).

OR

2. (a) If \( \vec{F} = 2yi - z \hat{i} + x \hat{k} \), evaluate \( \int \vec{F} \cdot d\vec{r} \) along the curve \( x = \cos t, y = \sin t, z = 2 \)
cost from \( t = 0 \) to \( t = \frac{\pi}{2} \).

(b) Prove that \( \int_{C} \vec{A} \cdot d\vec{s} = \int_{R} \vec{A} \cdot \frac{d\vec{A}}{\text{d}s} \).
Where \( R \) is the projection of \( s \) on the \( x,y \)-plane.

(c) Use Green's theorem in a plane to evaluate the integral
\[ \int (2x^2 - y^2) \, dx + (x^2 + y^2) \, dy \]
Where \( C \) is the boundary of the surface in the \( xy \) plane enclosed by the \( x \)-axis
and semi circle \( x^2 + y^2 = 1 \).

OR

(c') If \( \vec{F} = yi + (x - 2x) \hat{j} - xy \hat{k} \), evaluate \( \int_{S} (\nabla \times \vec{F}) \cdot d\vec{s} \),
Where \( S \) is the surface of the sphere \( x^2 + y^2 + z^2 = a^2 \) above the \( xy \)-plane.

Contd....2,
3. (a) Evaluate:
(i) \[ L \left[ t^2 e^t \sin 4t \right] \quad \text{OR} \quad L \left( \frac{1 - \cos t}{t} \right) \]
(ii) \[ L^{-1} \left\{ \frac{(2s^2 - 1)}{(s^2 + 1)(s^2 - 4)} \right\} \]
(b) Solve the equations
\[(D^2 - 3D + 2)x = 1 - e^{-2t}, \quad x_0 = 1, \quad x_1 = 0.\]
(c) Constant voltage \(V\) is applied at \(t = 0\) to a circuit with an inductance \(L\), capacitance \(C\) and resistance \(R\). Find the current \(I\) at time \(t\), if the initial current and charge are zero.

(c') Solve
\[D^2 x - y = e^t, \quad Dy + x = \sin t, \quad x_0 = 1, \quad y_0 = 0.\]
Where \(D = \frac{d}{dt}\)

4. (a) The probability that a man aged 60 will live to be 70 is 0.65. What is the probability that out of 10 men, now 60, at least 7 will live to be 70? [5,5,5]

(b) The income of a group of 10,000 persons was found to be normally distributed with mean Rs. 750 P.M. and standard deviation of Rs. 50. Show that, of this group, about 95% had income exceeding Rs. 688 and only 5% had income exceeding Rs. 832. Also find the lowest income among the richest 100.

(c) Suppose that the two-dimensional continuous random variable \((x, y)\) has joint pdf given by
\[f(x, y) = x^2 + \frac{xy}{3}, \quad 0 \leq x \leq 1, \quad 0 \leq y \leq 1,
= 0, \quad \text{elsewhere}\]
Find the marginal pdf of \(x\) and \(y\).
Q1. (a) Determine the analytic function \( f(z) = u + iv \) in terms of \( z \), where
\[
  u + v = e^{2t}(x \sin 2y + y \cos 2y)
\]
(5)

(b) Show that for the function \( f(z) = \frac{x^3(x+1) - y(x+1)}{x^2 + y^2} \), \( z \neq 0, f(0) = 0 \), Cauchy-Riemann equations are satisfied at the origin but the derivative \( f'(z) \) at the origin does not exist.
(6)

(c) Use Cauchy integral formula to evaluate \( \oint_C \frac{z^2}{(z^2 - a^2)} \), where \( C \) is the circle \( |z| = 3 \).
(4)

(c') Evaluate \( \int_C \left( \frac{z^2}{z+3} - 3z \right) \, dz \), where \( C \) is the unit circle \( |z| = 1 \).
(4)

Q2. (a) Obtain the series expansions for \( f(z) = \frac{(z-2)(z+2)}{(z+1)(z+4)} \) valid in the regions given as 
(i) \( 1 < |z| < 4 \)
(4)

(b) Find the residue at the singular point \( z = -2 \) of the function \( f(z) = \frac{z^2+1}{(z+2)^2(z+1)} \).
(3)

(c) Using Cauchy residue theorem evaluate \( I = \oint_C \frac{z^2}{a^2 + z^2} \, dz \) where \( a > 0 \).
(8)

Q3. (a) Apply Gauss-Seidel method and approximate \( x_2^{(3)} \) and \( x_4^{(3)} \) for the given system of equations
\[
egin{align*}
-x_1 + 11x_2 - x_3 + 3x_4 &= 25 \\
3x_2 - x_3 + 8x_4 &= 15 \\
2x_1 - x_2 + 10x_3 - x_4 &= -11 \\
10x_1 - x_2 + 2x_3 &= 6
\end{align*}
\]
(6)

(b) Find an interval of unit length in which a positive root of the equation \( \sin^2 x - x^2 + 1 = 0 \) lies. Then apply general iteration method \( x_{n+1} = \varphi(x_n) \), \( n = 0, 1, 2, \ldots \) and approximate the value of \( x_4 \). Also show that function \( \varphi \) chosen by you satisfies the condition \( |\varphi(x)| < 1 \) for \( x \) near the root.
(9)

**OR**

Contd...
(b') Construct the interpolating polynomial that fits the data.

<table>
<thead>
<tr>
<th>$x$</th>
<th>0.0</th>
<th>0.5</th>
<th>1.0</th>
<th>1.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>$f(x)$</td>
<td>1.0</td>
<td>1.2</td>
<td>1.0</td>
<td>0.7692</td>
</tr>
</tbody>
</table>

Approximate the critical point at which $\frac{df}{dx} = 0$.

Q4. (a) Determine $w_1$, $w_2$, and $w$ so that the quadrature formula

$$\int_{-1}^{1} f(x) dx = w_1 f(-u) + w_2 f(0) + w_3 f(u)$$

has maximum precision. Using this formula, evaluate $\int_{0}^{\frac{\pi}{4}} \frac{x}{(1+x^2)} dx$.

(b) Approximate $y(1.5)$ for the given initial value problem $\frac{dy}{dx} = xy^2 - \frac{y}{x}$, $y(1) = 1$, using fourth order Runge-Kutta method by considering $h = 0.25$.

OR

(b') (i) Given the initial value problem $\frac{dy}{dx} = (x - y)^2$, $y(0) = 0.5$, use modified Euler method (doing only two iterations at each stage to improve the solution) and approximate $y(0.2)$ taking $h = 0.1$.

(ii) Solve the boundary value problem $y'' - 2y' + 2y = 2x - 2$, $y(0) = 0$, $y(2) = 4$ taking $n = 4$.  

END
Values of some constants: Energy gap for Si = 1.12 eV; Thermal voltage (kT/e = 25 mV at room temp); Permittivity of free space ($\varepsilon_0 = 8.85 \times 10^{-12} \text{ F/m}$); Permittivity of silicon ($\varepsilon_{Si} = 12 \varepsilon_0$); Permittivity of oxide ($\varepsilon_{ox} = 3.9 \varepsilon_0$); $N_C = 2.8 \times 10^{16} \text{ cm}^{-3}$; $N_V = 1.04 \times 10^{19} \text{ cm}^{-3}$

1(a) Determine the probability that an energy level is occupied by an electron if the state is above the Fermi level by (i) $kT$ (ii) $5kT$ (iii) $10kT$.

1(b) Two semiconductor materials have exactly the same properties except that material A has a bandgap energy of 1.0 eV and material B has a bandgap energy of 1.2 eV. Determine the ratio of intrinsic carrier concentration of material A to that of material B for $T = 300 K$.

1(c) What is a Schottky diode? Explain the working of a Schottky diode with the help of an energy band diagram.

OR

1'(c) Determine $v_o$ for the network of Figure 1 for the input indicated. Explain all steps.

Figure 1. Applied signal and network for problem 1'(c)

2(a) What are the small signal models of BJT? Explain with the help of diagrams. Also, derive the expression of the transconductance.
2(b) Draw the small signal equivalent circuit for the common base amplifier. Derive the expressions for its voltage gain and input impedance. Mention one application of this configuration.

OR

2'(b) How the internal capacitance in BJT affect the performance of BJT amplifiers? Derive the expression for unity gain bandwidth ($\omega_0$).

2(c) A CE amplifier circuit operate with $V_{CC} = 10V$ is biased at $V_{ce} = 1V$. Find the voltage gain, the maximum allowed output negative swing without the transistor entering saturation, and the corresponding maximum input signal permitted.

OR

2'(c) When the CE amplifier circuit of Figure 2 is biased with a certain $V_{be}$, the dc voltage at the collector is found to be $2V$. For $V_{CC} = 5V$ and $R_C = 1k\Omega$, find $I_C$ and small signal voltage gain. For a change $\Delta V_{BE} = 5mV$, calculate the resulting $\Delta V_C$. Repeat for $\Delta V_{BE} = -5mV$.

![Figure 2]

With the help of sketches, derive the drain current expression for a n-channel MOSFET operating in triode region and extend it for saturation region. How the drain current expression is modified for channel length modulation. Also draw the large signal models for n-channel MOSFET with and without channel length modulation.

3(a) What is the need of biasing in MOSFET amplifiers? Discuss some important biasing schemes for MOSFET amplifiers.

OR

3'(a) For each of the circuits shown in Figure 3, find the labeled node voltages. The NMOS transistors have $V_t = 1V$ and $K_{m} \left( \frac{W}{L} \right) = 2mA/V^2$. Assume $\lambda = 0$. 
3(b) An NMOS transistor having $V_t = 1V$ is operated in triode region with $V_{ds}$ small. With $V_{gs} = 1.5V$, it is found to have a resistance $r_{ds} = 1k\Omega$. What value of $V_{gs}$ is required to obtain $r_{ds} = 200\Omega$? Find the corresponding resistance values obtained with a device having twice the value of $W$.

4(a) Define loop gain, open loop gain, closed loop gain and amount of feedback. Show that the Gain-Bandwidth product of amplifier remains constant with and without feedback.

4(b) Draw the diagram of Wein's bridge oscillator and derive the expression for condition of oscillation as well as frequency of oscillation.

4(c) The noninverting buffer op-amp shown in Figure 4. Assuming that the op-amp has infinite input resistance, what is $\beta$? If $A = 100$, what is closed loop voltage gain? What is amount of feedback (in dB)? For Voltage Signal Source of $1V$, find output voltage and input voltage. If $A$ decreases by 10%, what is the corresponding decrease in gain with feedback.

4*(c) In a particular amplifier design, the $\beta$ network consists of a linear potentiometer for which $\beta$ is zero at one end, 1 at the other end and 0.50 in the middle. As the potentiometer is adjusted, find the three values closed loop gain that result when the amplifier open loop gain is (I) 1 (II) 10 (III) 100 and (IV) 10,000.
Q.No. | Question | M.M.
--- | --- | ---
1(a) | Find the current which flows through the impedance \( 10 \Omega \) in the network shown in figure 1 with the help of Thévenin's theorem. | [05]

![Figure 1](image1)

1(b) | In the network shown in figure 2, find voltages \( V_{AB} \), \( V_{BC} \) and \( V_{CA} \) by nodal analysis. | [05]

![Figure 2](image2)

1(c) | Design a series RLC circuit that will resonate at 10 kHz, have a bandwidth of 1 kHz, and draws 15.3W from a 200V generator operating at resonant frequency of the current. | [05]

**OR**

Contd...2,
1'(a) Find the mesh currents $I_1$, $I_2$, and $I_3$ for the network shown in figure 3.

\[ \begin{array}{c}
\text{10V} \\
\end{array} \]

\[ \begin{array}{c}
\text{2A} \\
4\Omega \\
\text{5\Omega} \\
\text{6\Omega} \\
\end{array} \]

\[ \text{FIGURE 3} \]

1'(b) Determine the average and rms values of the trapezoidal waveform shown in figure 4.

\[ \text{FIGURE 4} \]

1'(c) With the help of an appropriate network, state and verify Tellegen's theorem.

2(a) Prove the statement that "In a linear graph every cut set has an even number of branches in common with every loop".

2(b) With the help of a graph, express the relation between branch voltages and node voltages.

2(c) Write the matrix loop equations and determine the loop currents for the network shown in figure 5.

\[ \text{FIGURE 5} \]

Contd.……3
3(a) Determine the input and output impedance of a terminated 2 port network in terms of $h$ parameters.

3(b) For a 2-port network, obtain a single-controlled source model of a non-reciprocal set of $z$-parameters.

3(c) For the network shown in figure 6, determine the $z$ and $y$ parameters.

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\begin{center}
\includegraphics[width=0.5\textwidth]{figure6}
\end{center}
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**Figure 6**

**OR**

3'(a) For a passive, linear 2 port network determine its input and output image impedance in terms of $ABCD$ parameters.

3'(b) Express the inter-relationship between:
   (i) $h$-parameters in terms of $ABCD$-parameters.
   (ii) $g$-parameters in terms of $z$-parameters.

3'(c) Determine the $y$ parameters of the bridged $T$ network shown in figure 7.

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\begin{center}
\includegraphics[width=0.5\textwidth]{figure7}
\end{center}
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**Figure 7**

4(a) Write the state equations of the circuit shown in figure 8.

Contd......4
4(b) Briefly define the following terms:
(i) Capacitor only loop
(ii) Normal tree
(iii) Inductor only cutset
(iv) Order of complexity

4(c) With the help of graph theory, write the state equations for the circuit shown in figure 9.
Answer all the questions. Assume suitable data if missing. Notations used have their usual meanings. Answer parts of a question together.

Q. No.  

1(a) Evaluate the shown voltages and currents (Figure 1), assuming $R=5k\Omega$, $V_{dc}=0.7V$ and infinite $\beta$.

![Figure 1](image1)

1(b) The two transistors in a differential amplifier have $\beta$ values as $\beta_1$ and $\beta_2$. Assuming everything else to be matched, show that the input offset voltage is approximately $V_T[(1/\beta_1)-(1/\beta_2)]$. Assume the differential source resistance to be zero. Also evaluate $V_{os}$ for $\beta_1=80$ and $\beta_2=160$.

2(a) Analyze the opamp 741 output stage as shown in Fig. 2, for the output resistance assuming that $V_o$ is positive. The shown $R_L$ is to be considered open circuit.

![Figure 2](image2)
2(b) For Figure 2, identify the role of Q_{16,19} along with R_{16}.

2(c) Design a rectangular wave generator for 100KHz with 75% duty cycle using 555 Timer IC, assuming a 10μF capacitor to be available.

OR

2' Describe the circuit of Cascode amplifier, analyze the same for gain and bandwidth.

3(a) For the circuit as shown in Figure 3, derive the expression for output voltage.

![Figure 3](image)

(b) How can quadrature sine waves be generated using two opamps?

OR

(b') Explain the operation of circuit given in Figure 4 and plot the two outputs separately with respect to the input.

![Figure 4](image)

4. Write technical notes on:

(i) PLL
(ii) Analog Multiplier
(iii) Active loaded differential amplifier
2013-2014
B.TECH AUTUMN (III SEMESTER) EXAMINATION
(ELECTRONICS ENGINEERING)
ELECTRONIC INSTRUMENTATION
EL-222
EQUIVALENT TO OLD COURSE: EL-221
PRINCIPLES OF MEASUREMENT AND INSTRUMENTATION
CREDITS: 04

Maximum Marks: 60

Duration: Three Hours

Answer all questions.

All questions carry equal marks.

1. Describe the construction and theory of operation of the thermal instruments. How they are used as an Ammeter and Voltmeter? Mention the advantages and disadvantages of these instruments. 12

2. Explain the construction and theory of operation of a Hall Effect wattmeter OR electrodynamometer type wattmeter. What are the sources of errors and how are they minimized? 12

3. (a) Explain the Wagner’s earthing device.

(b) An a.c. bridge is balanced at 1 kHz and has the following constants:

AB, 0.2 \( \mu \text{F} \) pure capacitor, BC, 500 \( \Omega \) pure resistor, CD, unknown, DA, a resistor of 300 \( \Omega \) in parallel with a 0.1 \( \mu \text{F} \) capacitor. Find the component values in arm CD, expressed as series combination. 08

OR

3\'. (a) Explain the theory of a series type Q-meter. 08

(b) A coil with a resistance of 3 \( \Omega \) is connected to the terminals of a Q-meter. Resonance occurs at an oscillator frequency of 5 MHz and a resonating capacitor of 100 pF. Calculate the percentage error introduced by the insertion resistance if its value is 0.1 \( \Omega \). 04

4. (a) Describe the construction and theory of operation of the metallic wire wound strain gages. How the temperature compensation is done in such gages? 08

Contd......2
(b) A strain gage bridge has two fixed resistors $R_1$ and $R_2$ of 120 $\Omega$ each, in its arm $AB$ and $DA$. The strain gage is represented by $R_3$ and is placed in arm $BC$. The variable resistor $R_4$ placed in the arm $CD$ is of 120 $\Omega$ at no strain and has a value of 120.63 $\Omega$ with strain. The gage factor is 2.04. Determine the strain in the beam at the point where the strain gage is attached.

5. (a) What are the common applications of CROs? Explain them briefly.
(b) Explain the following types of CROs briefly and indicate their applications:
   (a) Dual beam and Dual trace
   (b) Storage
   (c) Sampling
   (d) Digital read-out
2013-14
B.TECH. (AUTUMN, IV SEMESTER) EXAMINATION
ELECTRONICS ENGINEERING
SIGNALS & SYSTEMS
EL-241

Maximum Marks: 60
Credits: 04
Duration: Three Hours

Answer all the questions. Assume suitable data if missing. Notations and symbols used have their usual meaning.

Q.No. 
1(a) Sketch the following signals
   (i) \( u(t + 4)u(-t + 4) \)
   (ii) \( r(t) - r(t - 1) - r(t - 3) + r(t - 4) \)
   (iii) \( r(-t)u(t+2) \) [03]

OR

1'(a) Find whether the signal

\[ x[n] = \begin{cases} 
  n^2 & 0 \leq n \leq 3 \\
  10 - n & 4 \leq n \leq 6 \\
  n & 7 \leq n \leq 9 \\
  0 & \text{otherwise} 
\end{cases} \] [03]

Is a power or energy signal. Also find energy and power of the signal.

1(b) Find the Fourier Series of the signal \( x(t) \) shown below [04]

![Fig. for Q. 1(b)](image)

OR

1(b') Let \( x(t) \) be periodic signal whose Fourier series coefficients are [04]

Contd.......

2
\[ a_k = j(0.5)^k \] for \( k \neq 0 \) & \[ a_0 = 2 \] for \( k = 0 \)

Use Fourier series properties to answer the following questions:

(a) Is \( x(t) \) real?
(b) Is \( x(t) \) even?
(c) Is \( dx/dt \) even?

1(c) \( y[n] = E_v[x[n-1]] \), where \( E_v(.) \) represents even part of the signal.

Find whether the system whose input and output are related by above equation is linear/ time invariant.

1(a) Compute the convolution of any one the following pairs of signals:

(i) \( x[n] = \alpha^n u[n], \quad h[n] = \beta^n u[n] \quad \alpha \neq \beta \)
(ii) \( x(t) = u(t) - 2u(t-2) + u(t-5), \quad h(t) = e^{2\pi}u(1-t) \)

2(a) Consider a signal \( x(t) \) shown below

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Fig. for Q. 2(a)
```

(i) Find F.T. of \( x(t) \)
(ii) Sketch the spectrum of \( g(t) = x(t) \* \sum_{k=-\infty}^{\infty} \delta(t - 4k) \)

2(b) Consider a continuous-time LTI system for which the input \( x(t) \) and output \( y(t) \) are related by differential equation

\[ y''(t) + y'(t) - 2y(t) = x(t) \]

(i) Find the system function \( H(s) \)
(ii) Determine the impulse response \( h(t) \) for each of the following cases:
   - the system is causal
   - system is stable
   - system is neither stable nor causal.

2(c) Consider the signal \( x[n] = \begin{cases} \left(\frac{e}{3}\right)^2 \cos\left(\frac{\pi}{4}n\right), & n \leq 0 \\ 0 & n > 0 \end{cases} \)

Determine the poles and ROC for \( X(z) \).

Contd...
2(a) Let \( x(t) \) have the F.T. \( X(j\omega) \), and let \( p(t) \) be periodic with fundamental frequency \( \omega_0 \) and Fourier series representation \( p(t) = \sum_{n=-\infty}^{\infty} a_n e^{j n \omega_0 t} \). Determine an expression for the Fourier transform of \( y(t) = x(t)p(t) \).

2(b) A pressure gauge that can be modelled as an LTI system has a time response to a unit step input given by \( (1-e^{-t} -te^{-t})u(t) \). For a certain input \( x(t) \), the output is observed to be \( (2-3e^{-t}+e^{-3t})u(t) \). For this observed measurement, determine the true pressure input to the gauge as a function of time.

2(c) Determine the system function for the causal LTI system with difference equation

\[
y[n] = \frac{1}{2} y[n-1] + \frac{1}{4} y[n-2] = x[n]
\]

Also determine \( y[n] \) if \( x[n] = \left(\frac{1}{2}\right)^n u[n] \).

3(a)(i) Determine the Nyquist rate for the signal \( x(t) = \frac{\sin(4000\pi t)}{\pi t} \).

3(a)(ii) Find the impulse response of the series RLC system shown in figure below across Capacitor \( C \). Also find the step response and time constant and damping ratio.

3(b) For the signal flow graph of a system shown in Figure below, find the transfer function \( T(s) = C(s)/R(s) \) using Mason’s gain formula.
4(a) Consider a random process \( X(t) \) defined by \( X(t) = A \cos(2\pi F t) \), in which the frequency \( F \) is a random variable with probability density function (pdf)

\[
f_F(f) = \begin{cases} \frac{1}{w} & 0 \leq f \leq w \\ 0 & \text{otherwise} \end{cases}
\]

Show that \( X(t) \) is a non-stationary process.

4(b) Consider a half-wave rectifier transformation given by

\[
Y = \begin{cases} X & X > 0 \\ 0 & X \leq 0 \end{cases}
\]

If \( f_X(x) = \begin{cases} \frac{1}{h^2} & -\frac{h}{2} < x < \frac{h}{2} \\ 0, \text{ otherwise} \end{cases} \), find and sketch \( f_Y(y) \). OR

4(b') Consider a filter shown in the figure below consisting of a delay line and a summing device. Find the power spectral density of the random process \( Y(t) \) at the output of the filter, given that power spectral density of filter input \( X(t) \) is \( S_X(f) \).

4(c) Prove the following two properties of the autocorrelation function \( R_X(\tau) \) of a random process \( X(t) \):

(a) If \( X(t) \) contains a dc component equal to \( A \), then \( R_X(\tau) \) will contain a constant component equal to \( A^2 \).

(b) If \( X(t) \) contains a sinusoidal component, then \( R_X(\tau) \) will also contain a sinusoidal component of the same frequency.
Max. Marks: 40

Note: Answer all questions.

1. Write a letter of enquiry to Vijay Furniture Company, Cuttack-795361 enquiring about the furniture supply, rates and brochure. You are interested in buying latest furniture for newly established office in Cuttack.

OR

Write a job application and create a CV in response to the following advertisement:

GRADUATE/TRAINEE MEDIA SALES EXECUTIVE - £18,000 - 25,000 + COMMISSION - LONDON

EMPLOYER: MEDIA EXCHANGE
POSTED: 21/11/2013
REF: JJKY21
LOCATION: LONDON
INDUSTRY: ADVERTISING, MEDIA PRINT, MEDIA-ADVERTISING
FUNCTION: HR
LEVEL: GRADUATE/POST GRADUATE
CONTRACT: PERMANENT
HOURS: FULL TIME
SALARY: £18,000-25,000
APPLY NOW

2. Write short notes on any two of the following:
   (a) Telexes
   (b) Memos
   (c) e-mails
   (d) Tenders

Contd...
Read the following passage carefully and make notes.

Passage:
Governments looking for easy popularity have frequently been tempted into announcing give-aways of all sorts: free electricity, virtually free water, subsidized food, cloth at half price, and so on. The subsidy culture has gone to extremes. The richest farmers in the country get subsidized fertilizers. University education, typically accessed by the wealthier sections, is charged at a fraction of cost. Postal services are subsidized, and so are railway services. Bus fares cannot be raised to economical levels because there will be violent protest, so bus travel is subsidized too. In the past, price control on a variety of items, from steel to cement, meant that industrial consumer of these items got them at less than actual cost, while the losses of the public sector companies that produced them were borne by the taxpayer! A study done a few years ago, came to the conclusion that subsidies in the Indian economy total as much as 14.5 per cent of gross domestic product. At today's level, that would work out to about Rs. 1.50,000 crore.

And who pays the bill? The theory-and the political fiction on the basis of which it is sold to unsuspecting voters-is that subsidies go to the poor, and are paid for by the rich. The fact is that most subsidies go to the 'rich' (defined in the Indian context as those who are above the poverty line), and much of the tab goes indirectly to the poor. Because the hefty subsidy bill results in fiscal deficits, which in turn push up rates of inflation-which, as everyone knows, hits the poor the hardest of all. That is why taxmen call inflation the most regressive form of taxation.

The entire subsidy system is built on the thesis that people cannot help themselves, therefore governments must do so; that people cannot afford to pay for variety of goods and services, and therefore the government must step in. This thesis has been applied not just in the poor countries but in the rich ones as well, hence the birth of the welfare state in the west, and an almost Utopian social security system; free medical care, food aid, old age security, et al. But with the passage of time, most of the wealthy nations have discovered that their economies cannot sustain this social safety net, which in fact reduces the desire among people to pay their own way, and takes away some of the incentive to work; in short, the bill was unaffordable, and their societies were simply not willing to pay. To the regret of many, but because of the laws of economics are harsh, most Western societies have been busy pruning the welfare bill.

In India, the lessons of this experience over several decades, and in many countries, do not seem to have been learnt. Or they are simply ignored in the pursuit of immediate votes. People who are promised cheap food or clothing do not in most cases look beyond the gift horses to the question of who picks up the tab. The up roar over higher petrol, diesel and cooking gas prices ignored this basic question; if the user of cooking gas does not want to pay for its cost, who should pay? Diesel in the country is subsidised, and if the user of cooking gas does not want to pay for its full cost, who does he or she think should pay the balance of the cost? It is a simple question, nevertheless it remains unasked.

4. Generate a group discussion on any one of the following topics taking four participants:
   (a) Corporate Culture and personal values.
   (b) Importance of Communication Skills for Engineers.