HU11101

GOVERNMENT POLYTECHNIC MUMBAI
TERM END EXAMINATION

EVEN : 2014 -15

Programme : **CO/EC/IS/IF/LG/LT/EE**
Course Title : **Communication Skills**

03Hours / 80 marks Enrolment No. | | | | | | | | | | |

***Instructions*:**
1. Use separate answer book for section I and section II.
2. Attempt all the questions from each section.
3. Illustrate your answers with neat sketches wherever necessary.
4. Use of Mathematical Tables, Steam Table and Pocket Calculator (non-programmable) is permissible.
5. Marks on Right Hand Side indicate full marks for the question.
6. Assume suitable additional data, if necessary

SECTION – I

Q.1 Attempt any SIX **12 Marks**

a. Identify the sender, receiver, channel/medium, message and feedback in the following communication situation: The manager of luxury cars company arranges a test drive campaign with a special discount on the first thousand bookings at the launch of their new model 'luxury 21'. He gets a huge response from the public and 621 cars are booked in a single day.
b. Draw a tree diagram showing different channels of formal communication.
c. How does 'Semantic gap' affect the effective communication?
d. What is the responsibility of receiver in the process of communication?
e. Explain the concept of 'Consensus' in a business organization.
f. Select the proper channel for following communication situations. Justify your answers.
(i) Requesting public to save petrol. (ii) Fund raising campaign for fload victims.
g. What is 'haptics'?
h. State whether the following statements are true/false
(i) Crossing one's arms across one's chest is a sign of defensiveness.
(ii) Stage fright is a very rare phenomenon.

Q.2 Attempt any FOUR **16 Marks**

a. Write a short note on diagonal communication.
b. Which is the most commonly used channel of communication? Justify your answer.
c. How does chronemics (Use of Time) affect the body language during communication.
d. Write a short note on : Signs, Signals & Symbols.
e. What are the merits and demerits of upward communication?
f. State the different ways of interpreting the visuals.

Q. 3 Attempt any TWO **12 Marks**

a. Define 'Grapevine'. State its importance in an organization.
b. Explain the process of communication with the help of a neat and labelled diagram.
c. Compare and contrast the oral and written communication.

SECTION – II

Q.4 Attempt any THREE (3 X 4 Marks) **12 Marks**

a. Explain any four principles of effective Communication.
b. State any four psychological barriers.
c. What do you mean by physical barrier? Explain it with example.
d. Define and describe any one object given below.
   1) Mobile 2) Telephone 3) Washing Machine

Q.5 A. Attempt the Following (1 X 8 Marks) **08 Marks**

a. Write an applications letter with resume for the post of Mechanical Engineer in Raj Industries Andheri (E) 400057, advertised in Times of India.
b.

Q.5 B. Attempt any ONE (1 X 8 Marks) **08 Marks**

a. Write a report on sudden fall in production of Television sets in your company. Give suggestions.

OR

b. Write a report on an accident injuring two students. Explain the particulars, causes. First aid help and suggestions.

Q.6 A. Attempt any TWO (2 X 6 Marks **08 Marks**

a. Devise a memo to Mr. Patil, as a workshop supervisor regarding the negligence of duty & indisupline
b. Draft a circular for the employees regarding new uniform available in the stores of the company.
c. Draft a notice to the members of the company for the general meeting.

Q.6 B. Attempt any ONE (1 X 4 Marks **04 Marks**

Place an, order for communication skills books to Prabhat Book Depot, Pune for your college Library.

OR

Write an Enquiry letter to 'Neha Enterprises, Mumbai' regarding the installation of four air-conditioners in your office.

Enrollment No_____ **SC11108**

GOVERNMENT POLYTECHNIC MUMBAI
TERM END EXAMINATION

Programme: Instrumentation Engineering. EVEN 2014-15
Course Code: SC11108
Course Title:. Applied Chemistry.
Time Allotted: 03 Hrs. **Max.Marks:** 80

Instructions:

- Use **separate** answer book for section I and section II.
- Attempt **all the questions** from each section.
- Illustrate your answers with **neat sketches** wherever necessary.
- **Use** of Mathematical Tables, Steam Table and Pocket Calculator (non-programmable) is permissible.
- Marks on **Right Hand Side** indicate **full marks** for the question.
- Assume **suitable additional** data, if necessary

SECTION – I

Q.1 Attempt any SIX (6 x 2 Marks) **12 Marks**

a. State Hund's rule of maximum multiplicity.
b. Define common ion effect.
c. How will you distinguish between temporary & permanent hard water?
d. Name important ores of Iron.
e. Define Ferrous alloy & non-ferrous alloy with one example each.
f. Calculate pH valve of solution having hydrogen iron concentration $1x10^{-5}$ gm ions per liter.
g. Why sodium is electropositive? Explain with electronic configuration.
h. Write two application of Magnetic Steel.

Q.2. Attempt any FOUR(4 x 4 Marks) **16Marks**

a. Give the composition, properties & uses of Duralumin.
b. Which method is used for concentration of sulphide ore? Name and explain with the help of figure.
c. What is Zeolite? Draw a neat labelled diagram of zeolite process . write its working with chemical reactions.
d. Why copper is electro refined .Describe the process of electrorefining of copper with neat labelled diagram.
e. Describe the formation of $CaCl_2$ with diagram & name the types of bonding.
f. i)Write any two properties and applications of Lead.
   ii) A current of 0.4 amperes was passed through a solution of $CuSO_4$ for one hour. Find out weight of copper deposited on cathode (E.C.E of copper = 0.000326)

Q. 3. Attempt any TWO (2 x 6 Marks) **12 Marks**

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a. i) Write Orbital electronic configuration of following elements. $_{13}Al^{27}$, $_{19}K^{39}$, $_{24}Cr^{52}$.

ii) What is degree of ionization? How temperature and concentration of solution affects degree of ionization?

b. i) Explain any 3 disadvantages of hard water in boiler due to scale formation.

ii) Distinguish between calcinations and Roasting. (Any 3 points)

c. i) Explain any three purposes of preparation of alloy.

ii)What is sewage treatment? Describe the Aerobic oxidation method of sewage treatment.

SECTION – II

Q.4 Attempt any SIX (6 X 2 Marks) **12 Marks**

a. write four function of a lubricant in a machine.
b. Define the following terms. i) Calorific value ii) Ignition temperature.
c. Name four ingredients of plastic with one example of each.
d. Describe air pollution caused by IC engine.
e. Define viscosity index and saponification value.
f. Name four factors determined by proximate analysis.
g. Define glass wool. How is it prepared?
h. Define 'E'-waste with four examples.

Q.5 Attempt any FOUR (4 X 4 Marks) **16 Marks**

a. State four methods of applying protective metal coatings to prevent corrosion. Define any two those methods.
b. Describe boundary lubrication process with a well labeled diagram. Give examples of machines using this type of lubrication.
c. Describe working of a Gobar Gas plant. Write two disadvantages of Gobar Gas.
d. Write four points of difference between thermo softening & thermosetting plastics.
e. Name four air pollutants and state how they cause air pollution.
f. Draw a well labeled diagram and describe oxygen absorption mechanism of corrosion

Q.6 Attempt any TWO (2 X 6 Marks **12 Marks**

a. i) Define concentration cell formation with one example.
ii) State four condition under which semi-solid lubricants are used.
b. i) Compare solid fuel & Gaseous fuel on four points.
ii) Describe determination of percentage of sulphur from given coal example by ultimate analysis.
c. i) Describe processing of rubber latex.
d. ii) write four limitations of natural rubber.
e. iii) State two method of preventing water pollution.

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GOVERNMENT POLYTECHNIC MUMBAI

TERM END EXAMINATION

EVEN 2014-15

Programme : **CO / EC / EE / IS / IF**
Course Title: **Basic Mathematics**
3 Hours / 80 Marks Enrollment No:

Instructions:

1. Use separate answer book for Section I and Section II
2. Attempt all the questions from each section.
3. Illustrate your answers with neat sketches wherever necessary.
4. Use of Mathematical Tables, Steam Table and Pocket Calculator (non-programmable) is permissible.
5. Assume suitable additional data, if necessary.

SECTION – I

Q.1 Attempt any SIX (6 X 2 Marks) **12 Marks**

a. Expand the determinant $\begin{vmatrix} tan\theta & -1 \\ 1 & tan\theta \end{vmatrix}$

b. Evaluate $log_a\sqrt{a} + log_a a^2$.

c. Find the values of x, y, z and a which satisfy the matrix equation

$$\begin{bmatrix} x+3 & 2y+x \\ z-1 & 4a-6 \end{bmatrix} = \begin{bmatrix} 0 & -7 \\ 3 & 2a \end{bmatrix}$$

d. If $A = \begin{bmatrix} 4 & 2 & 5 \\ 1 & 3 & -6 \end{bmatrix}$, $B = \begin{bmatrix} 1 & 0 & 2 \\ 3 & 1 & 4 \end{bmatrix}$ find (A + B).

e. If $A = \begin{bmatrix} 2 & 3 \\ 6 & 5 \end{bmatrix}$, $B = \begin{bmatrix} 3 & 7 \\ 4 & 0 \end{bmatrix}$, then find A . B

f. Expand by binomial theorem $(3 - x^2)^5$.

g. Find approximate value of $\sqrt[3]{220}$.

h. Resolve into partial fractions $\frac{x-4}{(x-1)(x-2)}$

Q.2 Attempt any FOUR (4 X 4 Marks) **16 Marks**

a. Prove that $2log\left(\frac{16}{15}\right) + log\left(\frac{25}{24}\right) - log\left(\frac{32}{27}\right) = 0.$

b. Solve $\begin{vmatrix} 1 & 5 & 7 \\ 2 & x & 14 \\ 3 & 1 & 2 \end{vmatrix} = 0.$

c. If $A = \begin{bmatrix} 1 & 2 & -1 \\ 2 & 0 & 3 \\ 0 & 1 & 2 \end{bmatrix}$, $B = \begin{bmatrix} 3 & -1 & 1 \\ 0 & 0 & 2 \\ 4 & -3 & 2 \end{bmatrix}$, find produce AB and BA, show that AB≠ BA.

d. If $A=\begin{bmatrix}1 & 2 & -1\\ 3 & 0 & 2\\ 4 & 5 & 0\end{bmatrix}$ and $B=\begin{bmatrix}1 & 0 & 0\\ 2 & 1 & 0\\ 0 & 1 & 3\end{bmatrix}$, verify that $(AB)^T = B^T A^T$, where T indicates Transpose.

e. Find the adjoint of the matrix $\begin{bmatrix}1 & 2 & 5\\ 3 & 1 & 4\\ 1 & 1 & 2\end{bmatrix}$.

f. Resolve into partial fractions $\frac{3x+2}{(x-2)(x+1)^2}$.

Q.3 Attempt any TWO (2 X 6 Marks) **12 Marks**

a. Resolve into partial fractions $\frac{1}{(x^3+1)}$.

b. The term independent of x in the expansion of $\left(x^2+\frac{m}{x^3}\right)^{11}$ is 1320. Find m.

c. Solve the system of equations by matrix inversion method, $5x+3y+3z=48$, $2x+6y-3z=18$, $8x-3y+2z=21$.

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SECTION - II

Q.4 Attempt any SIX (6 X 2 Marks) **12 Marks**

a. If $\sin A = 0.4$, find $\sin 3A$.
b. Prove that $\operatorname{cosec}^2\theta - \cos^2\theta \cdot \operatorname{cosec}^2\theta = 1$
c. Using compound angle formulae find value of sin15.
d. Find principle value of $\sin^{-1}(-1) + \tan^{-1}(1) + \cos^{-1}\left(\frac{1}{2}\right)$
e. Find centroid of triangle with vertices of triangle A(7,-1), B(2,5), C(-9,3)
f. Find centre and radius of circle $x^2+y^2-2x+6y-3=0$
g. Find slope and x – intercept of the line.

$$\frac{x+5}{2}+\frac{y-1}{3}=1$$

h. Find unit vector along $\overline{AB}$, where A(3,-2,1) and B(3,5,-4).

Q.5 Attempt any FOUR (4 X 4 Marks) **16 Marks**

a. Without using calculator, Evaluate : cos570 . sin 510 + sin (-330) . Cos (-390)
b. Prove that $\frac{\sin A+\sin 2A+\sin 3A+\sin 4A}{\cos A+\cos 2A+\cos 3A+\cos 4A}=\tan\left(\frac{5A}{2}\right)$
c. Show that the points (-1,-4), (4,6) and (-4,10) are the vertices of right angle triangle.
d. Find the distance between the lines 5x-12y+1 = 0 & 10x-24y-1 = 0
e. Find two perpendicular vectors to vectors $\bar{a}=\hat{i}-5\hat{j}+2\hat{k}$ and $\bar{b}=2\hat{i}+3\hat{j}-7\hat{k}$
f. Find work done by a force $\bar{F}=5\hat{i}+2\hat{j}-7\hat{k}$ when applied on a object at point A(1,1,-1) displaces it to point B (3,4,-6)

Q.6 Attempt any TWO (2 X 6 Marks) **12 Marks**

a. Show that $\sin 20^0 \sin 40^0 \sin 60^0 \sin 80^0 = \frac{3}{16}$.
b. Find the equation of the circle circumscribing the ΔABC whose vertices are A(2,-1), B(2,3) and C(4,-1)
c. Find the equation of line passing through intersection of lines x-2y-5 = 0 & x+3y = 10 & parallel to the line 3x+4y = 0.