

B.E. DEGREE EXAMINATIONS: NOVEMBER 2009

Second Semester

U07CY201: CHEMISTRY II

(Common to Electrical and Electronics Engineering & Electronics and Instrumentation
Engineering Branches)

Time: Three hours**Maximum Marks: 100****Answer ALL the Questions:-****PART A (10 x 1 = 10 Marks)**

- Which one of the following is not a photochemical reaction?
(A) Manufacture of starch by plants
(B) Formation of ozone in stratosphere
(C) Sterilisation of water by bleaching powder
(D) Formation of photochemical smog
- Einstein (energy) associated with a radiation is:
(A) directly proportional to wavelength (B) inversely proportional to wavelength
(C) not dependent on wavelength (D) inversely proportional to frequency
- Which one of the following is a homo-polymer?
(A) PVC (B) ABS (C) phenol- formaldehyde (D) Urea-formaldehyde
- Which one of the following acts as the accelerator during vulcanization of rubber?
(A) carbon black (B) cotton linters (C) aniline (D) zinc oxide
- Which of the following metal undergoes chemical corrosion at maximum rate?
(A) Na (B) Zn (C) Ag (D) Pt
- Which one of the following metal is not used as a sacrificial anode?
(A) Al (B) Zn (C) Mg (D) Pt
- Predict the radiation emitted during this fission reaction: ${}_{92}\text{U}^{238} + {}_0\text{n}^1 = {}_{92}\text{U}^{239} + _$
(A) α (B) β (C) γ (D) positron
- During charging of a lead-acid battery the reaction taking place at the anode is:
(A) reduction (B) oxidation (C) neutralisation (D) both oxidation & reduction
- In electrolytic refining of copper the anode used is :
(A) copper (B) iron (C) aluminium (D) platinum
- Which of the following is not a top down approach for preparing nano-particles?
(A) machining (B) coating (C) automization (D) coagulation

PART B (10 x 2 = 20 Marks)

11. What is meant by non-radiative transitions?
12. What is meant by primary process in photochemistry?
13. Write the reaction of formation of polycarbonate from its monomers.
14. Mention four advantages of optical fibres.
15. State Pilling-Bedworth Rule.
16. What is pitting corrosion?
17. What is meant by multiplication factor in a fission reaction?
18. Name the anode, cathode and electrolyte of the dry cell.
19. Represent an electron transfer process in a homogeneous system.
20. Mention any four applications of nano materials.

PART C (5 x 14 = 70 Marks)

21. (a) (i) Explain the reasons for high and low quantum yields in photochemical reactions. (7)
(ii) What are the possible reactions during radiolysis in the primary and secondary stages? (7)
(OR)
- (b) (i) Discuss the energy transfer in photochemical reactions. (7)
(ii) How is the number of moles of the light-absorbing substances that react in a given time is determined? (7)
22. (a) (i) Explain the structure and characteristics of optical fibres. (7)
(ii) Discuss the structure and electronic behaviour of conducting polymers. (7)
(OR)
- (b) (i) Differentiate between polymer blends and polymer alloys. (7)
(ii) How are fibre reinforced plastics made? What are their applications? (7)
23. (a) (i) Discuss the mechanism of pitting corrosion. (7)
(ii) Explain the factors that affect the nature of coating in electroplating. (7)
(OR)
- (b) (i) Discuss any four environmental factors that affect corrosion. (7)
(ii) What is electroless plating? How is it done? What are its advantages? (7)

24. (a) (i) With a block diagram explain the working of a light water nuclear power plant. (7)
(ii) Discuss the construction and working of a hydrogen-oxygen fuel cell. (7)

(OR)

- (b) (i) Write a nuclear fusion reaction and discuss its characteristics. (7)
(ii) Discuss the construction and working of a lithium battery. (7)

25. (a) (i) With a neat diagram explain how electrolytic refining of aluminium is carried by Hoopes process? (7)
(ii) With a block diagram of SEM explain its principles of functioning. (7)

(OR)

- (b) (i) With a block diagram of TEM explain its principles of functioning. (7)
(ii) How is a small hole formed in a metal article by electrochemical machining? (7)

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