

FACULTY OF ENGINEERING
B.E (Civil) (CBCS) III - Semester (Backlog) Examination, March / April 2022

Subject: Surveying - I

Time: 3 Hours

Max marks: 70

(Missing data, if any, may be suitably assumed)

PART – A

Note: Answer all questions.

(10 x 2 = 20 Marks)

- 1 Differentiate between Prismatic compass and Surveyor's compass
- 2 Write the principle of Theodolite.
- 3 What is a well-conditioned triangle?
- 4 What do you mean by line of collimation?
- 5 Define the terms: Local attraction and magnetic declination.
- 6 List the three characteristics of Contour lines with neat sketches.
- 7 What are the different types of survey stations?
- 8 List the different types of Bench Marks?
- 9 Define orientation of plane table?
- 10 What is Mid-ordinate rule? Derive expression for it

PART – B

Note: Answer any five questions.

(5 x 10 = 50 Marks)

11. (a) List various types of chains used in Surveying. Explain any two in detail with their advantages.
 (b) The area of the plan of an old survey plotted to a scale of 20 meters to 1 cm measures now as 125.6 sq.cm as found by planimeter. The plan is found to have shrunk, so that a line originally 10 cm long now measures 9.6 cm only. There was also a note on the plan that the 20 m chain used was 6 cm too short. Find the true area of the field
12. What is Two – point problem and how it is solved.
- 13.(a) What are the different sources of errors in plane table? How are they eliminated?
 (b) The following are the bearings of the lines of a traverse ABCDEA, with a compass of an area where local attraction was suspected. Find the correct bearings of the lines.

Line	Fore bearing	Back bearing
AB	191°45'	13°0'
BC	39°30'	222°30'
CD	22°15'	200°30'
DE	242°45'	62°45'
EA	330°15'	147°45'

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14. (a) A man at a position 10 m above mean sea level observes the peak of a hill. The distance between the man and the hill is 80 km. Find the height of the hill.
- (b) The following staff readings were recorded in levelling operation 1.185, 2.605, 1.925, 2.305, 1.155, 0.864, 1.105, 1.685, 1.215, 1.545 and 0.605. A is the B.M of R.L 185.685m. Find the R.L's of the other points by H.I method. The first reading was taken at point A and the instrument was shifted after the readings 2.605, 0.864 and 1.215
15. (a) State the characteristics of a contour.
- (b) A railway embankment is 12 m wide. The ground is levelled in the direction of transverse to the centre line. Calculate the volume contained in a 100 m length by Trapezoidal rule and Prismoidal rule. If the side slope is 1.5:1. The central height at 20 m intervals are 3.7, 2.6, 4, 3.4, 2.8, 3 and 2.2 m respectively.
16. (a) The following observations were made during the testing of a dumpy level.

Instrument at	Staff Reading at		Remark
	A	B	
A	1.725	2.245	R.L of A = 450.00 m
B	2.145	3.045	

Distance between A and B = 200 m

Is the instrument in adjustment? To what reading should the line of collimation be adjusted when the instrument is at B? Find the R.L. of B?

- (b) Explain with a neat sketch, the principle and use of an optical square and open cross staff.

17. Write in detail on any **TWO** of the following:

- (a) Geodetic surveying.
- (b) Dip of magnetic needle.
- (c) Reciprocal levelling.

FACULTY OF ENGINEERING
B.E. (EEE/EIE/MECH/PROD/CS/CSE) III - Semester (CBCS) (Backlog)
Examination, March / April 2022

Subject: Environmental Science

Time: 3 Hours

Max. Marks: 70

(Missing data, if any, may be suitably assumed)

PART – A

Note: Answer all questions.

(10 x 2 = 20 Marks)

1. What is Environment?
2. Define salinity?
3. What is food chain?
4. What are producers, consumers and decomposers in an ecosystem?
5. Define levels of biodiversity?
6. What is meant by endemic species?
7. Explain Noise Pollution.
8. What are the hazards of plastics on environment?
9. Discuss effects of Acid rains.
10. Write short notes on Environmental Ethics.

PART – B

Note: Answer any five questions.

(5 x 10 = 50 Marks)

11. (a) Discuss droughts and floods with respect to their occurrence and impact.
(b) What is the impact of excessive use of pesticides and fertilizers?
12. (a) Define Ecological Pyramid. Give the detailed classification of the same.
(b) Define an Ecosystem. Explain the energy flow in an ecosystem with the help of a diagram.
13. (a) Explain In-situ and Ex-situ conservation of biodiversity.
(b) Select the major causes of Human wild conflict? Discuss the remedial steps that can curb the conflict.
14. (a) Define air pollution. Discuss various approaches to control air pollution.
(b) Define Solid waste management. Write the classification of solid wastes and their disposal methods.
15. (a) Define disaster management and explain disaster management cycle.
(b) Explain effects and control measures of global warming.
16. (a) Discuss the growing energy need of Man.
(b) Discuss the Pond Ecosystem.
17. (a) Discuss the causes and effects of thermal pollution.
(b) Define Disasters and write about various impacts of disaster.

FACULTY OF ENGINEERING
B.E. II / IV (CIVIL) (NON-CBCS) I - Semester (Backlog) Examination,
March / April 2022

Subject: Surveying - I

Time: 3 Hours

Max. Marks: 75

(Missing data, if any, may be suitably assumed)

Note: Answer all questions from Part-A and any five questions from Part-B.

PART – A (25 Marks)

- 1 State the principles of Chain surveying.
- 2 The length of a line measured with a 20m chain was found to be 250m. Calculate the true length of the line if the chain was 10cm too long.
- 3 What are the different sources of errors in chain surveying?
- 4 Write about Dip of magnetic needle.
- 5 Define Local attraction.
- 6 What are the advantages of plane table surveying?
- 7 Define the terms contour and contour gradient.
- 8 Distinguish between the Line of collimation and line of sight.
- 9 List any three uses of Contours.
- 10 Mention causes of error in Levelling.

PART – B (5 x 10 = 50 Marks)

- 11 (a) What is a Well-conditioned triangle? Why it is necessary to use well conditioned triangle?
 (b) Explain with a neat sketch principle and working of optical square.
- 12 (a) Draw a neat sketch of prismatic compass showing its various parts. Explain the function of each part.
 (b) The following are the bearing observed in traversing, with a compass, of an area where local attraction was suspected. Calculate the interior angles of the traverse and correct them if necessary.

Line	Fore bearing	Back bearing
AB	150°0'	330°0'
BC	230°30'	48°0'
CD	306°15'	127°45'
DE	298°0'	120°0'
EA	49°30'	229°30'

- 13 The following staff readings were observed successively with a level, the instrument having been moved after third, sixth and eighth readings: 2.228; 1.606; 0.988; 2.864; 1.262; 0.602; 1.982; 1.044; 2.684 meters. Enter the above readings in a page of a level book and calculate the R.L of points if the first reading was taken with a staff held on a bench mark of 432.384 m.
- 14 Explain in detail about Two-point problem in plane table surveying.

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- 15 (a) State and prove Trapezoidal rule.
 (b) Determine the area in hectares between the line AB and a meandering stream for offsets taken at a regular interval of 20 metre along a line AB using Simpson's rule.

Point	A								B
Distance(m)	0	20	40	60	80	100	120	140	160
Offset length(m)	23	40	42	30	32	60	10	14	22

- 16 (a) A chain line AB is obtained by a big pond and the points A and B are on the either side of pond. At 'A' a line CAD was ranged out. The distances AD = 320 m, AC = 280 m, DB = 530 m, CD = 485 m are measured. Find the distance of AB.
 (b) Describe the method of intersection in plane table survey.
- 17 Write in detail on any two of the following:
 (a) Obstacles in chaining
 (b) Surveyor's Compass
 (c) Characteristics of contours.

FACULTY OF ENGINEERING

B. E. II / IV (EEE/EIE/MECH/PROD/IT) (NON-CBCS) I – Semester (Backlog)

Examination, March / April 2022

Subject: Environment Studies

Time: 3 hours

Max. Marks: 75

(Missing data, if any, may be suitably assumed)

PART – A

Answer all questions.

(25 Marks)

1. What is the importance of Environmental science?
2. How does Land degradation take place? Write its adverse effects.
3. Define Decomposers and give their significance?
4. What are renewable and non renewable energy sources?
5. What are the reasons for habitat loss?
6. Why is it necessary to maintain biodiversity?
7. Define hazardous waste.
8. Justify the statement Environmental Protection Act.
9. What is global warming?
10. Write short notes on Disaster mitigation.

PART – B

Answer any five questions.

(5 x 10 = 50 Marks)

- 11 (a) Discuss in detail the factors responsible for Land degradation. What are the means to prevent land degradation?
(b) Discuss soil erosion and desertification. How does soil erosion impact desertification and fertility.
- 12 (a) Define Ecosystem. Explain the energy flow in an ecosystem.
(b) Explain the concept of land degradation.
- 13 (a) Why should we care about Wildlife? Explain the manner in which biodiversity is destroyed by human activities.
(b) Explain in detail the biogeographical classification of India.
- 14 Write short notes on
(a) Soil pollution (b) Thermal pollution
- 15 Classify solid waste. Write the adverse effects of solid waste. State how the solid waste can be managed.
- 16 (a) Write short notes on Disaster management cycle in India.
(b) Mention the objectives of Rainwater harvesting.
- 17 (a) Explain the uses of surface and ground water.
(b) Merits and demerits of Biomass energy.

FACULTY OF ENGINEERING
B.E. II / IV (ECE) I - Semester (NON-CBCS) (Backlog) Examination,
March / April 2022

Subject: Electrical Technology

Time: 3 Hours

Max. Marks: 75

(Missing data, if any, may be suitably assumed)

Note: Answer all questions from Part-A and any five questions from Part-B.

PART – A (25 Marks)

- 1 Draw the torque – speed characteristics of DC series motor.
- 2 Different types of DC generator.
- 3 Write the relation between phase and line quantity of voltage and current between 3 phase DELTA connected system.
- 4 Different losses in DC Machines.
- 5 What is meant by synchronous impedance of an alternator?
- 6 Define efficiency and regulation of transformer.
- 7 Draw the phasor diagram of transformer on NO LOAD.
- 8 An 8 pole, 50 Hz, 3 phase induction motor has a rotor emf frequency of 2 Hz. Calculate slip and speed.
- 9 Why starter is necessity in induction motor? Different types of starter.
- 10 Difference between squirrel cage and slip ring induction motor.

PART – B (5x10 = 50 Marks)

- 11 (a) Speed control of DC Shunt motor.
(b) The armature of a 6 pole DC generator has a wave winding containing 664 conductors. Calculate the generated EMF when flux per pole is 0.06wb and speed is 250 RPM. At what speed must the armature be driven to generator and EMF of 250V, if the flux per Pole is reduced to 0.058 wb.
- 12 Explain Power measurement by two wattmeter method.
- 13 (a) Determine Voltage regulation by Synchronous Impedance Method.
(b) Derive EMF of Alternator.
- 14 (a) Explain the Advantage and Disadvantage of Auto Transformer.
(b) A 10KVA, 200/400V, 50HZ, single phase transformer the following test result:
OC Test: 200V, 1.3A, 120W on LV side
SC Test: 22V, 30A, 200W on HV side
Calculate (i) Magnetizing and Core Loss component at 50HZ and rated voltage.
(ii) Magnetizing Branch Impedance.
(iii) Regulation at full load at 0.8 pf leading.
- 15 (a) Describe Auto Transformer starter of 3 phase induction motor.
(b) Explain the operation of a Capacitor Start Induction Motor.

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- 16 (a) Explain about 3 point Starter in DC Motor.
(b) Derive the torque-slip equation for a 3 phase induction motor and also the equation for slip at which maximum torque occurs.
- 17 (a) A 6 pole 50hz, 3 phase induction motor runs at 960 rpm when the torque on the shaft is 200 NM. If the stator losses are 1500W and friction and windage losses are 500W.
Find (i) rotor copper losses (ii) Efficiency of the motor.
(b) Derive torque equation of DC motor.

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FACULTY OF ENGINEERING
B.E. II / IV (A.E) I - Semester (NON-CBCS) (Backlog) Examination,
March / April 2022

Subject: Automotive Electrical and Electronics Engineering

Time: 3 Hours

Max. Marks: 75

(Missing data, if any, may be suitably assumed)

PART – A

Note: Answer all questions.

(25 Marks)

1. What are the requirements of a vehicle battery?
2. Write the formula for calculating the efficiency of a battery.
3. What do you understand by a parabolic reflector?
4. What is the principle of operation of a starting motor?
5. What do you understand by full-wave rectification?
6. Describe briefly the Y-type stator.
7. What are knock sensors?
8. What do you understand by battery rating?
9. What is a load cell?
10. What are the different types of sensors used in automobiles?

PART – B

Note: Answer any five questions.

(5 x 10 = 50 Marks)

11. Explain the working of a Nickel alkaline battery cell with the help of a diagram.
12. Draw a simplified circuit of a lighting system showing the side and head light bulbs, light switch, dip switch and main beam warning lights.
13. Explain in detail the main types of DC motors used in automobiles.
14. Explain what diode rectification is.
15. Write about the mass air flow rate sensors used in automobiles.
16. What are the different variables sensed in engine control?
17. What are the applications of microprocessors in automobiles?

FACULTY OF ENGINEERING
B.E. II / IV (CSE) I - Semester (NON-CBCS) (BACKLOG) Examination,
March / April 2022

Subject: Logic and Switching Theory

Time: 3 Hours

Max. Marks: 75

(Missing data, if any, may be suitably assumed)

Note: Answer all questions from Part-A and any five questions from Part-B.

PART – A (25 Marks)

- 1 Draw the equivalent AND, OR, NOT gates using NAND gates.
- 2 Prove that the dual of exclusive OR is also its complement.
- 3 Realize the given function $F(x,y,z) = xy+x'y'$.
- 4 Realize the odd parity generator circuit.
- 5 Distinguish between combinational and sequential logic circuits.
- 6 Compare Catch and a Flip Flop.
- 7 Write the VHDL code for 4x1 multiplexer.
- 8 Draw the diagram of a 3-bit shift register and explain its operation.
- 9 Realize Half subtractor.
- 10 State the conditions for a function to be symmetric.

PART – B (5 x 10 = 50 Marks)

- 11 (a) Simplify the Boolean function to a minimum number of literal.
(i) $xy+x'z+yz$ (ii) $ABC + A'B+ABC'$.
(b) Represent the deciman number 694 and 835 in BCD and then show the step necessary to form their sum.
- 12 (a) Obtain the characteristics and excitation tables for RS, JK, T and D flip-flops.
(b) Write a Verilog code for JK flip-flop.
- 13 Simplify the function using tabulation method and realize the minimal function.
 $F(A, B, C, D) = (0, 3, 5, 7, 8, 11, 15)$.
- 14 Design a combinational circuit whose input is a 4-bit number and whose output is the 2's complement of the input number.
- 15 Design a synchronous mod-5 counter using D flip-flop.
- 16 How do identify symmetric functions? Explain with an example.
- 17 Write notes on:
 - (a) Ripple carry adder
 - (b) Priority encoder.