

(OLD COURSE)

QP Code : **11848**

(2 Hours)

[Total Marks : 75

- N.B. :** (1) Question No. 1 is compulsory.
 (2) Attempt any **four** questions out of the remaining six questions.
 (3) **Figures** to the **right** indicate **full** marks.
 (4) **Answers** to all sub questions should be attempted and grouped together.

1. (a) Explain the 7 C's of communication. 5
 (b) Identify the barriers in the following communication situations: 3
 (i) A village patient took two spoons and kept in the pocket since the doctor advised him to take" two spoons after lunch."
 (ii) The speaker starts stammering when he sees the huge audience.
 (iii) The presenter discontinued the session due to the faulty projector.
 (c) Match the following :— 3
- | A | B |
|----------------------------|-----------------|
| (i) Finding price of goods | Guilty |
| (ii) informal channel | Danger |
| (iii) Avoid eye contact | Consideration . |
| (iv) Thermometer | Grapevine |
| (v) You-Attitude | Enquiry |
| (vi) Life is at risk | Instrument. |
- (e) What is non verbal communication? Explain any three types which we should apply while giving a presentation. 4
2. Write short notes :— 15
- (i) Advantages and disadvantages of Horizontal communication
 (ii) Techniques to improve Speaking and Writing skills.
 (iii) Explain SQ3R Method.
3. (a) Assuming that you are the Purchase Officer of Duro Garments Enterprises, Hoshiapur Road, Rohtak-124003, place an order for the following items with Modern Furniture Mart, Sadar Bazar, New Delhi- 110008. 8
- | | | |
|------------------|---|----|
| Office Chairs | - | 20 |
| Steel Cup boards | - | 08 |
| Wooden Tables | - | 15 |
- Invent necessary details regarding the size, shape, colour etc (Complete block)
- (b) Draw the Lay out of Semi block format with all the features. 3
 (c) Advantages and disadvantages of Grapevine communication. 4

4. (a) As the secretary of the Staff Club of your organization you bought a music system from a local dealer. You discovered that it is damaged. The dealer replaced it promptly, but that system also contains identical defects. Write a letter to the manufacturing company asking for a replacement. 8
(Modified Block)SM
- (b) Write one word substitute :— 2
(i) Study of the way we structure and use time to communicate
(ii) Specialized vocabulary
- (c) Describe any one of the following :— 5
(i) Lap top
(ii) Transformer
(iii) Calculator
5. (a) Write a technical description of any one :— 6
(i) Using a scanner
(ii) Using an OHP (Over Head Projector)
- (b) Write a brief note on any three :— 9
(i) Information, persuasion and morale as objectives of communication
(ii) You- Attitude
(iii) Upward and Downward communication
(iv) Code, Encode and Decode
(v) Difference between Process description and Instruction Writing.
6. (a) Identify the sender, message, medium, receiver and feedback . 4
(i) The Manager gives instructions to the computer operator over telephone about the launching of their product and how to market it through advertisement.
(ii) Students being offered a short term computer course in the college.
- (b) Write a set of instructions on Filing. 6
- (c) Fill in the blanks :— 5
(i) listening only to what you want to listen is _____ listening.
(ii) A signature block consists of _____, _____ and _____
(iii) _____ is more eloquent than words.
(iv) A hydro meter is an instrument used for measuring the specific gravity of liquids is a _____.
(v) SQ3R method is one of the techniques of _____.

7. Read the following passage and answer the questions below:—

Education has always had two objects: on the one hand, to give skill; and on the other, to impart a vaguer thing which we may call wisdom. The role of skill has become larger than it used to be and is increasingly threatening to oust the role of wisdom. At the same time it must be admitted that wisdom in our world is useless except for those who realize the great part played by skills, for it is increase of skill that is distinctive feature of your world.

Although scientific skill is necessary, it is by no means sufficient. A dictatorship of men of science would very soon become horrible. Skill without wisdom may prove to be purely destructive. For this reason it is of great importance that those who receive a scientific education should not be merely scientific, but should have some understanding of that kind of wisdom which, if it can be imparted at all, can only be by the cultural side of education. Science enables us to know the means to any chosen end, but it does not help to decide upon what ends should be pursued. If you wish to exterminate the human race, it will show you how to do it. If you wish to make human race so numerous that all are on the very verge of starvation, it will show you how to do that. If you wish to secure adequate prosperity for the whole human race, science will tell you what you must do. But it will not tell you whether one of these is more desirable than another. Nor will it give you that instinctive understanding of human beings that is necessary, if your measures are not to arouse opposition which only a dangerous action can stop. It can not teach you patience, it cannot teach you sympathy, it cannot teach you a sense of human dignity. These things, in so far as they can be taught in formal education, are mostly to emerge from the learning of history and great literature.

- | | |
|--|---|
| (i) What should, according to the writer, be the aim of education? | 2 |
| (ii) What knowledge does science impart to us? | 2 |
| (iii) Why should we study history and great literature? | 1 |
| (iv) What is the distinction between 'knowledge' and wisdom'? | 1 |
| (v) Why is increase of skill a distinctive feature of our world. | 1 |
| (vi) Summarize the passage in about 100 words with a suitable title. | 8 |

QP Code : 11842

(OLD COURSE)

(3 Hours)

[Total Marks : 100]

- N.B. :** (1) Questions No.1 is compulsory.
 (2) Attempt any **four** from remaining questions.

1. (a) Explain the object oriented concepts of Java. 10
 (b) Explain the types of operators in Java with example. 10
2. (a) Explain life cycle of a thread 10
 (b) Write a program in java to find largest of two numbers. Take the two numbers from command line. 10
3. (a) What is multiple inheritance? How it is implemented in java? 10
 (b) Explain the life cycle of Applet. 10
4. (a) Write a program in java to display the following pattern 10

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      *
     * *
    * * *
  
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- (b) What is abstract class? Explain with example. 10
5. (a) Write a program in Java to find Fibonacci series upto number 5. 10
 (b) What is exception handling in Java? How it is implemented? 10
6. (a) Write a program in java to demonstrate parameter passing to applet. 10
 (b) Write a program in java to illustrate boolean operators. 10
7. (a) Write a program in java to find reverse of the given string. 10
 (b) Explain the concept of thread synchronization. 10

FE Sem II (old)
Applied Chemistry II 28/11/2014

QP Code :11836

(OLD COURSE)

(2 Hours)

[Total Marks: 75]

- N.B. :(1) Question no. 1 is compulsory.
(2) Attempt any four questions from the remaining six.
(3) Figures to the right indicate full marks.
(4) Atomic weights H=1, C=12, N=14, O=16, Na=23, Mg=24, S=32, Cl=35.5, Ca=40

1. Answer any five questions from the following:— 15
- (a) 1 gm of coal sample was used for determination of nitrogen by Kjeldahl's method. The ammonia evolved was passed into 50 ml of 0.1N H₂SO₄. The excess acid required 40ml of 0.1N NaOH for neutralization, Calculate the percentage of nitrogen.
- (b) Give the composition, properties and uses of tinman's solder.
- (c) Write are the characteristics properties of a good paint.
- (d) Write the classification of composite materials.
- (e) Write a short note on green fuel.
- (f) What is catalysis? Explain different types of catalysis with one example each.
2. 6
- (a) Explain refining of petroleum. 5
- (b) Define corrosion. Explain intergranular corrosion with appropriate diagram and examples. 4
- (c) Explain the effect of the following alloying elements on steel 4
- (i) Cr (ii) Ni (iii) Mo (iv) W
3. 6
- (a) Calculate the weight and volume required for complete combustion of 1 kg of coal containing C= 60%, H= 5%, O=7%, N= 3% and remaining being ash. (M.W of air =28.949) 5
- (b) Define cracking. Discuss fluid bed catalytic cracking. 4
- (c) Explain the following factors affecting the rate of corrosion 4
- (i) pH of medium
- (ii) position of metal in galvanic series.
4. 6
- (a) Explain the production of alcohol from molasses. 5
- (b) Write a short note on fibre reinforced composites. 4
- (c) Calculate the percentage atom economy of the following reaction
- $$C_6H_6 + 4.5O_2 \xrightarrow{V_2O_5} C_4H_2O_3 + 2CO_2 + 2H_2O$$

- | | | |
|----|---|---|
| 5. | (a) Explain the adsorption theory of heterogenous catalysis in detail. | 6 |
| | (b) Write a short note on petrol knock and octane number. | 5 |
| | (c) Write a short note on pillard clay. | 4 |
| 6. | (a) Explain the traditional and green route for production of indigo dye | 6 |
| | (b) Explain cold powder extrusion moulding. | 5 |
| | (c) Write difference between anodic and cathodic coatings. | 4 |
| 7. | (a) Explain in detail cathodic protection methods. | 6 |
| | (b) A sample of coal has the following composition C= 79%, H= 7.5%, N=2%, S= 1.5%, O= 6%. Calculate the G.C.V. and N.C.V. of coal | 5 |
| | (c) What are ceramic powders? Explain the manufacture of alumina. | 4 |
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(OLD COURSE)

QP Code : 11830 2014

(2 Hours)

[Total Marks : 75

1. Solve any **five** from the following :— 15
- (a) Explain why centre of Newton's rings is always dark.
 - (b) What is optical fibre ? List out the advantages of an optical fibre.
 - (c) Light of wavelength 5880 \AA is incident on a thin film of glass of $\mu = 1.5$ such that the angle of refraction in the plate is 60° . Calculate the smallest thickness of the plate which will make it dark by reflection.
 - (d) State and explain Heisenbergs uncertainty principle.
 - (e) Differentiate between soft and hard magnetic materials.
 - (f) A bar magnet has a coercivity of $5 \times 10^3 \text{ amp/m}$. It is desired to demagnetize it by inserting it inside a solenoid 10 cm long and having 50 turns. What current should be sent through the solenoid ?
 - (g) Explain pirani gauge.
2. (a) How lasers are different than ordinary light ? Explain following terms :— 7
- (i) Induced absorption.
 - (ii) Spontaneous emission.
 - (iii) Stimulated emission.
 - (iv) Population inversion.
 - (v) Metastable state.
- (b) Explain construction and working of Rotary pump. 8
3. (a) Derive the expression for Numerical Aperture of fibre optics cable. 7
What is acceptance angle ? The numerical aperture of an optical fibre is 0.5 and core refractive index is 1.54. Find R.I of the cladding.
- (b) Describe the construction and working of He-Ne laser with diagrams. 8
4. (a) In Newton's ring experiment the diameter of 4th and 12th dark rings are 5
0.40 cm and 0.70 cm respectively. Deduce the diameter of 20th ring.
- (b) If an electron is accelerated at potential V, find out the wavelength of matter wave ? 5
- (c) Explain Ohms law for the magnetic circuit and hence derive a relation 5
between magnetomotive force and magnetic field strength for magnetic circuit due to solenoid ?

5. (a) Monochromatic light of wavelength 6560 \AA falls normally on a grating 2 cm wide. The first order spectrum is produced at an angle of $16^\circ 17'$ from the normal. Calculate the total number of lines on the grating 5
- (b) Show that the energy of an electron in the box varied as the square of natural numbers. 5
- (c) Explain the working of Scanning Electron Microscope with a neat diagram. 5
6. (a) Write a brief note on the diffraction of light rays through a diffraction grating. 5
- (b) Explain physical interpretation of wave function. 5
- (c) Write a note on Scanning Tunnelling Microscope. 5
7. (a) Calculate the spacing between two consecutive bright bands in case of interference due to a wedge shaped film. 5
- (b) Discuss holography as an application of laser. 5
- (c) Explain various stages of Hysteresis curve. 5

(OLD COURSE)QP Code **11825**

(3 Hours)

[Total Marks : 100]

- N.B. :** (1) Question No. 1 is compulsory.
 (2) Attempt any four questions from remaining six questions.
 (3) Figures to right indicate full marks.

1. (a) Find by double integration the total area enclosed by the lemniscate of Bernoulli 3

$$(x^2 + y^2)^2 = a^2 (x^2 - y^2)$$

- (b) Evaluate $\int_0^{\infty} \frac{\sqrt{x}}{(1+2x+x^2)} dx$ 3

- (c) Using Taylor's method solve $\frac{dy}{dx} = x^3 + y$ with $x_0 = 1, y_0 = 1$. 3

- (d) Evaluate $\int_0^2 \int_1^2 \int_0^y xyz \, dx dy dz$ 3

- (e) Solve $(D^4 - 1)y = e^x + \cos x \cos 3x$ 4

- (f) Solve $\frac{dy}{dx} + (2x \tan^{-1} y - x^3)(1 + y^2) = 0$. 4

2. (a) Evaluate $\int_0^a \int_0^{a-x} \int_0^{a-x-y} x^2 \, dx dy dz$ 6

- (b) Evaluate $\int_0^2 \int_{\sqrt{2x-x^2}}^{\sqrt{4-x^2}} \frac{dy dx}{\sqrt{4-x^2-y^2}}$ 6

- (c) Evaluate $\int_0^{\infty} \frac{e^{-x}}{x} \left(a - \frac{1}{x} + \frac{1}{x} e^{-ax} \right) dx$. 8

[TURN OVER

3. (a) Solve $\left[1 + \log(xy) \right] dx + \left(1 + \frac{x}{y} \right) dy = 0$ 6
- (b) Find by double integration the mass of a thin plate bounded by $y^2 = x$ and $y = x^3$. If the density of any point varies as the square of its distance from the origin. 6
- (c) Solve $x^2 \frac{d^2y}{dx^2} - 4x \frac{dy}{dx} + 6y = -x^4 \sin x$. 8
4. (a) Solve $\frac{dy}{dx} + y = y^2 (\cos x - \sin x)$ 6
- (b) Change the order of integration and evaluate 6
- $$\int_0^1 \int_0^{\sqrt{1-y^2}} \frac{\cos^{-1} x}{\sqrt{1-x^2} \sqrt{1-x^2-y^2}} dx dy$$
- (c) Use Euler's method to find an approximate value of y correct to 4 decimal places 8
for $x = 0.1$ given $\frac{dy}{dx} = x - y^2$ at $x = 0, y = 1$. Take $h = 0.02$.
5. (a) Find the length of the astroid $x = a \cos^3 t, y = a \sin^3 t$. 6
- (b) Evaluate $\iiint \frac{dx dy dz}{x^2 + y^2 + z^2}$ throughout the volume of the sphere 6
 $x^2 + y^2 + z^2 = a^2$.
- (c) Solve $\frac{dy}{dx} = xy$ with initial conditions $y(1) = 2$ and find y at $x = 1.2, 1.4$ by 8
Runge Kutta method of fourth order.

6. (a) Evaluate $\int_0^{\pi} \sin^2 \theta (1 + \cos \theta)^3 d\theta$ 6
- (b) Evaluate $\int \int_R x(x-y) dx dy$ where R is the triangle with vertices (0,0), (1, 2) (0,4). 6
- (c) Solve by method of variation of parameters $(D^2 + 1)y = \cot x$. 8
7. (a) Evaluate $\int_0^1 x^{q-1} \left(\log \frac{1}{x}\right)^{p-1} dx$ 6
- (b) Evaluate $\int \int r \sin \theta dA$ over the cardioid $r = a(1 + \cos \theta)$ above the initial line. 6
- (c) The differential equation of motion of a body is $\frac{d^2 x}{dt^2} + n^2 x = f \cos pt$. Solve this equation. What is the solution if $p = n$? 8
-