

CBCS Scheme

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17CHE12

First Semester B.E. Degree Examination, Dec.2017/Jan.2018 Engineering Chemistry

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing one full question from each module.

Module-1

- What are reference electrodes? Describe the construction and working of Calomel electrode, mention the uses. (07 Marks)
 - Define Battery. Explain construction, working and uses of Ni-metal Hydride battery. (07 Marks)
 - What are fuel cells? Explain the construction and working of Methanol oxygen cell. (06 Marks)

OR

- Define single Electrode Potential? Derive Nernst equation for single electrode. (07 Marks)
 - What are concentration cells? The cell potential of Ag concentration cell, $\frac{\text{Ag}_{(s)}}{\text{AgNO}_3}(0.001\text{M})/\text{AgNO}_3(\text{XM})/\text{Ag}_{(s)}$ is 0.0659 V at 25°C. Write the cell reactions and calculate the value of X. (07 Marks)
 - Write a note on: (i) Capacity (ii) Cycle life (iii) Voltage (06 Marks)

Module-2

- Define corrosion. Explain electrochemical theory of corrosion by taking Iron as an example. (07 Marks)
 - What is Anodizing? Explain anodizing of aluminium, mention uses. (07 Marks)
 - Define Electroless plating. What are the differences between electro plating and electroless plating? (06 Marks)

OR

- What is differential aeration corrosion? Explain pitting corrosion with anode and cathode reactions. (07 Marks)
 - Define metal finishing? Explain electroplating of Nickel by Watt's bath, mention the uses. (07 Marks)
 - What is cathodic protection? Explain the sacrificial anode method and impressed current method. (06 Marks)

Module-3

- Define GCV and NCV? How calorific value of a solid/liquid fuel is determined using bomb calorimeter. (07 Marks)
 - Define octane and cetane number? What is the objective of reforming of petrol and discuss the various methods of reforming. (07 Marks)
 - What are solar cells? Describe the method of purification of silicon by zone refining. (06 Marks)

important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

OR

- 6 a. A coal sample containing 92% C, 7% H₂ and 3% Ash is subjected to combustion in a bomb calorimeter. Calculate the Gross and Net calorific values. Given that mass of coal sample is 0.85×10^{-3} kg, mass of water in copper calorimeter is 2 kg, water equivalent of calorimeter is 0.75 kg, rise in temperature of water is 2.5°C, latent heat of steam is 2454 kJ/kg and specific heat of water is 4.187 kJ/kg/°C. (07 Marks)
- b. Describe the production of solar grade Si by union carbide process. (07 Marks)
- c. Explain the construction and working of a PV cell. (06 Marks)

Module-4

- 7 a. What are polymers? Illustrate the mechanism of addition polymerization by taking vinyl chloride as an example. (07 Marks)
- b. Describe the manufacture of (i) PMMA (ii) Kevlar. Mention the uses. (07 Marks)
- c. Define addition and condensation polymerization process with one example each. (06 Marks)

OR

- 8 a. Define Glass Transition Temperature. Explain any three factors affecting T_g. (07 Marks)
- b. What are Elastomers? Give the synthesis and applications of, (i) Silicone rubber (ii) Epoxy resin. (07 Marks)
- c. A polymer sample containing 50, 100 and 150 molecules having molar mass 2000 g/mol, 2500 g/mol and 3000 g/mol respectively. Calculate the number average and weight average molecular mass of polymer. (06 Marks)

Module-5

- 9 a. What is Boiler Feed Water? Explain the differences between scale and sludge formation in boiler. (07 Marks)
- b. What is desalination? Explain the desalination of sea water by electro dialysis. (07 Marks)
- c. What are nano materials? Explain the synthesis of nano material by Sol.gel method. (06 Marks)

OR

- 10 a. Define COD and BOD. In COD test 25.5 cm³ and 12.5 cm³ of 0.05 N FAS solution are required for blank and sample titration respectively. The volume of the test sample used is 26 cm³. Calculate the COD of the sample solution. (08 Marks)
- b. Describe the synthesis of nano materials by chemical vapor condensation process. (06 Marks)
- c. Write a note on CNT and Dendrimers. (06 Marks)

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14CHE12/22

First/Second Semester B.E. Degree Examination, Dec.2017/Jan.2018
Engineering Chemistry

Time: 3 hrs.

Max. Marks: 100

**Note: Answer any FIVE full questions, choosing
 ONE full question from each module.**

Module-1

- 1 a. What are reference electrodes? Describe the construction and working of calomel electrode. (05 Marks)
- b. What is an electrolyte concentration cell? Derive an expression for its cell potential. (05 Marks)
- c. Explain the following battery characteristics : i) Cell potential ii) Capacity iii) Electricity storage density. (06 Marks)
- d. Explain the construction and working of methanol – oxygen fuel cell with a neat sketch. (04 Marks)

OR

- 2 a. Derive Nernst equation for electrode polished. (05 Marks)
- b. How pH of a given solution is determined using glass electrode? (05 Marks)
- c. Discuss the construction, working and applications of Nickel – Metal hydride battery. (05 Marks)
- d. What are lithium ion batteries? Describe the construction and working of lithium ion battery. (05 Marks)

Module-2

- 3 a. Define corrosion. Discuss electrochemical theory of corrosion. (05 Marks)
- b. Discuss corrosion control by cathodic protection with reference to sacrificial anode method. (05 Marks)
- c. Discuss the following factors which influence the nature of electro-deposit :
 i) Current density ii) Temperature iii) pH. (06 Marks)
- d. Explain electroplating of decorative chromium. (04 Marks)

OR

- 4 a. Discuss the following factors affecting the rate of corrosion :
 i) Nature of corrosion product ii) ratio of anodic to cathodic area iii) polarization of anodic and cathodic regions. (06 Marks)
- b. Write a note on Tinning. (04 Marks)
- c. What is metal finishing? Mention technological importance of metal finishing. (04 Marks)
- d. Explain electroless plating of copper and the manufacturing double sided PCBs with copper. (06 Marks)

Module-3

- 5 a. What is calorific value of a fuel? Discuss the determination of calorific value of a solid fuel using bomb calorimeter with neat sketch. (06 Marks)
- b. Discuss the synthesis of petrol by Fischer – Tropsch process. (04 Marks)
- c. Write a note on : i) power alcohol ii) biogas. (04 Marks)
- d. What are the advantages and disadvantages of PV cells? Explain the production of solar grade silicon by union carbide process. (06 Marks)

OR

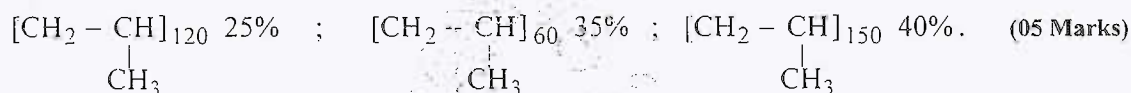
- 6 a. 0.73g of coal sample (%H = 5.0) was subjected to combustion in Bombs calorimeter. Mass of water taken in calorimeter was 1500g and water equivalent of calorimeter 470g. Initial temperature of water was 25°C and final temperature 27.3°C. Calculate GCV and NCV of coal sample. (Latent heat of steam 2454kJ/kg and specific heat of water = 4.187 kJ kg⁻¹ K⁻¹). (06 Marks)
- b. What is meant by petroleum cracking? Describe fluidized catalytic cracking process. (04 Marks)
- c. Write a note on : i) octane number ii) biodiesel. (04 Marks)
- d. What are photovoltaic cells? Explain construction and working of PV cell. (06 Marks)

Module-4

- 7 a. Define polymerization. Explain free radical mechanism for the formation of polyvinyl chloride. (06 Marks)
- b. What is glass transition temperature? Discuss any three factors that influence T_g. (04 Marks)
- c. Give the synthesis and application of : i) polyurethane and ii) polycarbonate. (05 Marks)
- d. What are conducting polymers? Explain mechanism of conduction in polyaniline. (05 Marks)

OR

- 8 a. Calculate number average and weight average molecular weight of polypropylene with following composition (Given atomic masses of C = 12, H = 1)



- b. How are structure property relationship of polymers related to crystalline and tensile strength? (05 Marks)
- c. Give the synthesis and application of : i) Silicone rubber and ii) epoxy resin. (05 Marks)
- d. What are polymer composites? Give the synthesis of carbon fiber. (05 Marks)

Module-5

- 9 a. Discuss boiler troubles with respect to scale and sludge formation. (05 Marks)
- b. Explain softening of water by ion exchange process. (05 Marks)
- c. How do you synthesize nano materials by i) precipitation method ii) chemical vapour condensation. (06 Marks)
- d. Write a note on nano wires. (04 Marks)

OR

- 10 a. Discuss boiler trouble with respect to priming and teaming. (05 Marks)
- b. What is sewage? Discuss the activated sludge process of sewage treatment. (05 Marks)
- c. How do you synthesis nano materials by i) Sol-gel process ii) gas condensation method. (06 Marks)
- d. Write a note on nano composites. (04 Marks)

CBCS Scheme

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15CHE12/22

First/Second Semester B.E. Degree Examination, Dec.2017/Jan.2018 Engineering Chemistry

Time: 3 hrs.

Max. Marks: 80

Note: Answer any FIVE full questions, choosing
ONE full question from each module.

Module-1

- 1 a. What is an ion selective electrode? Explain the method of determining the pH of a solution using glass electrode. (06 Marks)
- b. Discuss the construction and working of Zinc – air battery. (05 Marks)
- c. What are fuel cells? How it is different from a galvanic cell? Mention any two advantages of fuel cells. (05 Marks)

OR

- 2 a. Describe the construction and working principle of glass electrode. (06 Marks)
- b. Explain the construction and working of Ni – metal hydride batteries. (06 Marks)
- c. What are concentration cells? The emf of the cell $\text{Cu} | \text{CuSO}_4 (0.01\text{M}) || \text{CuSO}_4(\text{XM}) | \text{Cu}$ is 0.0295V at 25°C. Find the value of X. (04 Marks)

Module-2

- 3 a. Define corrosion. Explain electrochemical theory of corrosion. (06 Marks)
- b. What is Anodization? Explain anodization of aluminium. (06 Marks)
- c. Mention the difference between electroplating and electroless plating. (04 Marks)

OR

- 4 a. Write a note on polarization and over potential. (06 Marks)
- b. What is galvanization? Describe the galvanization process for iron. (05 Marks)
- c. Explain the process of electroplating of hard chromium. (05 Marks)

Module-3

- 5 a. Define calorific value. Explain how calorific value of solid fuel is determined by bomb calorimeter. (07 Marks)
- b. Explain the synthesis of petrol by Fischer – Tropsch process. (05 Marks)
- c. Write the advantages and disadvantages of PV cells. (04 Marks)

OR

- 6 a. What is knocking in IC engines? Explain its mechanism with chemical reactions. (06 Marks)
- b. Explain the modules, panels and arrays of PV cells. (06 Marks)
- c. What is reforming of petroleum? Give any three reactions involved in reformation. (04 Marks)

Module-4

- 7 a. What are conducting polymers? Discuss the conduction mechanism in polyaniline and mention any two applications. (07 Marks)
- b. What is glass transition temperature? Explain any 3 factors influencing T_g values. (05 Marks)
- c. Explain the synthesis and applications of silicon rubber. (04 Marks)

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2. Any revealing of identification, appeal to evaluator and/or equations written eg. 42+8 = 50, will be treated as malpractice.

OR

- 8 a. A polymer has the following composition 100 molecules of molecular mass 1000g/mol, 200 molecules of molecular mass 2000g/mol and 500 molecules of molecular mass 5000g/mol. Calculate the number and weight average molecular weight. (06 Marks)
- b. Explain the synthesis and applications of : i) PMMA and ii) Epoxy resin. (06 Marks)
- c. Distinguish between addition and condensation polymerization with example. (04 Marks)

Module-5

- 9 a. Define COD. Discuss the experimental determination of COD of waste water. (06 Marks)
- b. Define desalination. Explain desalination of sea water by electro dialysis process. (06 Marks)
- c. Write a note on carbon nano tubes. Mention its applications. (04 Marks)

OR

- 10 a. Discuss the boiler corrosion due to O_2 , CO_2 and $MgCl_2$ and its control. (07 Marks)
- b. Explain the synthesis of nano materials by sol-gel process. (05 Marks)
- c. Write a note on priming and foaming. (04 Marks)

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First/Second Semester B.E. Degree Examination, Dec.2017/Jan.2018
Basic Electronics

Time: 3 hrs.

Max. Marks:100

Note: Answer FIVE full questions, selecting ONE full question from each module.

Module – 1

1. a. Explain the operation of a full wave rectifier using centre tap transformer with the help of a circuit diagram and relevant waveforms. Show that its maximum efficiency is 81.2%. (10 Marks)
- b. Draw the common emitter circuit of a transistor and sketch the input and output characteristics. Explain the different regions of operation by indicating them on the characteristic curve. (07 Marks)
- c. Calculate I_C , I_E and β in a common emitter transistor circuit that has $\alpha = 0.98$ and $I_B = 100 \mu A$. (03 Marks)
2. a. With appropriate circuit diagram, explain the DC load line analysis of a semiconductor diode. (05 Marks)
- b. Explain the working of a negative clamper circuit. (05 Marks)
- c. A transformer with 10 : 1 turns ratio is connected to a halfwave rectifier with supply voltage of $220 \sin 210t$. If load and forward resistances are 500Ω and 10Ω respectively, calculate the average output voltage, dc output power, ac input power, rectification efficiency and peak inverse voltage. (05 Marks)
- d. With neat circuit diagrams, explain zener voltage regulator with load and no load. (05 Marks)

Module – 2

3. a. In a voltage divider bias circuit, $V_{CC} = 24V$, $R_1 = 180 K\Omega$, $R_2 = 56 K\Omega$, $R_E = 4.7 K\Omega$ and $R_C = 8.2 K\Omega$. Calculate the approximate levels of I_C , V_E , V_C and V_{CE} . (05 Marks)
- b. Explain how an opamp can be used as a, (i) Voltage follower, (ii) Integrator (iii) Differentiator and (iv) Summing amplifier. (10 Marks)
- c. Design an inverting and non inverting operational amplifier to have a gain of 15. (05 Marks)
4. a. What is an operational amplifier? List the ideal characteristics of an opamp. (06 Marks)
- b. The base bias circuit has $R_B = 470 K\Omega$, $R_C = 2.2 K\Omega$, $V_{CC} = 18 V$ and if the transistor has $\beta = 100$. Determine I_B , I_C and V_{CE} . (06 Marks)
- c. Design an adder circuit using an opamp to obtain an output voltage of $V_o = -[2V_1 + 3V_2 + 5V_3]$ (05 Marks)
- d. Explain slew rate and CMRR of an opamp. (03 Marks)

Module – 3

5. a. Realize a two input exclusive NOR gate using only NAND gates, indicating the output at each of the gate. (04 Marks)
- b. Realize a Full adder using two half adders and an OR gate. Write the truth table and expressions for sum and carry outputs. (08 Marks)
- c. State and prove DeMorgan's theorem. (04 Marks)
- d. Simplify the Boolean expression, $\overline{xy + xyz + x(y + xy)}$. (04 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
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- 6 a. Subtract $(1111.101)_2$ from $(1001.101)_2$ using 1's and 2's complement method. (04 Marks)
- b. Convert (i) $(2AD.E3)_{16}$ to its octal and decimal equivalents.
(ii) $(1456.72)_8$ to its decimal and Hexadecimal equivalents. (04 Marks)
- c. Explain the 'OR' and 'AND' operation using diodes. (06 Marks)
- d. Simplify and realize the expression using Basic gates.
 $Y = \overline{AB} + \overline{AC} + \overline{ABC} + (\overline{AB} + C)$ (06 Marks)

Module – 4

- 7 a. What is a flip flop? With the help of a logic diagram and truth table, explain the working of a clocked SR flip flop. (06 Marks)
- b. What is a transducer? Explain the working of LVDT. (05 Marks)
- c. What is a microprocessor? With a neat block diagram, explain the architecture of 8085 microprocessor. (09 Marks)
- 8 a. What is a Latch? With the help of a logic diagram and truth table, explain the working of a NAND gate latch. (06 Marks)
- b. List the differences between microprocessors and microcontrollers. (04 Marks)
- c. Write a short note on:
(i) Resistance thermometer and
(ii) Thermistor. (10 Marks)

Module – 5

- 9 a. What are the commonly used frequency ranges in communication systems? Mention the applications of each range. (04 Marks)
- b. Define amplitude modulation. Draw the AM signal and its spectrum. For an amplitude modulated wave, prove that total power is given by, $P_t = P_c \left[1 + \frac{\mu^2}{2} \right]$, where μ is the modulation index. (06 Marks)
- c. What is ISDN? Explain the services of ISDN. (05 Marks)
- d. With a neat block diagram, explain the optical fibre communication system. (05 Marks)
- 10 a. With a block diagram, explain typical cellular mobile radio unit. (05 Marks)
- b. What are the advantages of optical fibre communication? (05 Marks)
- c. Compare AM and FM modulation schemes. (04 Marks)
- d. An audio signal frequency signal $5 \sin 2\pi(1000)t$ is used to amplitude modulate a carrier of $100 \sin 2\pi(10^6)t$. Assume modulation index of 0.4. Find
(i) Sideband frequencies.
(ii) Band width required.
(iii) Amplitude of each side band
(iv) Total power delivered to a load of 100Ω (06 Marks)

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CBCS Scheme

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15ELN15/25

First/Second Semester B.E. Degree Examination, Dec.2017/Jan.2018

Basic Electronics

Time: 3 hrs.

Max. Marks: 80

Note: Answer any FIVE full questions, choosing one full question from each module.

Module-1

- 1 a. Explain the V-I characteristics of p-n junction diode. (05 Marks)
- b. The input voltage applied to the primary of a 4:1 step down transformer of a full wave centre tap rectifier is 230 V, 50 Hz is the load resistance is 600Ω and forward resistance is 20Ω . Determine the following for circuit shown in Fig.Q1(b).
- dc power output
 - Rectification efficiency
 - PIV

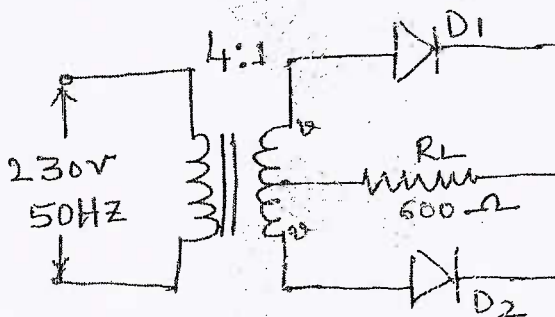


Fig.Q1(b)

- c. Explain CB configuration of BJT with characteristics. (06 Marks)

(05 Marks)

OR

- 2 a. Derive an expression for ripple factor and output dc voltage of a full wave rectifier. (06 Marks)
- b. Explain how a zener diode can be used as a voltage regulator. (05 Marks)
- c. Obtain the relationship between α and β . Calculate the value of I_C , I_E for a transistor that has $\alpha = 0.98$ and $I_B = 100 \mu A$. (05 Marks)

Module-2

- 3 a. What is DC load line? Explain collector to base biased method with necessary equation. (05 Marks)
- b. Define the following terms with respect to op-amp: (i) Slew rate, (ii) CMRR, (iii) PSRR. (05 Marks)
- c. Design an op-amp circuit that will produce an output equal to $-(4V_1 + V_2 + 0.1V_3)$. (06 Marks)

OR

- 4 a. With circuit diagram, explain the operation of voltage divider bias circuit with necessary equations. (06 Marks)
- b. Derive the expression of 3-i/p summing amplifier. (05 Marks)
- c. Draw the circuit of inverting op-amp. Derive the expression for the voltage gain. (05 Marks)

Module-3

- 5 a. Perform the following:
- Convert $(725.25)_{10} = (?)_{10} = (?)_2$
 - Subtract using 2's complement $(4 - 9)_{10}$
 - $(11010.101)_2 = (?)_8 = (?)_{16}$ (06 Marks)
- b. State and prove Demorgan's theorem. (05 Marks)
- c. Simplify the expression and realize using basic gates $\overline{A} \overline{B} C + \overline{A} B \overline{C} + A \overline{B} \overline{C} + A B C$. (05 Marks)

OR

- 6 a. Convert:
- $(172.625)_{10} = (?)_{16} = (?)_2$
 - $(BDCE)_{16} = (?)_2 = (?)_8$
 - $(10111101.0110)_2 = (?)_{10} = (?)_{16}$ (06 Marks)
- b. Simplify and realize the Boolean expression using two inputs NAND gates only $(A + \overline{B} + C)(\overline{A} + B + C)$. (05 Marks)
- c. Realize the full adder circuit for sum and carry using basic gates, explain the same with truth table. (05 Marks)

Module-4

- 7 a. Explain the operation of NAND and NOR latch with symbol, circuit and truth tube. (08 Marks)
- b. With neat block diagram, describe the architecture of 8051 microcontroller. (08 Marks)

OR

- 8 a. What is flip-flop? Explain clocked R-S flip-flop with diagram and truth table. (08 Marks)
- b. Explain the working principle of microcontroller based stepper motor control system. (08 Marks)

Module-5

- 9 a. What are the basic elements of communication system? Explain with neat block diagram. (06 Marks)
- b. Distinguish between Amplitude Modulation (AM) and Frequency Modulation (FM). (04 Marks)
- c. Explain the construction and the principle of operation of LVDT. (06 Marks)

OR

- 10 a. With relevant waveforms, explain amplitude modulation. (06 Marks)
- b. What is a transducer? Mention four important parameters of an electrical transducer. (04 Marks)
- c. Write short notes on:
- Piezo electric transducer
 - Photo electric transducer. (06 Marks)

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CBCS Scheme

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17ELN15

First Semester B.E. Degree Examination, Dec.2017/Jan.2018

Basic Electronics

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing one full question from each module.

Module-1

- 1 a. Explain the operation of PN junction diode under forward and reverse biased conditions, with the help of VI characteristics curve. (06 Marks)
- b. Derive the relation between α and β . Calculate I_C and I_E for transistor that has $\alpha_{dc} = 0.98$ and $I_B = 100 \mu A$. (06 Marks)
- c. With a neat circuit diagram and waveforms, explain the working of centre-tap full wave rectifier and derive the efficiency for the same. (08 Marks)

OR

- 2 a. With a neat diagram, explain the operation of PNP and NPN transistor. (08 Marks)
- b. A half wave rectifier from a supply $230 V$ 50 Hz with step down transformer ratio 3:1 to a resistive load of $10 K\Omega$. The diode forward resistance is 75Ω and transformer secondary is 10Ω . Calculate the DC current, DC voltage, efficiency and ripple factor. (06 Marks)
- c. With neat circuit diagram, explain the common emitter circuit and sketch the input and output characteristics. (06 Marks)

Module-2

- 3 a. With a necessary equation and circuit, explain the base-bias transistor circuits. (06 Marks)
- b. Design an Adder using op-amp to give the output voltage,
 $V_o = -[2V_1 + 3V_2 + 5V_3]$ (06 Marks)
- c. Derive the equations for output voltage for an inverting amplifier and an integrator. (08 Marks)

OR

- 4 a. Explain the characteristics of an ideal op-amp. Mention the applications. (06 Marks)
- b. Accurately analyze the voltage divider bias which has $V_{CC} = 18 V$, $R_1 = 33 K\Omega$, $R_2 = 12 K\Omega$ and $R_E = 1 K\Omega$. Determine V_E , V_C , V_{CE} , I_C and Q point. when transistor $h_{fe} = 200$. (08 Marks)
- c. Write short notes on op-amp virtual ground concept. (06 Marks)

Module-3

- 5 a. Perform the following:
 - i) Convert $(57345)_{10} = (\quad)_{16}$
 - ii) Subtract $(28)_{10} - (19)_{10}$ using 2's complement method. (06 Marks)
- b. Realize $Y = AB + CD + E$ using NAND gate. (06 Marks)
- c. Explain the full adder circuit with truth table. Realize the circuit for sum and carry using logic gates. (08 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
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OR

- 6 a. Perform the following:
- Convert $(FA27D)_{16} = ()_2 \rightarrow = ()_8 = ()_{10}$
 - Subtract $10.0101 - 101.1110$ using 1's complement method. (06 Marks)
- b. $Y = A + \bar{A}B + ABC$ simplify and implement using logic gates and NOR gates. (06 Marks)
- c. State and prove De Morgan's theorem using two variable. (08 Marks)

Module-4

- 7 a. Bring out differences between flip flops and latches. (04 Marks)
- b. Explain SR flipflop with circuit diagram and truth table. (06 Marks)
- c. With a neat block diagram explain the architecture of 8051 microcontroller. (10 Marks)

OR

- 8 a. Explain the operation of NAND gate latch with circuit and truth table. (10 Marks)
- b. What is stepper motor? With a neat block diagram, explain the working principle of microcontroller based stepper motor control system. (10 Marks)

Module-5

- 9 a. Define communication. With neat block diagram, explain the elements of communication system. (06 Marks)
- b. Derive an expression for amplitude modulation and draw the necessary waveforms. (08 Marks)
- c. What is transducer? Compare the active and passive transducers. (06 Marks)

OR

- 10 a. Bring out the difference between amplitude modulation and frequency modulation. (06 Marks)
- b. If a FM wave represented by the equation $V = 10\sin(8 \times 10^8 + 4\sin 1000t)$, calculate:
- Carrier frequency
 - Modulating frequency
 - Modulation index
 - Band width
- (06 Marks)
- c. With necessary diagram and equations, explain the following:
- Piezo-electric transducer
 - LVDT. (08 Marks)

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CBCS Scheme

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17PCD13

First Semester B.E. Degree Examination, Dec.2017/Jan.2018

Programming in C and Data Structures

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing one full question from each module.

Module-1

- 1 a. List all the logical operators and write a C program to demonstrate working of these logical operators. (10 Marks)
- b. Explain structure of C program with an example. (05 Marks)
- c. Classify the following as valid and invalid variable. If invalid give reasons. (05 Marks)
 - i) r143
 - ii) help+me
 - iii) auto
 - iv) hello _how
 - v) *a

OR

- 2 a. What is a token? What are different types of tokens available in c language? Explain. (10 Marks)
- b. Write an algorithm and program to find biggest of three numbers. (10 Marks)

Module-2

- 3 a. Write a C program to find the roots of quadratic equation. (10 Marks)
- b. Explain syntax of while statement. Write a C program to check the given number is palindrome or not. (10 Marks)

OR

- 4 a. Explain break and continue statements with respect to do-while, while and for loop with suitable examples. (10 Marks)
- b. Print the following series: (05 Marks)

```
1
1 2
1 2 3
1 2 3 4
```
- c. Explain ternary operator with suitable example. (05 Marks)

Module-3

- 5 a. Define an array. Write a syntax for declaring two dimensional array and initialize the same with suitable example. (10 Marks)
- b. Write a C program to find sum of array elements by passing array as function argument. (05 Marks)
- c. Explain any two string manipulation functions. (05 Marks)

OR

- 6 a. Explain recursion with an example. (06 Marks)
- b. Write a C program to sort the elements of a given array using bubble sort. (08 Marks)
- c. Write a C program to concatenate two strings without using built-in function strcat(). (06 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg. 42+8 = 50. will be treated as malpractice.

Module-4

- 7 a. What is structure? Explain its declaration and initialization with an example. (06 Marks)
b. Explain any four file operations with an example. (06 Marks)
c. Write a C program to pass structure variable as function argument. (08 Marks)

OR

- 8 a. Write a C program to store and print Name, USN, SubjectName and IA Marks of student using structure. (10 Marks)
b. Explain typedef with suitable example. (05 Marks)
c. Explain how the input is accepted from file and displayed. (05 Marks)

Module-5

- 9 a. What is pointer? Give advantages and disadvantages of pointers in C. (07 Marks)
b. Explain malloc() and calloc() functions with examples. (06 Marks)
c. What is queue? Explain its operations. (07 Marks)

OR

- 10 a. Write a C program to swap two numbers using call by address. (08 Marks)
b. What are primitive and non-primitive data types and explain. (07 Marks)
c. Define stack. List applications of stack. (05 Marks)

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CBCS Scheme

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15PCD13/23

First/Second Semester B.E. Degree Examination, Dec.2017/Jan.2018

Programming in C and Data Structures

Time: 3 hrs.

Max. Marks: 80

Note: Answer any FIVE full questions, choosing one full question from each module.

Module-1

- 1 a. What is a variable? Explain the rules for constructing variables in C language. Give examples for valid and invalid variables. (06 Marks)
- b. Write C expressions corresponding to the following (Assume all quantities are of same type):
- i) $A = \frac{-b + \sqrt{b^2 - 4ac}}{2a}$ ii) $B = e^{x^2 - 20}$ iii) $C = \frac{x}{b+c} + \frac{y}{b-c}$
- iv) $D = \sqrt{2\pi n}$ v) $E = \sin \theta$ vi) $F = \sin\left(\frac{b}{\sqrt{a^2 + b^2}}\right)$ (06 Marks)
- c. Write a C program to find area of a circle. (04 Marks)

OR

- 2 a. List all the operators supported in C. Explain relational, logical and bitwise operators. (08 Marks)
- b. Write a C program to find area of a triangle, when we know the lengths of all three of its sides. (08 Marks)

Module-2

- 3 a. List all the conditional control statements used in C. Explain if...else and nested if statements with example for each. (08 Marks)
- b. Write a C program to simulate simple calculator that performs arithmetic operations using switch statement. Error message should be displayed, if any attempt is made to divide by zero. (08 Marks)

OR

- 4 a. Explain the different types of loops used in C with syntax and example for each. (08 Marks)
- b. Write a C program to find the sum of series $1 + x + x^2 + x^3 + \dots + x^n$. (08 Marks)

Module-3

- 5 a. What is an array? Explain different methods of initialization of single dimensional array. (08 Marks)
- b. Write a C program to sort the given array elements in ascending order by using bubble sort. (08 Marks)

OR

- 6 a. Write a C program to compute the factorial of a given number 'n' using recursion. (08 Marks)
- b. Explain any four string manipulation library functions with example. (08 Marks)

Module-4

- 7 a. Write a C program to input the following details of 'N' students using structure:
Roll No: integer, Name : string, Marks : float, Grade : Char
Print the names of the students with marks ≥ 70.0 . (08 Marks)
- b. Explain the following file operations along with syntax:
i) fopen() ii) fclose() iii) fscanf() iv) fprintf() (08 Marks)

OR

- 8 a. Write a C program to maintain a record of 'n' employee detail using an array of structures with three fields (id, name, salary) and print the details of employees whose salary is above Rs.10,000. (08 Marks)
- b. Explain structure within a structure with an example. (08 Marks)

Module-5

- 9 a. Define a pointer. Explain with an example, the declaration and initialization of a pointer variable. (06 Marks)
- b. Develop a C program to read two numbers and function to swap these numbers using pointers. (06 Marks)
- c. Explain the following C functions along with syntax: i) malloc() ii) calloc() (04 Marks)

OR

- 10 a. Explain stack and queue data structures along with their applications. (08 Marks)
- b. Explain any four preprocessor directives in C language with example for each. (08 Marks)

CBCS Scheme

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Question Paper Version : D

First Semester B.E. Degree Examination, Dec.2017/Jan.2018

Environmental Studies

(COMMON TO ALL BRANCHES)

Time: 2 hrs.]

[Max. Marks: 30

INSTRUCTIONS TO THE CANDIDATES

1. Answer all the fifty questions, each question carries **ONE** mark.
2. Use only **Black ball point pen** for writing / darkening the circles.
3. **For each question, after selecting your answer, darken the appropriate circle corresponding to the same question number on the OMR sheet.**
4. Darkening two circles for the same question makes the answer invalid.
5. **Damaging/overwriting, using whiteners** on the **OMR** sheets are strictly prohibited.

-
1. India has the largest share of which of the following
a) Manganese b) Mica c) Copper d) Diamond
 2. Forests prevent soil erosion by binding soil particles in their
a) Stems b) Roots c) Leaves d) Buds
 3. Which of the following is the most environmental friendly agriculture practice
a) using chemical fertilizers b) using insecticides
c) organic farming d) None of these
 4. Mining means
a) To conserve minerals b) To check pollution
c) To extract minerals and ores d) None of these
 5. Which of the following is absorbed by green plants from atmosphere
a) Carbon -di - oxide b) Water c) Nutrients d) All of the above
 6. Which atmospheric sphere is closest to earth surface
a) Troposphere b) Stratosphere c) Mesosphere d) Exosphere
 7. The largest reservoir of Nitrogen in our plant is
a) Oceans b) Atmosphere c) Biosphere d) Fossil fuels

8. In an Ecosystem, the flow of energy is
a) Bidirectional b) Cyclic c) Unidirectional d) Multidirectional!
9. Which of the following conceptual spheres of the environment is having the least storage capacity for matter
a) Atmosphere b) Lithosphere c) Hydrosphere d) Biosphere
10. The term Environment has been derived from the French word _____ which means to encircle or surround.
a) Environ b) Oikos c) Geo d) Aqua
11. Remote sensing technique deals with the detection of recording of a selected portion of
a) Emission spectrum b) Light spectrum
c) Photo spectrum d) Electro magnetic spectrum
12. RADAR stands for
a) Radio & Distance Ranging b) Radio detection & Ranging
c) Ranging & Detection Arrangement d) Radio detection Recorder
13. Which is not a commonly using coding scheme for images
a) JPEG b) GIF c) MP3 d) Tiff
14. DBMS stands for
a) Database Management System b) Database Monitoring system
c) Database Manufacturing system d) Database Mixing station
15. GIS stands for
a) Geostationary interact sector b) Geographical information system
c) Geotechnical information society d) Geothermal investigation site
16. Which State is having highest women literacy rate in India
a) Karnataka b) Punjab c) Rajasthan d) Kerala
17. In water treatment, alum is used for
a) Softening b) Coagulation c) Filtration d) Disinfection
18. World Ozone day is being celebrated on
a) September 5th b) October 15th c) September 11th d) September 16th
19. Acid rain has been increasing day by day due to
a) Urbanisation b) Industrialization
c) Increase in vehicle population d) None of these
20. Reduction in brightness of the famous Taj Mahal is due to
a) Global warming b) Air pollution c) Ozone depletion d) Afforestation
21. Primary cause of Acid rain around the World is due to
a) Carbon-di-oxide b) Sulphur-di-oxide c) Carbon-Monoxide d) Ozone

- 22. Petroleum based vehicles emit tracer of
a) CO & NO₂ b) SPM c) Aldehydes d) CH_n

- 23. Definition of Noise is
a) Loud sound b) Unwanted sound
c) Constant sound d) Sound on high frequency

- 24. Smog is
a) A natural phenomenon b) Combination of smoke & fog
c) Colourless d) All the above

- 25. The liquid waste from kitchen and bathroom is called
a) Sullage b) Domestic sewage c) Storm waste d) Run off

- 26. BOD means
a) Bio chemical oxygen demand b) Chemical oxygen demand
c) Bio – physical oxygen demand d) All the above

- 27. Highest producer of oil and petroleum is
a) Middle East countries b) America
c) China d) India

- 28. Nuclear waste is active for
a) 5 year b) 10 years c) 50 years d) Centuries

- 29. Nuclear power plant in Karnataka is located at
a) Bhadravathi b) Sondur c) Raichur d) Kaiga

- 30. Direct conversion of solar energy is attained by
a) Solar photo voltaic system b) Solar diesel hybrid system
c) Solar thermal system d) Solar air heater

CBCS SCHEME

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15CHE12/22

First/Second Semester B.E. Degree Examination, June/July 2018 Engineering Chemistry

Time: 3 hrs.

Max. Marks: 80

Note: Answer any FIVE full questions, choosing one full question from each module.

Module-1

- 1 a. Derive Nernst's equation for single electrode potential of an electrode considering reduction reaction. (05 Marks)
- b. Define electrolyte concentration cell. Calculate the e.m.f of the given concentration cell at 298 K
 $\text{Ag} | \text{AgNO}_3 (0.02 \text{ M}) || \text{AgNO}_3 (2 \text{ M}) | \text{Ag}$ (05 Marks)
- c. Describe construction, working and application of methanol- O_2 fuel cell using H_2SO_4 as electrolyte (06 Marks)

OR

- 2 a. Define reference electrode. Describe construction and working of Calomel electrode with reactions. (05 Marks)
- b. Describe construction and working of Zn-Air battery. Mention its application. (05 Marks)
- c. Explain the following battery characteristics :
(i) Capacity (ii) Cycle life (iii) Energy-efficiency (06 Marks)

Module-2

- 3 a. Explain electrochemical theory of corrosion with its mechanism taking Iron as an example. (06 Marks)
- b. Describe the following factors which affects the rate of corrosion:
(i) Nature of corrosion product
(ii) Ratio of Anodic to cathodic area
(iii) pH of the medium. (06 Marks)
- c. Describe electroplating of Nickel by Watt's bath. Mention its applications. (04 Marks)

OR

- 4 a. Define Metal finishing. Describe the technological importance of metal finishing. (05 Marks)
- b. Describe electroless plating of copper on PCB's with plating reaction. Mention its application. (05 Marks)
- c. Explain Differential Aeration Corrosion with an example. (06 Marks)

Module-3

- 5 a. Describe Bomb calorimetric method for determination of calorific value of a fuel. (05 Marks)
- b. What do you mean by reforming of petroleum? Give any three reactions involved in reforming process. (05 Marks)
- c. Explain the production of solar grade silicon by Union carbide method. (06 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg. 42+8 = 50, will be treated as malpractice.

OR

- 6 a. Calculate the gross or net calorific value of a coal sample from the following data obtained from Bomb calorimetric experiment.
 (i) Weight of coal = 0.75 kg ; (ii) Weight of water taken in calorimeter = 1200 kg ;
 (iii) Water equivalent of calorimeter = 400 kg ; (iv) Rise in temperature = 1.8°C ;
 (v) Hydrogen in coal sample = 2% (vi) Latent heat of steam = 587×4.2 kJ/kg ;
 (vii) Specific heat of water = 4.187 kJ/kg/°C (06 Marks)
- b. Explain construction, working and application of photovoltaic cell. (06 Marks)
- c. Explain the purification of silicon by zone-refining technique. (04 Marks)

Module-4

- 7 a. Explain the free radical mechanism for addition polymerization taking Vinyl chloride as an example. (05 Marks)
- b. Explain the synthesis and application of the following :
 (i) Plexiglass (PMMA) (ii) Polyurethane (06 Marks)
- c. Define Glass transition temperature. Describe the following factors which affects T_g value
 (i) Flexibility of polymer chain (ii) Intermolecular force of attraction. (05 Marks)

OR

- 8 a. Calculate number average and weight average mole wt. of a polymer in which 200 molecules of 1000 mole mass and 300 molecules of 2000 mole mass and 500 molecules of 3000 mole mass are present respectively. (06 Marks)
- b. Explain the synthesis, properties and application of silicon rubber. (05 Marks)
- c. What are polymer composites? Describe the synthesis and application of Kevlar fibre. (05 Marks)

Module-5

- 9 a. Explain scale and sludge formation in the boiler. Mention its ill effects. (05 Marks)
- b. Explain the softening of water by ion-exchange resin method. (05 Marks)
- c. Describe the Sol-Gel process for synthesis of Nanomaterial. (06 Marks)

OR

- 10 a. What is desalination of water? Explain the reverse-Osmosis process for desalination of water. (05 Marks)
- b. Write short notes on Fullerene and Dendrimers. (06 Marks)
- c. Explain the synthesis of Nanomaterial by chemical vapour condensation method. (05 Marks)

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CBCS Scheme

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17CHE12/22

First/Second Semester B.E. Degree Examination, June/July 2018 Engineering Chemistry

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing one full question from each module.

Module-1

- 1 a. Define single electrode potential. Derive Nernst equation. (07 Marks)
b. Describe the construction and working of zinc-air battery. Mention any two applications. (07 Marks)
c. Define concentration cells. The cell potential of Ag concentration cell is $\text{Ag}/\text{AgNO}_3(0.002\text{M})/(\text{AgNO}_3(\text{XM})/\text{Ag}$ is 0.0751V at 25°C. Write the cell reactions and calculate the value of X. (06 Marks)

OR

- 2 a. What are reference electrodes? How will you determine the electrode potential of unknown electrode using calomel as reference electrode? (07 Marks)
b. Explain the construction and working of Lithium ion battery. Mention its application. (07 Marks)
c. What are fuel cells? Explain the construction and working of methanol-oxygen fuel cell. (06 Marks)

Module-2

- 3 a. Define corrosion. Explain electrochemical theory of corrosion by taking iron as example. (07 Marks)
b. What is galvanizing? Explain the various steps involved in it. (07 Marks)
c. Explain electroplating of Nickel by Watts Bath and mention its uses. (06 Marks)

OR

- 4 a. Explain stress corrosion and water line. (07 Marks)
b. Explain the following: i) polarization ii) over voltage. (06 Marks)
c. What is electroless plating? Explain the electroless plating of copper. (07 Marks)

Module-3

- 5 a. A coal sample contains 5.8% H_2 is subjected to combustion in a bomb calorimeter. Calculate the gross and net calorific values. Given that mass of coal sample is 0.78×10^{-3} kg, mass of water in copper calorimeter is 2.5 kg, water equivalent of calorimeter is 0.83 kg rise in temperature is 3.2°C, latent heat of steam is 2454 kJ/kg and specific heat 4.187 kJ/kg/°C. (07 Marks)
b. Define knocking. Explain the mechanism of knocking and mention its ill effects. (07 Marks)
c. Define photovoltaic cell. Describe the construction and working of photo-voltaic cell with a neat diagram. (06 Marks)

OR

- 6 a. Define cracking. Explain fluidized catalytic cracking with a neat diagram. (07 Marks)
b. Explain the Fischer-Tropsch process of synthesis of petrol. (07 Marks)
c. Describe the method of purification of silicon by zone refining. (06 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and/or equations written eg. 42+8 = 50, will be treated as malpractice.

Module-4

- 7 a. Distinguish between addition and condensation polymerization reactions with suitable examples. (06 Marks)
- b. Explain the mechanism of addition polymerization by taking vinyl chloride as example. (07 Marks)
- c. A polymer sample containing 100, 150 and 200 molecules having molar mass 3000 g/mol, 3500 g/mol and 4000 g/mol respectively. Calculate the number average and weight average molecular mass of the polymer. (07 Marks)

OR

- 8 a. Define T_g . Explain any three factors affecting T_g . (07 Marks)
- b. Describe the synthesis of (i) Polyurethane (ii) Silicone rubber. Mention the application. (07 Marks)
- c. What are adhesives? Explain the synthesis and application of epoxy resins. (06 Marks)

Module-5

- 9 a. What is boiler feed water? Explain priming and foaming in boilers. (06 Marks)
- b. Define COD. In a COD tests 32.7 cm^3 and 23.5 cm^3 of 0.02N FAS solution are required for blank and sample titration respectively. The volume of test sample is 25 cm^3 . Calculate the COD of solution. (07 Marks)
- c. Explain the synthesis of nanomaterial by sol-gel process. (07 Marks)

OR

- 10 a. Define BOD. Explain the determination of BOD. (07 Marks)
- b. What is desalination? Explain the desalination of seawater by electro dialysis. (07 Marks)
- c. Write a note on nano composites and fullerenes. (06 Marks)

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14PCD13/23

First/Second Semester B.E. Degree Examination, June/July 2018
Programming in C and Data Structures

Time: 3 hrs.

Max. Marks:100

Note: Answer FIVE full questions, selecting ONE full question from each module.

Module – 1

- 1 a. Explain basic concepts of C program. (08 Marks)
- b. Define variable. Give example. List out any four rules to be followed while using a variable. (06 Marks)
- c. Write a C program to swap the contents of two variables. (06 Marks)
- 2 a. Explain relational operators in C with example. (08 Marks)
- b. Define Pseudocode. What is its purpose? Write pseudocode to display numbers from 1 to 10 along with their squares. (06 Marks)
- c. What would be the value of 'a' after the execution of the following expressions:
 (i) $a += (a++) + (++a)$ (ii) $a = (--a) - (a--)$ (06 Marks)

Module – 2

- 3 a. Explain single selection and two way selection in C language along with syntax. (08 Marks)
- b. What is purpose of switch statement? Explain with syntax. (04 Marks)
- c. Write a C program to simulate the working of a calculator with addition, subtraction, multiplication and division. Use switch. (08 Marks)
- 4 a. How do you perform looping in C? Give the syntax of loop constructs. (08 Marks)
- b. Explain the following statements supported in C – break, continue, goto. (06 Marks)
- c. Write a C program to find the sum of individual digits of the given number. (06 Marks)

Module – 3

- 5 a. Define array. List four properties of an array. Explain declaration of single dimensional array with example. (08 Marks)
- b. Explain call by value and call by reference with example. (06 Marks)
- c. Write a program to accept a string and check whether it is palindrome or not. (06 Marks)
- 6 a. Explain function declaration, function definition and function call. (06 Marks)
- b. Explain any four string library functions with example. (08 Marks)
- c. Write a recursive program to find factorial of a number. (06 Marks)

Module – 4

- 7 a. What is a structure? Give its syntax. How to declare a structure? (06 Marks)
- b. Using structures with a C program that takes book ID, Author name, Publisher name and price for a book as input and prints the same information as output. (08 Marks)
- c. What is a text file? What are various steps to be performed when we do file manipulations? (06 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
 2. Any revealing of identification, appeal to evaluator and /or equations written eg. 42+8 = 50, will be treated as malpractice.

- 8 a. Write a program to open a file in read only mode. (08 Marks)
b. Explain array of structures with example. (06 Marks)
c. What is the use of fscanf () and fprintf () function? Explain with syntax. (06 Marks)

Module – 5

- 9 a. What are preprocessor directives and symbolic constants? Write a program to show the usage of symbolic constant. (08 Marks)
b. List out any four advantages of preprocessor. (04 Marks)
c. What is dynamic memory allocation? Write and explain different dynamic memory allocation in C. (08 Marks)
- 10 a. Write a C program to compare two strings using pointers. (08 Marks)
b. Define Stack and Queue. Outline their applications. (06 Marks)
c. Explain any two preprocessor directives with example. (06 Marks)

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CBCS Scheme

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15PCD13/23

First/Second Semester B.E. Degree Examination, June/July 2018 Programming in C and Data Structures

Time: 3 hrs.

Max. Marks: 80

Note: Answer any FIVE full questions, choosing one full question from each module.

Module-1

- 1 a. What is pseudocode and what is the purpose of pseudocode? (06 Marks)
- b. Explain the basic structure of a 'C' program and write a 'C' program to calculate the area of rectangle. (10 Marks)

OR

- 2 a. Which are 2 important point to declare variable? Explain with syntax. (06 Marks)
- b. What is data type and explain all different data types with syntax and examples. (10 Marks)

Module-2

- 3 a. How many decision control statements are there in 'C' language? List out all types of control statements. (04 Marks)
- b. Explain if-else control statement with syntax and flow chart. (06 Marks)
- c. Explain else-if ladder control statement with syntax and flow chart. (06 Marks)

OR

- 4 a. Explain 'for' loop control statement with syntax and flow chart. (06 Marks)
- b. What is the difference between while-do loop and do-while loop? Explain with syntax and example. (06 Marks)
- c. Write a 'C' program to find the sum of 'N' natural numbers using 'for' loop. (04 Marks)

Module-3

- 5 a. Define array. Explain how one-dimensional array is declared and initialized with syntax. (06 Marks)
- b. Write a 'C' program to read N integers (+Ve, -Ve and zero) into an array:
 - i) Find the sum of -Ve integers
 - ii) Find the sum of +Ve integers
 - iii) Find the average of all integers(10 Marks)

OR

- 6 a. Define string. List out all string manipulation functions. (06 Marks)
- b. Write a 'C' program to read 2-strings and compare both the strings with specified number of characters and with case sensitive and without case sensitive. (10 Marks)

Module-4

- 7 a. What is structure? Write a 'C' program to read name, USN from main function and print the name, USN using structure. (06 Marks)
- b. Explain type defining a structure with two different techniques and also with syntax. (06 Marks)
- c. What are different operations that can be performed on the file? Explain fscanf operation with syntax? (04 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg. 42+8 = 50, will be treated as malpractice.

OR

- 8 a. Write a 'C' program to count the number of characters, number of lines and number of white spaces from a file. (10 Marks)
- b. What is meant by array of structure? How it can be created? (06 Marks)

Module-5

- 9 a. What is pointer? How pointers are declared and initialized? Explain with syntax. (06 Marks)
- b. Write a 'C' program to access the value of variable 'a' and 'b' through the pointer 'p' and 'q' by *p and *q respectively. (05 Marks)
- c. Write a 'C' program by using single pointer 'p' is made to point variable a, b and c respectively and display the value of a, b, and c through single pointer p. (05 Marks)

OR

- 10 a. What are preprocessors directives? Explain the advantages of preprocessor directives with examples. (08 Marks)
- b. Explain conditional compilation preprocessor directives with suitable program to find the area of circle, by giving the radius of circles. (08 Marks)

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CBCS SCHEME

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17PCD13/23

First/Second Semester B.E. Degree Examination, June/July 2018 Programming in C and Data Structures

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing one full question from each module.

Module-1

- 1 a. Write basic structure of C program and explain its different sections. (08 Marks)
b. What are the rules to be followed to declare an identifier with example? (04 Marks)
c. Write a note on different types of Type conversions, with an example/program for each. (08 Marks)

OR

- 2 a. Define C – tokens. List and explain different C – tokens. (08 Marks)
b. Write a C program to convert number of days into months and days. (Hint : Assume a month has 30 days) (For e.g. 45 days = 1 month and 15 days). (04 Marks)
c. Write a note on Operator precedence and Associativity. (08 Marks)

Module-2

- 3 a. An Electric power distribution company charges its domestic consumers as follows :

Consumption Units	Rate of charge
0 - 200	Rs 0.50 per units
201 - 400	Rs 100 + Rs 0.65 per unit excess of 200
401 - 600	Rs 230 + Rs 0.80 per unit excess of 400
601 - above	Rs 390 + Rs 1.00 per unit excess of 600

- Write a C program to compute and print amount to be paid by the customer. (08 Marks)
b. Write the Syntax of different looping control constructs and explain their working. (08 Marks)
c. Distinguish between the following :
i) goto and if ii) break and continue. (04 Marks)

OR

- 4 a. Write the Syntax of nested if ...else statement and explain its working. (08 Marks)
b. Write a C program to convert a decimal number to binary form. (08 Marks)
c. Differentiate between do...while loop and while loop, with the help of Syntax. (04 Marks)

Module-3

- 5 a. Write a C program to search a key integer element in the given array of N elements using binary search technique. Print the output with suitable headings. (08 Marks)
b. Distinguish between the following types of variables :
i) Automatic ii) Global iii) Static iv) Register. (08 Marks)
c. Explain the importance of strcmp () and strcat () string manipulation functions. (04 Marks)

OR

- 6 a. Write the Syntax and give an example for each : (08 Marks)
i) Declaration of One – dimensional array ii) Initialization of One – dimensional array
iii) Declaration of Two – dimensional array iv) Initialization of Two – dimensional array.

1 of 2

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg. 42+8 = 50, will be treated as malpractice.

- b. Write a C program to find n^{th} term of Fibonacci series using recursion. (08 Marks)
 c. Write a C program to find length of a string without using `strlen()` function. (04 Marks)

Module-4

- 7 a. Write a note on the following with an example for each : (08 Marks)
 i) Arrays of structures ii) Arrays within structures iii) Structures within structures.
 b. Write a C program to count the number of characters, Number of lines and number of white spaces from a file. (08 Marks)
 c. Create structure `st_record` having members student Name (Sname) and student marks (Smarks). Write a C program which reads name and marks of two students and compare whether both students are same. (04 Marks)

OR

- 8 a. Mention importance of the following input/output file operations along with Syntax and example for each : (08 Marks)
 i) `fscanf()` ii) `fprintf()` iii) `fopen()` iv) `fclose()`.
 b. Create a structure `st_record` having members to store name of student, marks scored in three different subjects. Create a user defined function `cal-average()` to compute average marks scored by the student. Write a C program which reads details of a student and prints whether a student is pass or fail. (08 Marks)
 c. Mention syntax and give an example for the following : (04 Marks)
 i) Structure definition ii) Structure variable declaration.

Module-5

- 9 a. Write Syntax and give an example of function declaration of the following : (08 Marks)
 i) `malloc()` ii) `calloc()` iii) `realloc()` iv) `free()`.
 b. Write a note on categories of pre – processor directives. (08 Marks)
 c. List two disadvantages of : i) Arrays ii) Linked lists. (04 Marks)

OR

- 10 a. Write a note on the following data structures : (08 Marks)
 i) Linked list ii) Stack.
 b. Write a C program which copies contents of a string to another using pointer as function parameter. Print copied string. (08 Marks)
 c. Mention significance of compiler control Pre – processor directives. (04 Marks)

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14ELN15/25

First/Second Semester B.E. Degree Examination, June/July 2018
Basic Electronics

Time: 3 hrs.

Max. Marks:100

Note: Answer any FIVE full questions, selecting ONE full question from each module.

Module-1

- 1 a. Draw and explain the V-I characteristics of Si and Ge diode. (06 Marks)
- b. A Zener diode with $V_Z = 4.3V$ and Z_Z equal to 22Ω when $I_Z = 20mA$. Calculate the upper and lower limits of V_Z when I_Z changes by $\pm 5 mA$. (06 Marks)
- c. Sketch the typical input and output characteristics for the CE configuration. Briefly explain the three regions of operation. (08 Marks)

OR

- 2 a. Explain the working of positive clamping. (05 Marks)
- b. A diode with $V_F = 0.7V$ is connected as a Half wave rectifier. The load resistance is 500Ω , and the (r.m.s) ac input is 22v. Determine the peak output voltage, the peak load current, and the diode peak inverse voltage. (05 Marks)
- c. Calculate I_C and I_E for a transistor that has $\alpha_{dc} = 0.98$ and $I_B = 100\mu A$. Determine the value of β_{dc} (or h_{FE}) for the transistor. (04 Marks)
- d. With a circuit diagram, explain the working of a centre tapped FWR. (06 Marks)

Module-2

- 3 a. List the factors, which affect the stability of operating point. (04 Marks)
- b. For CE – circuit shown in Fig Q3 (b) draw the DC load line and obtain Q-point values. Assume $\beta = 100$ and $V_{BE} = 0.7V$.

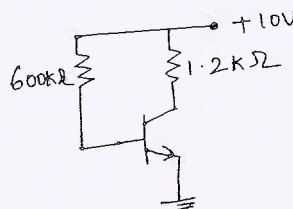


Fig Q3(b)

- c. With a neat diagram, explain how op-amp can be used as differentiator (04 Marks)
- d. For the op-amp circuit of Fig Q3(d), find the output voltage and closed loop gain.

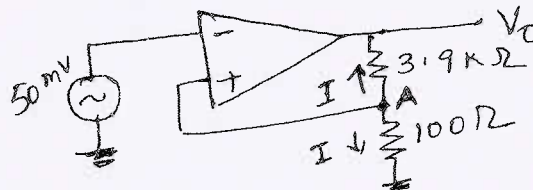


Fig Q3(d)

(04 Marks)

OR

- 4 a. With a neat circuit diagram, explain the voltage divider biasing circuit and derive the expression for V_{CE} and I_C . (08 Marks)
- b. List the characteristics of an ideal op-amp and draw the three input inverting summer circuit using an op-amp and derive an expression for output voltage. (08 Marks)

- c. Find the output of the op-amp circuit shown in Fig Q4(c) (04 Marks)

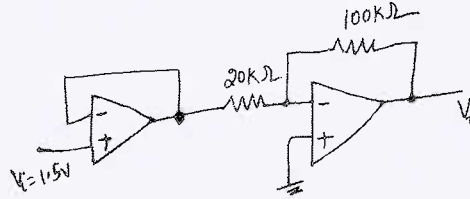


Fig Q4(c)

Module-3

- 5 a. Convert $(BCDE)_{16} = ()_2 = ()_8 = ()_{10}$. (03 Marks)
 b. Subtract $(57)_{10}$ from $(43)_{10}$ using 2's complement form. (05 Marks)
 c. Simplify the following Boolean expression
 i) $Y = \overline{ABC} + \overline{A}BC + A\overline{BC} + ABC$
 ii) $Y = (\overline{A}B + \overline{A}C)(BC + \overline{B}C)(ABC)$ (06 Marks)
 d. Draw the logic diagram of a full adder and also write its truth table with sum and carry expressions. (06 Marks)

OR

- 6 a. Design a logic diagram using basic gates with 3 inputs A, B, C and output Y that goes high only when A is high. (05 Marks)
 b. Simplify and realize the Boolean expressions, using two input NAND gates only
 i) $ABCD + \overline{A}BCD$ ii) $AB + ABC + ABC\overline{C} + \overline{A}BC$ iii) $AB + ABC + AB(D + E)$ (10 Marks)
 c. Perform the following :
 i) $(110011)_2 - (11001)_2 = (?)_2$ - using 2's compliment
 ii) $(11110101)_2 - (10010101)_2 = (?)_2$ - Using 1's complement. (05 Marks)

Module-4

- 7 a. With the help of logic diagram and truth table explain the working of the clocked RS Flip Flop. (06 Marks)
 b. List the differences between Microprocessor and Microcontroller. (05 Marks)
 c. What is Transducer? Distinguish between active and passive Transducers. (04 Marks)
 d. Explain the working of Piezoelectric Transducer. (05 Marks)

OR

- 8 a. With a neat block diagram explain architecture of 8051 microcontroller. (10 Marks)
 b. Explain the working of LVDT. (06 Marks)
 c. Explain: i) Hall effect ii) Seebeck effect. (04 Marks)

Module-5

- 9 a. Draw the block diagram of communication system and explain each element. (08 Marks)
 b. With a network diagram explain the working of typical switched telephone system. (05 Marks)
 c. Mention the advantages and applications of Optical Fibre Communications. (07 Marks)

OR

- 10 a. Define FM. Draw the FM signal. Write the expression for FM wave. (05 Marks)
 b. A 500W, 100KHz carrier is modulated to a depth of 60% by modulating signal frequency of 1KHz. Calculate the total power transmitted. What are the side band components of the AM wave? (06 Marks)
 c. Give the comparison between AM and FM. (05 Marks)
 d. Explain the principle of operations of mobile phones. (04 Marks)

CBCS Scheme

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15ELN15/25

First/Second Semester B.E. Degree Examination, June/July 2018 Basic Electronics

Time: 3 hrs.

Max. Marks: 80

Note: Answer any FIVE full questions, choosing one full question from each module.

Module-1

- 1 a. Explain the i) Ideal-diode approximation ii) Practical diode approximation
iii) Piece-wise linear approximation of diode. (06 Marks)
- b. Draw the circuit of full-wave rectifier and derive the expression for average dc current I_{DC} , RMS load current I_{RMS} . (08 Marks)
- c. Calculate the output voltage V_0 in the following circuit:

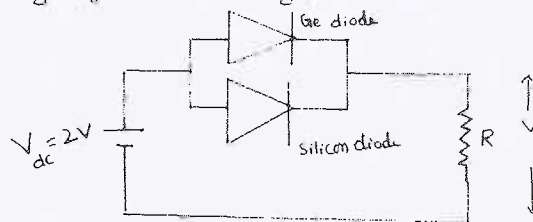


Fig.Q.1(c)

Assume V_r (breakdown V_g of G_c) = 0.7V

Assume V_r (breakdown V_g of silicon) = 0.3V.

(02 Marks)

OR

- 2 a. Draw the common Emitter circuit and sketch the output characteristics, explain active region, cut off region and saturation region by indicating them on the characteristic curve. (08 Marks)
- b. A transistor has $I_B = 100\mu A$ and $I_C = 2mA$. Find: i) β of the transistor ii) α of the transistor
iii) Emitter current I_E iv) If I_B changes by $+25\mu A$ and I_C changes by $+0.6mA$. Find the new value of β . (08 Marks)

Module-2

- 3 a. Sketch a base-bias circuit and write equations for I_B , I_C and V_{CE} . (04 Marks)
- b. A voltage divider bias circuit with a 25V supply has $R_C = 4.7 K\Omega$, $R_E = 3.3 K\Omega$, $R_1 = 33K\Omega$, $R_2 = 12K\Omega$ and $h_{FE} = 50$. Use the approximate analysis method to calculate the V_{CE} level. (08 Marks)
- c. Derive the output equation for non-inverting amplifier using op-amp. (04 Marks)

OR

- 4 a. Define the terms: i) Slew rate ii) CMRR iii) Common mode gain A_C . (06 Marks)
- b. Design an adder circuit using op-amp to obtain an output expression $V_0 = -(0.1V_1 + 0.5V_2 + 20V_3)$ where V_1 , V_2 and V_3 are the inputs select $R_f = 10K\Omega$. (06 Marks)
- c. Write any four Ideal-opamp characteristics. (04 Marks)

Module-3

- 5 a. Convert the following binary numbers to octal number system:
 i) 1011.1111 ii) 111100111110001. (04 Marks)
 b. With a neat diagram, explain the concept of digital waveform. (06 Marks)
 c. Subtract $(1000.01)_2$ from $(1011.10)_2$ using 1's and 2's complement method. (06 Marks)

OR

- 6 a. State and prove De-Morgan's theorem. (04 Marks)
 b. Simplify the following Boolean expressions:
 i) $AB + \overline{AC} + \overline{ABC}(AB + C)$
 ii) $\overline{\overline{AB} + \overline{ABC} + A(B + \overline{AB})}$ (06 Marks)
 c. Realize full adder circuit using NAND gate. (06 Marks)

Module-4

- 7 a. Explain the working of clocked R-S flip flop with a suitable circuit, symbol, truth-table, input-output waveforms considering positive edge triggered RS flip-flop. (08 Marks)
 b. With a neat block diagram, explain how stepper motor is interfaced to 8051 microcontroller. (08 Marks)

OR

- 8 a. With a neat diagram, explain flag register of 8051 microcontroller. (06 Marks)
 b. Differentiate between latches and flip-flops. (04 Marks)
 c. Draw the TMOD register and explain how it control the modes of operation of a timer in 8051 microcontroller. (06 Marks)

Module-5

- 9 a. Define amplitude modulation and derive the expression for standard amplitude modulation. Also define modulation index. (06 Marks)
 b. A broadcast transmitter radiates 20kW when the modulation percentage is 75. How much of this is carrier power? Also calculate the power of each sideband. (06 Marks)
 c. Distinguish between frequency modulation and amplitude modulation. (04 Marks)

OR

- 10 a. With a neat diagram, explain the construction and operation of LVDT. Also mention its advantages and disadvantages. (10 Marks)
 b. An FM signal is given as $V = 12 \sin(5 \times 10^3 t + 5 \sin 1250t)$. Calculate: i) Carrier frequency
 ii) Modulating frequency iii) Frequency deviation. (06 Marks)

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CBCS SCHEME

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17ELN15/25

First/Second Semester B.E. Degree Examination, June/July 2018 Basic Electronics

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing one full question from each module.

Module-1

- 1 a. Explain the operation of p-n junction diode under forward and reverse bias condition. (08 Marks)
- b. Explain how zener diode can be used as voltage regulator. (05 Marks)
- c. With a neat diagram, explain the output characteristics of a transistor in common base configuration. (07 Marks)

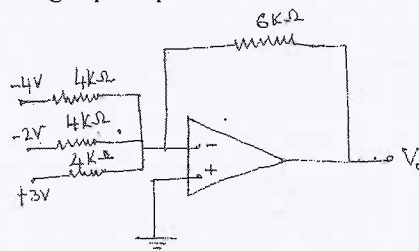
OR

- 2 a. With neat circuit diagram, explain the operation of Centre – tapped full wave rectifier. Draw input and output waveforms. (08 Marks)
- b. Explain the working principle of NPN transistor. (08 Marks)
- c. Explain the relationship between α and β . Find the values of β , α for a transistor has $I_B = 10\mu A$ and $I_C = 1mA$. (04 Marks)

Module-2

- 3 a. With neat circuit diagram, explain the operation of voltage divider bias circuit with necessary equations. (05 Marks)
- b. What is Op – amp? List the characteristics of an ideal Op-amp. (05 Marks)
- c. Find the output of the following Op-amp circuit. (05 Marks)

Fig.Q3(c)

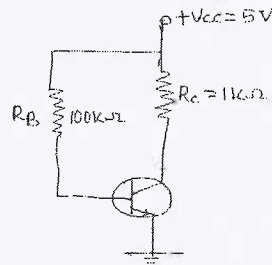


- d. Draw the circuit of Op-amp integrator. Derive the expression of output voltage. (05 Marks)

OR

- 4 a. For the circuit shown in fig.Q4(a), find the Q – point values and draw d.c load line, where $V_{BE} = 0.7V$ and $\beta = 50$. (08 Marks)

Fig.Q4(a)



- b. Define the following terms with respect to Op-amp. (05 Marks)
- c. Draw the circuit of inverting Op-amp. Derive the expression for the voltage gain. (07 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

Module-3

- 5 a. Convert : (08 Marks)
- i) $(11001.011)_2 = ()_{10}$ iii) $(64.73)_8 = ()_{16}$
- ii) $(186.75)_{10} = ()_2$ iv) $(ABCD)_{16} = ()_2$.
- b. Subtract the following using 2's Complement method. (04 Marks)
- i) $(111001)_2 - (101011)_2$ ii) $(1111)_2 - (1011)_2$.
- c. Simplify the following expression and realize using basic gates (04 Marks)
- $$Y = ABC + AB\bar{C} + \bar{A}BC.$$
- d. State and prove de – Morgan's theorem using truth table for 2 variable. (04 Marks)

OR

- 6 a. Explain full adder circuit with truth table. Realize the circuit for sum and carry using basic gates. Also write the diagram showing full adder using two half adder. (10 Marks)
- b. Implement Ex - OR gate using only NAND gate. (05 Marks)
- c. Simplify and realize the following using only NAND gate. (05 Marks)
- $$Y = A\bar{B}\bar{C} + \bar{A}\bar{B}\bar{C} + \bar{A}\bar{B} + \bar{A}\bar{C}.$$

Module-4

- 7 a. Mention the difference between Latch and Flip flop. (05 Marks)
- b. Define Microcontroller, write important features. (05 Marks)
- c. With a neat block diagram, explain the architecture of 8051 microcontroller. (10 Marks)

OR

- 8 a. Write a note on NOR – gate latch. (04 Marks)
- b. Explain the working of clocked RS Flip flop using NAND gates. (06 Marks)
- c. Interface stepper motor to 8051 micro – controller. With a neat block diagram, explain its working principle. (10 Marks)

Module-5

- 9 a. With the help of block diagram, explain communication system. (04 Marks)
- b. Define Amplitude modulation. Derive Mathematical expression for the same. Draw waveforms. (08 Marks)
- c. Explain the construction and principle of operation of LVDT. (08 Marks)

OR

- 10 a. List the difference between AM and FM. (04 Marks)
- b. Explain Frequency modulation, with neat waveform. (08 Marks)
- c. Briefly explain the working of thermistor. Mention its applications. (08 Marks)

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CBCS Scheme

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First/Second Semester B.E Degree Examination, Dec.2017/Jan.2018

Environmental Studies

(COMMON TO ALL BRANCHES)

Time: 2 hrs.]

[Max. Marks: 40

INSTRUCTIONS TO THE CANDIDATES

1. Answer all the forty questions, each question carries **ONE mark**.
2. Use only **Black ball point pen** for writing / darkening the circles.
3. For each question, after selecting your answer, darken the appropriate circle corresponding to the same question number on the OMR sheet.
4. Darkening two circles for the same question makes the answer invalid.
5. **Damaging/overwriting, using whiteners** on the **OMR** sheets are strictly prohibited.

-
1. The objective of environmental education is
 - a) Raise consciousness about environmental conditions
 - b) To teach environmentally appropriate behaviour
 - c) Create an environmental ethic
 - d) All of the above.
 2. Which of the following is a biotic component of an ecosystem?
 - a) Fungi
 - b) Solar light
 - c) Temperature
 - d) humidity.
 3. In complex ecosystems the degree of species diversity is
 - a) Poor
 - b) High
 - c) Medium
 - d) None.
 4. Which of the following statement is false
 - a) Inorganic nutrients are recycled in an ecosystem
 - b) Energy "flows" through the ecosystem in the form of carbon-carbon bonds
 - c) Energy is recycled in an ecosystem
 - d) Respiration process releases energy.
 5. In an ecosystem biological cycling of materials is maintained by
 - a) Procedure
 - b) Consumer
 - c) Decomposer
 - d) All of the above.

6. A predator is
a) An animal that is fed upon
b) An animal that feeds upon another animal
c) Animal that feeds upon both plants and animals
d) A primary consumer.
7. Ozone concentration is relatively more in
a) Mesosphere b) Stratosphere c) Staticsphere d) Atmosphere.
8. World environmental day is on
a) 5th May b) 5th June c) 15th June d) 15th May.
9. EIA can be expanded as
a) Environment of Industrial Act b) Environment Important Act
c) Environment Impact Assessment d) Economic Industrial Act.
10. Major purpose of most of the dams are
a) Power generation b) Drinking c) Flood control d) Irrigation.
11. Eutrophication is related to
a) Water b) Soil c) Air d) Land.
12. Water logging is effect of modern
a) Industries b) Agriculture c) Population d) Education.
13. Bioremediation means removal of contaminates by
a) Mining b) Super bugs c) Air d) Water.
14. Nitrate contamination causes
a) White baby syndrom b) Blue baby syndrom
c) Green baby syndrom d) Black baby syndrom.
15. Out of the following nutrients in fertilizers which one causes minimum water pollution
a) Nitrogen b) Phosphorous c) Potassium d) Organic matter.
16. Fluorosis is caused due to
a) Chlorine b) Fluoride c) Feldspar d) Farming.
17. Hepatitis is caused by
a) Hepata worm b) Virus c) Amoeba d) Fungus.
18. Chernobyl disaster occurred in the year
a) 1986 b) 2006 c) 2011 d) 1947.

19. Fukushima disaster is a
a) Heavy metal disaster
b) Nuclear disaster
c) Atom bomb disaster
d) Pesticide disaster.
20. A country without a single nuclear power plant is
a) China
b) USA
c) Australia
d) France.
21. Which of the following is more ecofriendly source of producing energy
a) Biogas
b) Coal
c) Fuel cells
d) Hydrel
22. Electromagnetic radiation can cause
a) Plague
b) Dengue
c) Cancer
d) Malaria.
23. Wind farms are located in
a) River basin
b) Plain areas
c) Hilly areas
d) Forest areas.
24. Natural gas contains
a) Methane
b) Oxygen
c) Nitrogen
d) Sulphur.
25. The source of electromagnetic radiation is
a) Magnetics
b) Electrons
c) Sun
d) Earth.
26. Which of the following sources is surface water
a) Springs
b) Streams
c) Wells
d) all.
27. Which of the following is an air pollutant
a) CO
b) O₂
c) N₂
d) all.
28. Smog in London was due to
a) SO₂ and NO₂
b) CO₂ and CO
c) Methane and ethane
d) Water and air.
29. Which of the following are Non-biodegradable
a) Plastics
b) Domestic sewage
c) Detergent
d) a and c
30. Endosulfan is a
a) Organization
b) Institution
c) Pesticide
d) River
31. Minameta disease is caused due to
a) Lead
b) Copper
c) Mercury
d) Arsenic.
32. World's single largest class of refugees is due to
a) War
b) Earthquake
c) Tsunami
d) Environmental degradation.

33. Noise pollution limits at airport area
a) 65dB b) 120dB c) 240dB d) 600dB.
34. Blaring sounds are known to cause
a) Metal distress b) Deafness
c) Neurological problems d) All the above.
35. Increase in asthma attacks has been linked to high levels of
a) Soil borne pesticides b) Air borne dust pesticides
c) CO₂ d) Green house gases.
36. Population explosion will cause
a) Biodiversity b) Stress on the ecosystem
c) Better communication d) Energy storage.
37. The Protocol that reduces green house gas emissions are
a) Kyoto protocol b) Cartagena protocol
c) Montreal Protocol d) Delhi protocol.
38. Global warming could affect
a) Climate b) Increase in sea level c) Melting of glaciers d) All of the above.
39. Primary cause of acid rain around the world is due to
a) CO₂ b) CO c) SO₂ d) O₃.
40. Reduction in brightness and the famous Taj Mahal is due to
a) Global warming b) Green house gases
c) Ozone deflection d) Air pollution.

CBCS Scheme

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Question Paper Version : C

First/Second Semester B.E. Degree Examination, June/July 2018

Environmental Studies

(COMMON TO ALL BRANCHES)

Time: 2 hrs.]

[Max. Marks: 30

INSTRUCTIONS TO THE CANDIDATES

1. Answer all the thirty questions. each question carries **ONE** mark.
2. Use only **Black ball point pen** for writing & darkening the circles.
3. **For each question, after selecting your answer, darken the appropriate circle corresponding to the same question number on the OMR sheet.**
4. Darkening two circles for the same question makes the answer invalid.
5. **Damaging/overwriting, using whiteners** on the **OMR** sheets are strictly prohibited.

-
1. The leader of "Chipko Movement" is
a) Sunderlal Bahuguna
b) Medha Patkar
c) Vandana Shiva
d) Mahatma Gandhi
 2. GILO is a project associated with
a) Environment protection
b) Environment education
c) Women education
d) None of these
 3. India has the largest share of which of the following :
a) Manganese
b) Mica
c) Copper
d) Silver
 4. Physical pollution of water is due to
a) Dissolved oxygen
b) pH
c) Turbidity
d) None of these
 5. Which of the following is the source of fly ash?
a) Vehicular exhaust
b) Sewage
c) Thermal power plant
d) All of these
 6. The permissible range of pH for drinking water as per the Indian standard is
a) 6 to 9
b) 6.5 to 8.5
c) 6 to 8.5
d) 6.5 to 7.5

-C1-

7. Noise pollution is controlled by
 a) Reducing the noise at the source b) Preventing its transmission
 c) Protecting the receiver d) All of these
8. LPG is a mixture of
 a) N_2 and H_2S b) CO_2 and N_2
 c) Propane and butane d) Methane and CO_2
9. Direct conversion of solar energy is attained by
 a) Solar photovoltaic cells b) diesel hybrid system
 c) Solar thermal system d) None of these.
10. Nuclear wastes are active for
 a) 5 years b) 10 years c) 50 years d) centuries
11. Molasses from sugar industry is used to generate
 a) Biodiesel b) Hydrogen c) Bioethanol d) Biomethanol
12. Demography is the study of
 a) Animals behaviour b) Population growth
 c) Rivers d) Forests
13. The major objectives of family welfare program is
 a) Employment generation b) Population growth and control
 c) Disease control d) None of these
14. Which green house gas is known as colorless, non flammable, sweetish odour and laughing gas?
 a) Methane b) CO_2
 c) Nitrous oxide d) SO_2
15. Nuclear fission reaction involves the bombardment of ^{235}U by
 a) Electrons b) Neutrons
 c) Protons d) Alpha radiation
16. Remote sensor detects
 a) Electromagnetic radiation b) only visible radiations
 c) only IR radiations d) only UV radiations
17. The tiger conservation project was started in
 a) 1973 b) 1975
 c) 1981 d) 2000
18. Centre for science and environment is
 a) Government organization b) Non government organization
 c) International body d) None of these
19. Carbon cycle involves
 a) Ammonia, nitrate and proteins b) Carbon dioxide, water and energy
 c) Sulphur dioxide, Sulphate & Proteins d) Carbon, Nitrogen and Oxygen

20. Deforestation means
a) conservation of forest
b) destruction of forest
c) monocrop cultivation
d) decrease in agriculture
21. Blue baby syndrome is caused by the contamination of water due to
a) Phosphates
b) Sulphur
c) Arsenic
d) Nitrates
22. Excess fluorides in drinking water cause
a) Blue babies
b) Fluorosis
c) Beriberi
d) Rickets
23. Fixation of nitrogen is done by
a) Lightening
b) Fixing bacteria
c) Fertilizer factory
d) All of these
24. Recycled waste water can be used for
a) crop irrigation
b) landscape gardening
c) Replenishing fast depleting aquifers
d) All of these
25. The sequence of eating and being eaten in an ecosystem is called
a) Food chain
b) Carbon cycle
c) Food web
d) hydrological cycle
26. In aquatic ecosystem phytoplankton can be considered as a
a) Consumer
b) Producer
c) Macro consumer
d) None of these
27. Ecological pyramids are studies of
a) Pyramid of Energy
b) Pyramid of numbers
c) Pyramid of biomass
d) all of these
28. E.I.A can be expanded as
a) Environment & Industrial act
b) Environment & Impact Activities
c) Environmental Impact Assessment
d) None of these
29. Water logging is a phenomena in which
a) Water patterns are rotated
b) Soil root zone becomes saturated due to over irrigation.
c) Erosion of soil
d) Soil degradation
30. The permissible limit of Lead in domestic portable water as per BIS is
a) 0.05 mg/L
b) 0.005 mg/L
c) 0.5 mg/L
d) 5 mg/L
