

19/12/2011

FE Sem-II (REV) All Branch  
Communication Skills.

AGJ 2nd half (y) 15

Con. 6247-11.

MP-4006

(2 Hours)

[ Total Marks : 75

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

Q. I ]:

- a) Discuss the cycle of communication with the help of a diagram and suitable examples. (08)
- b) Describe some of the chief characteristics of listening and reading skills and importance of these skills in communication. (07)

Q. II ] Write short notes on any **THREE** of the following: (15)

- a) Functions of Business Letter  
b) Characteristics of a good definition  
c) Importance of feedback  
d) Describe different networks of communication.

Q. III] Do as directed:

- a) Being the Sales Manager of ABC Group Ltd., Mumbai, you have received an angry letter from one of your wholesaler distributor about the manufacturing defects in the computer appliances they **bought** from your company recently. Draft a suitable reply. Use complete block form. (08)
- b) Find one word substitute for the following : (03)
- i) The study of the behaviour of electric currents in electronic equipments.  
ii) The scientific study of matter and energy.  
iii) The study of earth's physical structure and activities, etc.

c) Distinguish between: (04)

- i) Semi-block style and Full block style of letter writing  
ii) Upward and Downward communication

Q. IV ] Do as directed:

- a) Write a complete set of instructions for any **TWO** of the following: (08)
- i) Sending an e-mail    ii) Using a drafter    iii) Drafting a claim letter
- b) Match the items in the following columns: (04)

Respected Sir/ Madam  
Debate  
Elocution  
Extempore

Formal Speech  
Spontaneous speech  
Highly formal and official  
Formal arguments

[ TURN OVER

Con. 6247-MP-4006-11.

2

c) Choose the correct word: (03)

- i) \_\_\_\_\_ has taken over many of the routine functions of a business organisation.  
(The secretary, The machine)
- ii) Greeting the receiver : \_\_\_\_\_ (Official, Salutation)
- iii) Skimming and \_\_\_\_\_ are two types of rapid reading techniques. (Scanning, Silent)

Q. V ] Do as directed:

a) Punctuate the following: (03)

- i) renaissance is the name commonly applied to the period of european history following to the middle ages.
- ii) Shri M. C. Chagla,  
minister of education,  
government of india.

iii) The nouns are classified into five categories - common proper collective material and abstract

b] Transfer the following past perfect sentences into past perfect continuous tense: (02)

- i) We had visited that place earlier.
- ii) We had worked hard to reach that level.

c) Describe any ONE of the following objects by giving definition, diagram, description and working (10)

- i) Drill Machine    ii) Electric Bulb    iii) Fire Extinguisher

Q. VI] Read the following passage and answer the questions given below:

Leading investors have joined the growing chorus of concern about government and companies rushing into producing biofuels as a solution for global warming, saying that many involved in the sector could be jeopardising future profits if they do not consider the long-term impact of what they are doing carefully.

It is essential to build sustainability criteria into the supply chain of any green fuel project in order to ensure that there is no adverse effect on the surrounding environmental and human rights campaigners are worried that this will lead to destruction of rain forests. Food prices could also go up as there is increased competition for crops as both foodstuffs and sources of fuel. Last week, the UN warned that biofuels could have dangerous side effects and said that steps need to be taken to make sure that land converted to grow biofuels does not damage the environment or cause civil unrest. There is already great concern about palm oil, which is used in many foods in addition to being an important biofuel, as rain forests are being cleared in some countries and people driven from their homes to create palm oil plantations.

An analyst and author of the investors' report says that biofuels are not a cure for climate change but they can play their part as long as governments and companies manage the social and environmental impacts thoroughly. There should also be greater measure taken to increase efficiency and to reduce demand.

**Con. 6247-MP-4006-11.**

**3**

(03)

a) Choose the correct alternatives:

1) \_\_\_\_\_ are worried about the boom in biofuels.

- i) Few people
- ii) Many people
- iii) Only leading investors

2) Environmentalist believes that increased production of corn and soya \_\_\_\_\_

- i) has destroyed rain forest.
- ii) may lead to the destruction of rain forest.
- iii) will lead to the destruction of rain forest.

3) The author of the report says that biofuels \_\_\_\_\_

- i) have no role to play in fighting global warming.
- ii) can be effective in fighting global warming on their own.
- iii) should be part of a group of measures to fight global warming.

b) Why are environmental and human rights campaigners worried? (02)

c) Comment on the investor's report on biofuels. (02)

d) Use the following words and form a new sentence: (02)

- i) jeopardise
- ii) efficiency

e) Write a summary of about 150 words of the above passage. Give a suitable title. (06)

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14/12/11

FE Sem - II (Ren)

Computers Programming - II  
MP-2503

Con. 5820-11.

(3 Hours)

[ Total Marks : 100

N.B. (1) Question No.1 is compulsory.

(2) Attempt any Four questions from remaining Six questions.

(3) Assume suitable data if required and state the assumption clearly.

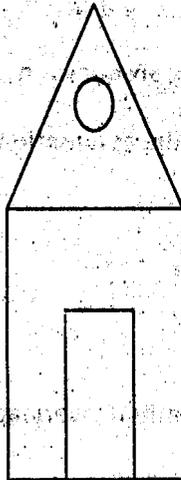
(4) Figures to the Right Indicates Full marks.

1. a) Differentiate method overriding and method overloading. [ 5 ]  
 b) Explain the role of wrapper classes. [ 5 ]  
 c) Write a short note on "Abstract Class". [ 5 ]  
 d) Explain static members. [ 5 ]
2. a) Write a program to create multiple threads. Demonstrate the use of `isAlive()`, `setName()`, `getName()`, `setPriority()`, and `getPriority()` methods of the Thread Class. [ 10 ]  
 b) Write a program to evaluate the sum of the following series:  

$$1 + 1/2^2 + 1/3^2 + 1/4^2 + \dots + 1/n^2$$
 Take the value of n from the user. [ 10 ]
3. a) Write a program to read the five names of students from the commandline and store them in a Vector. Sort the list in the alphabetical order and display. [ 10 ]  
 b) Write a program to count the frequency of occurrence of a given character in a given line of text. For example: The line text is : We are students and eat Eggs.  
 The given character is : e .  
 Then the frequency of occurrence is = 5 . [ 10 ]
4. a) How do you define an exception? Explain how Java handles exceptions during program execution with suitable example. [ 10 ]  
 b) What are the benefits of packages? What are the Java API packages? Write a program to demonstrate the creation and use of a package. [ 10 ]
5. a) Write a program to display the area of square and rectangle using the concept of overloaded constructor. [ 10 ]

[ TURN OVER

b) Write a Java applet to display the house as shown below :



[ 10 ]

6. a) Explain the difficulty of Java to implement multiple inheritance. How multiple inheritance is supported by Java , explain with suitable example.

[ 10 ]

b) How do you define a datatype ? Explain the datatypes available in Java.

[ 10 ]

7. Write short notes on any FOUR of the following :-

[ 20 ]

( a ) Parameter passing to an applet.

( b ) Life Cycle of a thread.

( c ) System.arraycopy() method.

( d ) Commandline arguments.

( e ) Java Access Protection.

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Con. 5731-11.

MP-2500

(2 Hours)

[Total Marks : 75]

- N.B. :** (1) Question No. 1 is **compulsory**.  
 (2) Solve any **four** questions from Question Nos. 2 to 7.  
 (3) Use **suitable** data whenever **necessary**.

1. Answer any **five** from the following :— 15
- Explain the conditions of sustained interference pattern of light.
  - What do you mean by diffraction and state its types.
  - Explain two types of Light Sources used in optical communication systems.
  - Why Electron microscope is consider better than optical microscope ?
  - Explain De-Broglie's hypothesis.
  - Define relative permeability and susceptibility. Write the relation between them.
  - What do you mean by Vacuum ? What are various gauges used to measure vacuum ?
2. (a) Obtain the condition for maxima and minima due to interference in a wedge-shaped film observed in reflected light. Derive the expression for fringe width. 8  
 (b) What is diffraction grating ? What is the advantage of increasing the number of lines in a grating ? In an experiment with grating, third order spectral line of wavelength  $\lambda$ , coincides with the fourth order spectral line of wavelength 4992 Å. Calculate the value of  $\lambda$ . 7
3. (a) What is De-Broglie concept of matter-waves ? Derive one dimensional time dependent Schrodinger equation for matter waves. 8  
 (b) Derive the expression of numerical aperture for a step index fibre. Calculate the acceptance angle for the fibre in water of refractive index 1.33 given that N.A. is 0.2 and cladding refractive index is 1.59. 7
4. (a) Obtain an expression for the radius of the  $n^{\text{th}}$  dark ring in the case of Newton's rings. White light falls normally on a soap film of thickness  $5 \times 10^{-5}$  cm and of refractive index 1.33 which wavelength in the visible region will be reflected most strongly. 8  
 (b) What is holography ? Explain the process of recording and reconstruction of hologram. 7
5. (a) With neat energy level diagram describe the construction and working of He-Ne laser. What are its merits and demerits ? 8  
 (b) Differentiate between soft and hard magnetic materials. In a magnetic material the field strength is found to be  $10^6$  ampere/m. If the magnetic susceptibility of the material is  $0.5 \times 10^{-5}$ . Calculate the intensity of magnetization and the flux density in the material. 7
6. (a) Explain the atomic origin of ferromagnetism ? Differentiate between diamagnetic and paramagnetic materials. 8  
 (b) Show that electron can not pre-exist in free state in a nucleus. An electron has a speed of  $4 \times 10^5$  metre/sec. accurate to 0.01%. With what accuracy can we locate the position of the electron ? 7
7. Write short notes on any **three** of the following :— 15
- AFM.
  - Rotary Pump.
  - Anti reflecting film.
  - Holography.

29/11/11

FE Semr II (Rev)  
Applied maths II

AGJ 2nd half (q) 30

Con. 5822-11.

MP-2522

(3 Hours)

[ Total Marks : 100

- N.B. :** (1) Question No. 1 is compulsory.  
 (2) Out of remaining questions, attempt any four questions.  
 (3) In all five questions to be attempted.  
 (4) Answer to each new question to be started on a fresh page.  
 (5) Figures in brackets indicate full marks.

**Q.1 a)** Prove that  $\sqrt{\frac{3}{2}-x} \sqrt{\frac{3}{2}+x} = \left(\frac{1}{4}-x^2\right) \pi \sec \pi x$  provided  $-1 < 2x < 1$  (5)

**b)** Solve  $(D^4 - 4D^3 + 8D^2 - 8D + 4)y = e^x + 1$  (5)

**c)** Find the length of the curve  $y = \log(e^x + 1) - \log(e^x - 1)$  from  $x = 1$  to  $x = 2$  (5)

**d)** Find the area bounded by the curves  $xy = 2$ ,  $4y = x^2$  and  $y = 4$  (5)

**Q.2 a)** Change the order of integration in  $\int_0^a \int_0^{b/(b+x)} f(x, y) dx dy$  (6)

**b)** Solve by the method of variation of parameters  $(D^2 + 3D + 2)y = \frac{1}{1+e^x}$  (6)

**c)** Solve  $\frac{dy}{dx} = 2 + \sqrt{xy}$  with  $x_0 = 1.2$   $y_0 = 1.6403$  by Euler's modified formula for  $x = 1.6$  correct the four places of decimals by taking  $h = 0.2$ . (8)

**Q.3 a)** Evaluate  $\int_0^e \int_0^{\log y} \int_1^{e^x} \log z dx dy dz$  (6)

**b)** Change to polar coordinates and evaluate  $\int_0^{a/\sqrt{2}} \int_y^{\sqrt{a^2-y^2}} \log(x^2 + y^2) dx dy$  (6)

**c)** Solve the differential equation  $\frac{dy}{dx} = x + y^2$ ,  $y(0) = 1$  for the interval  $(0, 0.2)$  in steps of  $h = 0.1$  by using Raunge-Kutta method of fourth order (8)

[ TURN OVER

Con. 5822-MP-2522-11.

2

Q.4 a) Solve  $(D^2 - 2D + 1)y = xe^x \sin x$  (6)

b) Evaluate  $\int_0^{\infty} \frac{e^{-x}}{x} \left( a - \frac{1}{x} + \frac{1}{x} e^{-ax} \right) dx$  (6)

c) Solve  $(1+2x)^2 \frac{d^2y}{dx^2} - 6(1+2x) \frac{dy}{dx} + 16y = 8(1+2x)^2$  (8)

Q.5 a) Solve  $\frac{dy}{dx} = e^{x-y} (e^x - e^y)$  (6)

b) Solve  $x^2 \frac{d^2y}{dx^2} + x \frac{dy}{dx} - y = \frac{x^3}{x^2 + 1}$  (6)

c) Find the volume of the tetrahedron bounded by the planes  $x = 0$ ,  $y = 0$ ,  $z = 0$  and  $x + y + z = a$  (8)

Q.6 a) Find the mass of the lamina bounded by the curves  $ay^2 = x^3$  and the line  $y = x$ , if the density at a point varies as the distance of the point from the  $x$  axis. (6)

b) Using duplication formula prove that  $B(n, n) \cdot B\left(n + \frac{1}{2}, n + \frac{1}{2}\right) = \frac{\pi}{n} 2^{1-4n}$  (6)

c) Solve  $(D^2 + 1)y = x^2 \sin 3x$  (8)

Q.7 a) Evaluate  $\iint (x^2 + y^2) dx dy$  over the area of the triangle whose vertices are  $(0, 1)$ ,  $(1, 1)$  and  $(1, 2)$ . (6)

b) Solve  $\frac{dy}{dx} = \frac{y^3}{e^{2x} + y^2}$  (6)

c) Evaluate  $\int_0^{\infty} \frac{e^{-\beta x} \sin 2x}{x} dx$  and hence deduce that  $\int_0^{\infty} \frac{\sin x}{x} dx = \frac{\pi}{2}$  (8)

\* Good Luck \*

(2 Hours)

[Total Marks : 75]

**N.B. :** (1) Question No. 1 is compulsory.

(2) Attempt any four from remaining six questions.

(3) **Figures** to the right indicate full marks.

(4) Atomic wt :- C = 12, H = 1, O = 16, S = 32, N = 14, Cl = 35.5, Ba = 137.3.

1. Solve any five from the followings :-

15

(a) What is season cracking.

(b) Give composition, properties and uses of soft solders.

(c) A sample of coal contains - C = 70%, O = 23%, H = 5%, S = 1.5%, N = 0.4%, ash = 0.1%. Calculate G.C.V. and N.C.V. of this fuel.

(d) What are fiber composites.

(e) What are green fuel.

(f) Give significance of proximate analysis.

2. (a) Explain the direct chemical corrosion.

5

(b) 1.5 gms of sample of coal was taken in crucible for C and H estimation, by combustion method. The increase in weight of tube containing CaCl<sub>2</sub> and bulb-containing KOH, was found to be 1.25 gms and 4.88 gms. respectively. Calculate % C. and H.

5

(c) Giving conventional and greener route for production of adipic acid, explain related green chemistry principle in this case.

5

3. (a) Explain method of obtaining Biodiesel from vegetable oil? Give advantages of Biodiesel.

5

(b) 100 ml. of natural solution containing 0.2 gm of Cu<sup>2+</sup> ion electrolysed till entire copper was deposited. The current strength was 1.2 amperes and Volume of solution maintained at 100 ml. Assuming 100% efficiency. Calculate time taken for deposition of copper.  
(At wt. of copper = 63.58).

5

(c) Explain the principle of use of safer solvent and reaction condition in green chemistry with suitable examples.

5

4. (a) Calculate weight of air needed for complete combustion of 1 kg of coal containing C = 72%, H = 10%, O = 9%, N = 3% and remaining being ash.

5

(b) Describe adsorption and catalytic properties of Zeolite.

5

(c) What is powder metallurgy? How metal powders are prepared.

5

5. (a) Give the functions of matrix phase in composite materials with their properties.

5

(b) What is cracking? Explain advantages of catalytic cracking over thermal cracking.

5

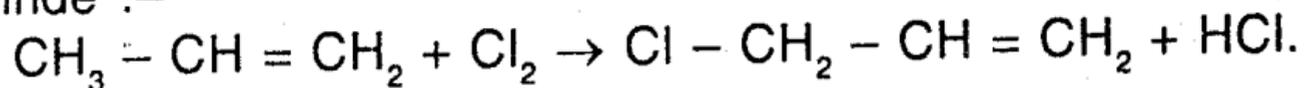
(c) The composition of gas was found to be H<sub>2</sub> = 10%, CH<sub>4</sub> = 20%, C<sub>2</sub>H<sub>6</sub> = 16%, N = 6%, CO = 18%, CO<sub>2</sub> = 22%. O<sub>2</sub> = rest. Calculate volume of air required for 1 m<sup>3</sup> of this gas.

5

6. (a) Discuss the corrosion due to combination of metals of different electrode potentials. 5  
(b) What are ceramic powder ? Explain method of manufacturing any one ceramic powder. 5  
(c) Define cetane and octane number. 5
7. (a) How does a catalyst affect establishment of equilibrium state and activation energy of reaction ? Explain with necessary graph. 5  
(b) Write characteristics of good fuels. 5  
(c) Which are main constituents of varnishes. Write their function. 5

**OR**

Calculate the percentage atom economy for following reaction with respect of Allylchloride :-



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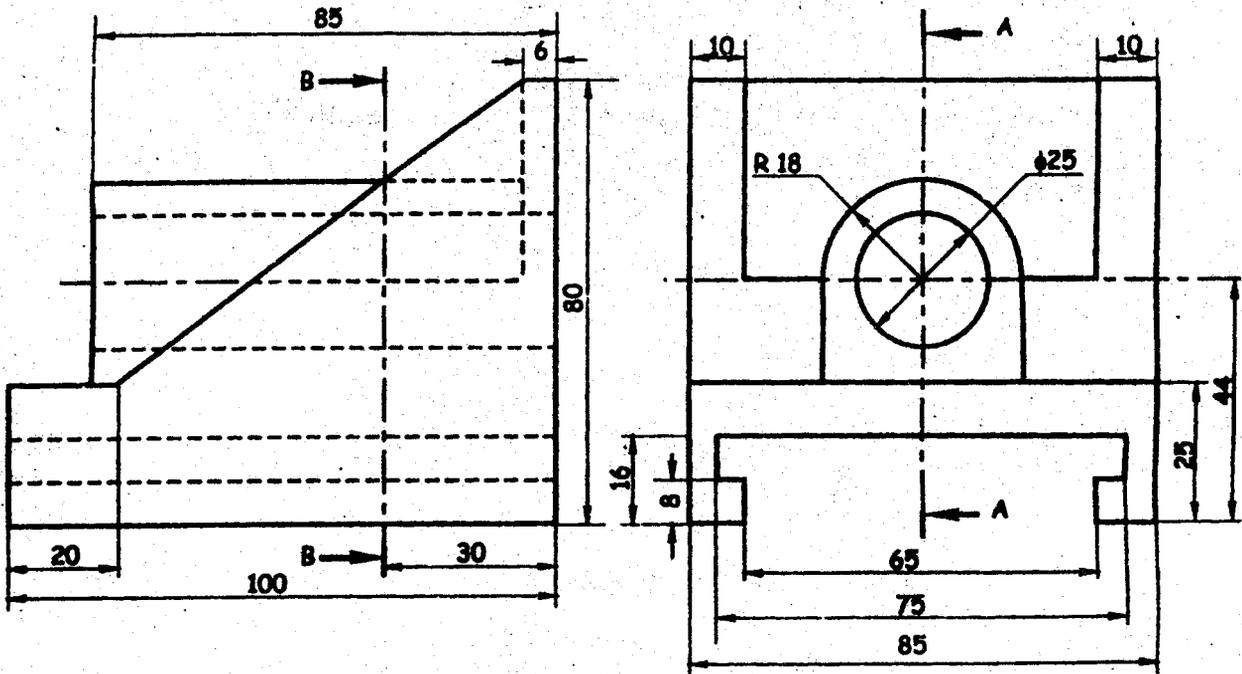


2. Figure shows Front view and Side view of a machine block. Draw the following views :—

- (a) Sec. F. V. along A-A
- (b) Sec. S. V. along B-B
- (c) Top view.

Instert atleast 8 major dimensions.

4  
4  
5  
2

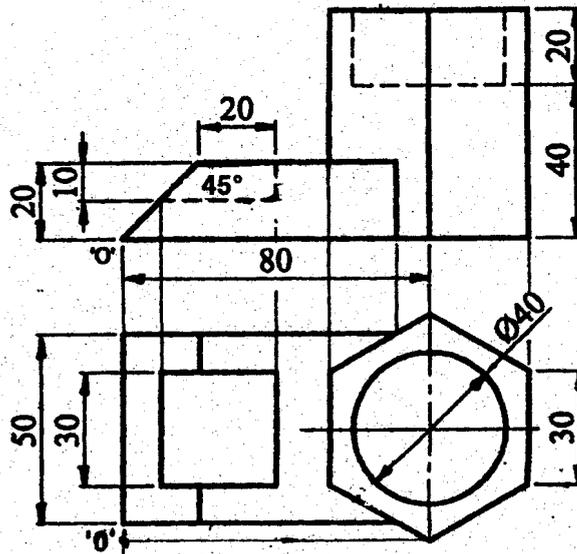


- 3. (a) A line AB, 100 mm long is inclined at an angle of  $30^\circ$  to HP and  $45^\circ$  to VP. Its endpoint 'A' is 10 mm above HP and 20 mm in front of VP. Draw the projections when point B is in the fourth quadrant. Also find HT and VT. 9
- (b) Two lines AB and AC are inclined at  $75^\circ$  to each other. Point P is 40 mm from AB and 30 mm from AC. Draw a hyperbola passing through point 'P'. 6
- 4. A pentagonal pyramid, base edges 40 mm and axis length 75 mm rests on its slant edge on HP, which is inclined at  $30^\circ$  to VP. Draw its projections with apex nearer to the observer. 15
- 5. (a) A cone of base 70 mm diameter and axis 90 mm long is resting on its base on HP. It is cut by an AIP, which is parallel to and 15 mm away from one of its end generators. Draw F. V., Sectional T. V. and true shape of the section. 10
- (b) Draw neat, proportionate free hand sketches of the following (Two views each) :—
  - (i) Countersunk headed screw with flat end 3
  - (ii) Ordinary stud. 2

Con. 5900-MP-2515-11.

3

6. (a) A hexagonal pyramid, side of the base 30 mm and height 70 mm is resting on its base on HP, having a pair of base sides parallel to VP. A square hole of sides 25 mm is cut through it such that its axis is parallel to HP, perpendicular to VP and intersects the axis of pyramid 22 mm from the base. Faces of the hole are equally inclined to HP. Draw DLS of the pyramid with the hole. 11
- (b) Draw neat, proportionate free hand sketch of a castle nut (Two views). 4
7. (a) Draw an Isometric view of the following object using natural scale. 10



- (b) Draw neat, proportionate free hand sketches of the following :—
- (i) Cylindrical headed bolt (Two views) 3
  - (ii) Unified thread profile (One view only). 2