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F.E. sem II (old) CS

4/6/15

(OLD COURSE)

QP Code : 3135

Marks-75

Time-2Hrs.

Note: 1) Question no.1 is compulsory.

2) Attempt any four questions from the remaining six questions.

3) Figures on the right-hand side indicate marks.

Q 1 a) Identify the message signaled by the following non-verbal clues- [2]

i) Drooping shoulders
ii) Clinched fist

Q1 b) Explain the following terms with reference to communication barrier- [5]

i) Closed mind
ii) Halo & horn effect

Q 1 c) List any four guidelines for effective reading. [2]

Q 1d) Draw the diagrammatic representation of a letter in 'Modified-block format' indicating the compulsory part. [4]

Q 1 e) Define 'Process of electroplating'. [1]

Q 1 f) Which headings do you include when you frame the special instructions? [1]

Q 2 a) Identify the Sender Receiver, Medium and Feedback in the following situation. [2]

A passenger fills an application form for reservation of seats for his journey and submits to the reservation clerk. The clerk informs him that the reservation is confirmed.

Q 2 b) Differentiate between the following – [5]

i) Encoding and Decoding
ii) Oral and Written communication.

Q 2 c) As the personnel manager of a large firm at Belapur in Navi Mumbai, you wish to arrange a dinner party on the eve of 31 December, for all the workers. Write to a firm of caterer asking them details of menu, charges, service etc. provide the details of number of guests and other necessary details.

(Use Modified block format) [8]

[TURN OVER

Q 3 a) Explain the following term with the reference to communication barrier. [4]

i) Snap reactions
ii) Defensiveness

Q 3 b) Give three reasons to explain why 'Internal communication' is essential for the smooth functioning of an organization. [3]

Q 3 c) You purchased an expensive shirt manufactured by a reputed company from a retail shop. After one year the color faded and material shrunk. The retailer has asked you to write to the manufacturer complaining about the same and asking for replacement within 15 days.

(Use Semi-block format) [8]

Q 4 a) Draw a neatly labeled diagram of the process of communication. [3]

Q 4 b) Match the following body signals with their meanings. [3]

A	B
i) Yawing	Puzzled
ii) Raising an eyebrow	Nervous
iii) Rubbing the nose	Bored

Q 4 c) Briefly describe the process of welding by using the points-

Definition, Material required, Working. [5]

Q 4 d) Arrange the following instruction on filing a piece of metal as per the sequence. [4]

Follow these instructions while filing a piece of metal.

i) Keep the left foot forward beneath the vice.
ii) Hold the handle with the right hand and the point of file with the left hand, because the right hand exerts the force required for the cut where as the left hand guides the cut.
iii) Apply force on the file only on the forward stroke because forward stroke is the cutting stroke.
iv) Hold the job in a vice at such a height that the top of job is at level with your elbow.

Q 5 a) Provide real life situation for the following objectives of communication. [3]

i) Information.
ii) Raising moral.
iii) Warning

Q 5 b) Fill in the blanks. [3]

i) _____communication takes place from higher authority to the lower authority.
ii) _____communication uses word in their spoken form.
iii) _____communication is the natural accompaniment of verbal method of communication.

Q 5 c) Write a brief note on 'clarity' and 'conciseness' as the basic principles of correspondence. [6]

Q 5 d) Identify the following Hazard Notation – [3]

i) Do not put your hand into the spin tub until the spinner has completely stopped.
ii) Do not operate reflector type projectors with the head closed.
iii) High lamp is recommended for LCD projection panels, low lamp is recommended for normal use and will extend lamp life.

Q 6 a) Devise positive feedback for the following communication situations. [2]

i) An employee submits an application for leave to the manager.
ii) An artist presents outstanding performance on the stage.

Q 6 b) write brief note on the following in 5-6 sentences - [6]

i) SQ3R Method.
ii) Blocks to effective listening.

Q 6 c) Match the following. [2]

A	B
i) CC to	Complimentary close
ii) Bio-data	Identification Line
iii) ABC/gf	Enclosure
iv) Yours faithfully	Carbon copy notation

Q 6 d) Match the following [5]

A	B
i) Tool	Photocopier
ii) Appliance	Ammeter
iii) Instrument	Beaker
iv) Machine	Hammer

v) Apparatus Microwave oven

Q 7 a) Read the following passage carefully and answer the questions below-

One warm summer afternoon my friends and I strolled languidly across the College campus on our way to the dining hall. We had successful completed the trials and tribulations of freshman orientation and considered ourselves to be matured students. Confidently opening of the canteen door we stepped inside and stared at the huge room in horror; we had no idea how to get to the food line. Immediately we scuttled back to the door and huddled together, frantically trying to decide our next move. A friendly senior girl behind us, seeing our dire situation started to guide us to the food line. We were almost there when an entire table of boys who had watched the scene with amusement stood up clapping and yelled "yes freshmen!" This made us realize that we weren't the mature collage students we thought we were ...yet.

A semester had passed since that embarrassing day at orientation, and I feel like I have made the transition from adolescent to adult. It wasn't easy though. Going to class wasn't ordeal for me because I had to walk through the sea of unfamiliar faces. I remember asking directions without a second thought I sat in a wrong class for ten days before the teacher told me that I wasn't on his roles. Eventually I learnt my way around the campus.

Towards the middle of the semester; some new 'college' words entered my vocabulary. One such word was 'semesters'. I had never used this word in high school and it sounded so grown up and important that I incorporated it into almost any conversation. I specially used it a lot at home with my little sister. Soon, everyone knew I was busy with all my semesters. 'Arrears' was another term everyone started using towards the end of the semester. Luckily another ignorant freshman asked the teacher for the meaning, and I learnt that it meant 'subject not cleared in the first attempt'. When learnt this, the thought of taking an exam that covered twenty chapters terrified me, and all forms of socializing quickly ended while I studied for my dreaded exams.

However I must say I am much more matured than I was the first time I walked into this College. I now walk confidently to my classes recognizing several faces in the sea of student and wave and say "Hi!" just like everyone else. I know all about first

year practicals and exactly how good the canteen food tastes! Perhaps the best feelings of all, however is knowing that next year a new group of fresher will be wondering around the campus and as a sophomore I'll be the one giving them the direction and they are really scared and lost, I will probably give them right directions!

i) What is the reaction of the student in the canteen? [1]

ii) Class room situations led to embarrassment for the writer because
a) …….. b) …….. [2]

iii) College teaches new terms to the student in the canteen. [2]
Illustrate the experience of the student towards maturity as mentioned in the passage.

iv) Provide synonyms for the following- [1]
Ignorant , Scared

v) Provide Antonyms for the following- [1]
Confident , huge

vi) Provide meanings of the following words- [1]
Frantically , Huddled

Q 7 b) Summarize the above passage in your own words and provide a suitable title. [7]

F. E. Sem II
CP (old)
29/05/15-

(OLD COURSE) QP Code : **3131**

(3 Hours) **[Total Marks : 100**

N.B. (1) Question No. **1** is **compulsory**.
(2) Solve any **4** questions from the remaining questions.

1. (a) Write a program in Java to take two numbers from command line and add them. **10**
   (b) What is inheritance ? Explain the different types of inheritances ? **10**

2. (a) Explain the life cycle of Applet. **10**
   (b) Write a program in Java to find factorial of a given number. **10**

3. (a) What is a package ? Illustrate with programming example. **10**
   (b) Write a program in java to illustrate boolean operators.. **10**

4. (a) Explain the object oriented concept in Java. **10**
   (b) How multiple inheritance is implemented in java ? Explain with example. **10**

5. (a) Write a program in Java to display the following pattern : **10**

```
1
1  2
1  2  3
1  2  3  4
```

   (b) What is exception handling in Java ? How it is implemented ? **10**

6. (a) Write a program in Java to create multiple threads. **10**
   (b) Write a program in java to demonstrate parameter passing to applet. **10**

7. (a) Write a program in java to check whether given string is palindrome or not. **10**
   (b) Explain the life cycle of a thread. **10**

RJ-Con. 8322-15.

F.E. Sem. II – Old – Applied Chemistry - II

25/05/2015

(OLD COURSE) QP Code : **3122**

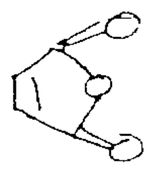
(2 Hours) [Total Marks : 75

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

1. Answer any **five** from the following:— 15
(a) A current of 0.5A was passed through the solution of $CuSO_4$ for 1 hour. Calculate the amount of copper deposited at cathode.
(b) Define octane and cetane number and give their significance.
(c) Write a note on "E-green propellants."
(d) What is catalyst? Write the types of catalyst with one example.
(e) Write the classification of composite materials.
(f) Write the composition, properties and uses of gun metal.

2. (a) Explain rusting of iron. 6
(b) 2.5 gm. of air dried coal sample was taken in a silica crucible, after heating it in an oven at 110°C for 1 hour, the residue was weighed 2.4gm. The residue was heated in a silica crucible with vented lid at 950 ± 20°C for 7 mins. After cooling, the weight of residue was found to be 1.7gm. The residue was then heated in air to a constant weight of 0.24gm. calculate the proximate analysis results. 5
(c) What are the applications of powder metallurgy. 4

3. (a) The composition of a gas was found to be H_2=10%, CH_4 =15%, C_2H_6= 21% CO=23%, CO_2=18% and rest is O_2. Calculate the volume of air required for complete combusion of $1m^3$ of this gas. 6
(b) Explain anodic protection method of corrosion control. 5
(c) Calculate the percentage atom economy for the following reaction with respect to mallaic anhydride. 4

$$CH_3\text{-}CH{=}CH\text{-}CH_3 + 3O_2 \rightarrow$$  $$+ 3H_2O$$

4. (a) List 12 principles of green chemistry 6
(b) Explain particle reinforced composites 5
(c) How these factors influence the rate of corrosion 4
(i) temperature (ii) relative areas of anode and cathode

[TURN OVER

QP Code : **3122**

5.	(a)	What is catalysis? Explain the adsoption theory of heterogenous catalysis.	6
	(b)	What are ceremic powder ? write the manufacture of silicon carbide	5
	(c)	Write the advantages of catalytic cracking over thermal cracking.	4
6.	(a)	Write the constituents of paints and their functions	6
	(b)	Write the transestrification reaction of productions of biodiesel. Explain advantages of biodiesel.	5
	(c)	Define and explain activation energy.	4
7.	(a)	Explain the production of adipic acid with traditional and green route	6
	(b)	A sample of coal contains C= 75%, H= 12% , O= 6%, S= 4% and remaining nitrogen. Calculate H.C.V. and L.C.V. of the coal.	5
	(c)	Explain cold powder extrusion moulding.	4

F.E. sem II (old) 19/05/15

Applied Physics-II

(OLD COURSE) Q.P. Code : **3117**

(2 Hours) [Total Marks : 75

N.B. : (1) Question **No.1** is compulsory.
(2) Solve any **four** questions from **Q.2** to **Q.7**
(3) **Symbols** have their usual meanings.
(4) Assume **suitable** data wherever **necessary**.
(5) Figures to the right indicate full **marks**.

1. Answer any **Five** from the following: **15**
   (a) Explain why in Newton's ring experiment the fringes are circular with dark spot at the center.
   (b) Explain the principle and advantages of an optical fibre.
   (c) What does LASER stand for? In what respects it differ from an ordinary source of light?
   (d) Calculate the de Broglie wavelength associated with an α-particle accelerated by a potential difference of 30 Kv. (Mass of α - particle is 6.68×10^{-27} kg)
   (e) State applications of ferrites.
   (f) Define magnetomotive force and reluctance.
   (g) Explain various applications of vacuum technology.

2. (a) How lasers are different compared to X-rays ? Explain induced absorption, spontaneous emission, stimulated emission, population inversion and metastable state. **8**
   (b) What do you mean by Vacuum ? Explain the construction and working of diffusion pump. **7**

3. (a) Explain the working of semiconductor laser with relevant diagram. **8**
   (b) Derive the expression for Numerical Aperture of fibre optic cable. What is acceptance angle? **7**
   The numerical aperture of an optical fibre is 0.5 and core refractive index is 1.54. Find R.I of the cladding.

4. (a) A parallel beam of sodium light strikes a film of oil floating on water. When viewed at an angle of 30^0 from the normal, eighth dark band is seen. Determine the thickness of the film? **5**
   (R.I of oil is 1.46 and $\lambda = 5890\ A^0$).
   (b) State and explain Heisenberg's uncertainty principle. Give its physical significance. **5**
   (c) A magnetic field of 1600 A/m produces a magnetic flux of 2.4×10^{-5} Weber in an iron bar of Cross-sectional area 0.2 cm^2. Calculate permeability and susceptibility of the bar. **5**

5.	(a)	What do you mean by diffraction and its types. Hence differentiate between them.	**5**
	(b)	If an electron is accelerated at potential V, find out the wavelength of matter waves. Give its importance.	**5**
	(c)	Explain the principle and construction of SEM.	**5**
6.	(a)	How many orders will be observed by a grating having 4000 lines per cm, if it is illuminated by Light of wavelength in the range 5000 A^0 to 7500 A^0.	**5**
	(b)	Derive one dimensional time dependent Schrodinger equation for matter waves.	**5**
	(c)	Give applications of NMR (Nuclear Magnetic Resonance) spectroscopy.	**5**
7.	(a)	Obtain the expression for n^{th} dark ring in case of Newton's rings experiment.	**5**
	(b)	Write a note on holography.	**5**
	(c)	Give a short account of diamagnetism, paramagnetism and ferromagnetism.	**5**

FE SEM II (old)
AM II 13/05/15

QP Code : 3110

Old course

(3 hours) [Total Marks: 100

1. Q 1 is compulsory.
2. Solve any four out of the remaining from Q. No. 2 to Q No 7
3. Fig on right hand side indicate full marks.

Q. 1.

a) Using Taylors series method solve $\frac{dy}{dx} = x + y$ with $x_0 = 1, y_0 = 0$ *and carry to* $x = 1.1$ 3

b) Solve $(D^4 - a^4)y = 0$ 3

c) Evaluate $\int_0^1 \int_0^{x^2} e^{\frac{y}{x}} dydx$ 3

d) Evaluate $\int_{-1}^1 \int_0^z \int_{x-z}^{x+z} (x + y + z)dxdydz$ 3

e) Evaluate $\int_0^4 \sqrt{x}\,(4 - x)^{\frac{3}{2}} dx$ 4

f) Using Euler's method, find the approximate value of y when $\frac{dy}{dx} = xy$, and y=2 when x=0 at x=1 in five steps. 4

Q.2.

a) Evaluate $\int_0^\infty \frac{x^5(1+x^4)}{(1+x)^{16}} dx$ 6

b) Solve using Runge- Kutta method of fourth order $\frac{dy}{dx} = x^2 + y^2$, with the condition x=1 at y=1.5 in the interval (1.1.2) with h=0.1. 6

c) Solve $((1 + y^2)dx = \left(e^{\tan^{-1}y} - x\right)dy$ 8

Q.3.

a) $(2xy\ \cos x^2 - 2xy + 1)\,dx + (\sin x^2 - x^2)dy = 0$ 6

b) Solve using method of variation of parameters, $(D^2 + 1)y = Cotx$ 6

c) Show that $\int_0^\infty \frac{\log(1+ax^2)}{x^2} dx = \pi\sqrt{a}, a \geq 0.$ 8

[Turn over

RJ-Con. 8331-15.

Q.4.

a) Solve $y(x + y)\,dx - x\,(y-x)\,dy = 0$ 6

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

c) Solve $(D^2 - 2D + 1)y = x^2e^{3x}$ 8

Q.5.

a) In a electric circuit containing inductance L, resistance R, and voltage E, the current i is given by $L\frac{di}{dt} + Ri = E.Find$ the current i at time t, if at t=0 when i=0 and L,R,E are constants. 6

b) Change the order of integration. $\int_0^a \int_x^{\frac{a^2}{x}} f(x,y)dxdy$ 6

c) Evaluate $\iiint xyz(x^2 + y^2 + z^2)dxdydz$ over the first octant of the sphere $x^2 + y^2 + z^2 = a^2$ 8

Q. 6.

a) Find the total length of the loop of the curve $9y^2 = (x + 7)(x + 4)^2$ 6

b) Change to polar coordinates and evaluate $\int_0^1 \int_0^x (x + y)dxdy$ 6

c) Evaluate $\iint_R \sqrt{(xy - y^2)}dxdy$ Over the region R of a triangle whose vertices are (0,0),(10,1) and (1,1). 8

Q.7.

a) Change the order of integration and evaluate $\int_0^a \int_y^{\sqrt{ay}} (\frac{x}{x^2+y^2})dxdy$ 6

b) Find by double integration the area of the smaller region bounded by $x^2 + y^2 = a^2$ and x +y = a. 6

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