Code No.14009/BL

FACULTY OF ENGINEERING

B.E. 2/4 (Civil) I-Semester (Backlog) Examination, October 2021

Subject: Surveying-I

Time: 2 hours **Max. Marks: 75**

Note: Missing data, if any, may be suitably assumed.

PART – A

Answer any seven questions. **(7x3 = 21 Marks)**

1 List out the different types of chains with their specifications.
2 Write briefly about cross staff survey.
3 Convert the following QB's into WCB's
a) S 40^0 30' 20" E b) N 25^0 40' 50" W
4 Differentiate between the following;
a) Isogonic and agonic lines b) Magnetic declination and dip
c) Isoclinic and aclinic lines
5 Name the instruments used in plane table surveying with their use.
6 Explain radiation method with a neat sketch.
7 Define the terms bench mark, back sight, rise and height of instrument.
8 Write briefly about fly levelling.
9 State and prove trapezoidal rule.
10 Define the terms overhanging cliff, saddle and a hill with sketches.

PART – B

Answer any three questions. **(3x18 = 54 Marks)**

11 a) Explain the various sources and nature of errors in chain survey.
b) An area actually measures 0.8094 hectares. How much will it measure in m^2 by a 30.48m chain which was 20.32 cm too short at the start and 60.96 cm toolongattheendof survey?
12 a) What are the advantages and disadvantages of compass survey? State the limitsofprecisionof compass survey.
b) The following angles were observed in the clockwise direction in an open traverse.
<ABC=$124^0$15' <DEF=$95^0$15'
<BCD=$156^0$30' <EFG=$215^0$45'
<CDE=$102^0$00'
The magnetic bearing of the line AB was $241^0$30'. What would the bearing of the line FG?

13 a) Compare the radiation and intersection methods of plane table surveying and give an example of the most desirable application of each.
b) State the factors influencing the size of the triangle of error.

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14 a) The following staff readings were taken with a level. The instrument having been shifted after the 4th, 7th and 10th readings. R.L. of the starting B.M. is 100.00m. Enter the readings in the form of a level book page and reduce the level by the collimation method and apply the usual checks.
2.65, 3.74, 3.83, 5.27, 4.64, 0.38, 0.96, 1.64, 2.84, 3.48, 4.68 and 5.26

b) Discuss briefly the effect of curvature and refraction is levelling. Derive an expression for curvature correction and for combined curvature and refraction correction.

15 a) Write a short note on the uses of contour maps for engineering purposes.

b) The following perpendicular offsets were taken from a chain line to an irregular boundary.

Chainage (m)	0	30	60	90	120	150	180	210
Offset lengths (m)	0	2.65	3.80	3.75	4.65	3.60	5.00	5.80

Calculate the area between the chain line and their irregular boundary by i) average ordinate rule, ii) mid ordinate rule, iii) trapezoidal rule, and iv) Simpson's rule.

16 a) The following notes refer to the reciprocal levels taken with one level.

Instrument station	Staff readings on		Remarks
	A	B	
A	1.03	1.630	Distance AB=800m
B	0.95	1.540	R.L OF A=450m

i) true R.L. of B
ii) Combined correction for curvature and refraction.
iii) the error in collimation adjustment of the instrument.

b) A big pound obstructs the chain line AB. A line AL was measured on the left of the line AB for circumventing the obstacle. The length of AL was 901m. Similarly, the line AM was measured on the right of the line AB whose length was 1100m. points M, B and L are in the same straight line. Length of the links BL and BM
are 502 m, respectively find the distance AB.

17 Write any two short notes on the following:

a) Prismatic compass and surveyors compass
b) Lehmann's rules.
c) Curvature and refraction effects.

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Code No. 14015/BL

FACULTY OF ENGINEERING

B.E. 2/4 (EEE/EIE/M/P/IT) I-Semester (Backlog) Examination, October 2021

Subject: Environmental Studies

Time: 2 hours **Max. Marks: 75**

Note: Missing data, if any, may be suitably assumed.

PART – A

Answer any seven questions. **(7x3 = 21 Marks)**

1 Discuss soil salinity and water logging.
2 Discuss briefly the growing energy needs of India.
3 Define ecosystem, producers and consumers.
4 Explain briefly the energy flow in an ecosystem.
5 Write short notes on Genetic species and ecosystem diversity.
6 Write about endemic and endangered species.
7 Write three causes of water pollution.
8 Mention features of any two legislation Acts for protecting environment.
9 Explain about Climate change and Global Warming.
10 Explain the types of disaster briefly.

PART – B

Answer any three questions. **(3x18 = 54 Marks)**

11 (a) Explain about the benefits and environmental problems associated with dam.
(b) Discuss about problems associated with fertilizers and pesticides.

12 (a) Write detailed notes on various ecological pyramid.
(b) Explain biotic and abiotic structure of an ecosystem.

13 (a) Write short notes on Rain water harvesting and role of community in it.
(b) Write causes, effects and steps to control air pollution.

14 (a) What is water conservation and watershed management?
(b) What is greenhouse effect and Global warming?

15 (a) What is the need to enforce environmental legislation? Explain Environmental Protection Act.
(b)Why is it important to protect the species from getting extinct?

16 (a)Write the basic principles of disaster mitigation. Define Disaster Management.
(b)What is the impact of disasters on environment and wild life?

17 (a) Write about the effects of modern agriculture. Define eutrophication.
(b) Explain the exploitation of Land as a natural resource.

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Code No. 14022/BL

FACULTY OF ENGINEERING

B.E. 2/4 (ECE) I-Semester (Backlog) Examination, October 2021

Subject: Electrical Technology

Time: 2 hours **Max. Marks: 75**

Note: Missing data, if any, may be suitably assumed.

PART – A

Answer any seven questions. **(7x3 = 21 Marks)**

1 Write the equation for the torque developed in DC motor.
2 Draw the circuit of series generator, shunt generator and compound generator.
3 Show that the line voltage is 3 times the phase current in a three phase delta connected system.
4 A 2,200/200-V transformer draws a no-load primary current of 0.6 A and absorbs 400 watt. Find the magnetizing and iron loss currents 37?
5 Write the applications of split phase and shaded pole machines.
6 Explain the importance of OC and SC tests in Transformer.
7 Define regulation and efficiency of Transmission line.
8 Define voltage regulation of Alternator.
9 Draw the phase diagram for transformer on NO LOAD.
10 Draw the block diagram representation of nuclear power station.

PART – B

Answer any three questions. **(3x18 = 54 Marks)**

11 (a) Explain various methods of speed control of a DC shunt motor.
(b) A 2-pole series motor runs at 707 r.p.m. when taking 100 A at 85 v and with the filed coils in series. The resistance of each field coil is 0.25 Ω and that of the armature 0.04 Ω. If the field coils are connected in parallel and load torque remains constant, find (i) speed (ii) the additional resistance to be inserted in series with the motor to restore the speed to 707 r.p.m.

12 (a) Three equal star-connected inductors take 8kW at power factor 0.8 when connected a 460 V, 3 phase, 3-wire supply. Find the line current if one inductor is short circuited.
(b) Determine voltage regulation by the synchronous impedance method.

13 (a) Discuss the principle of operation and application of single phase auto transformer.

(b) A 5 kVA 200 / 1000 V, t0 Hz, single –phase transformer gave the following tests results.

O.C. Test (L.V. Side) : 2000 V, 1.2A, 100 W

S.C. Test (H.V. Side) : 50 V , 5 A, 110 W

(i) Calculate the parameters of the equivalent circuit referred to the L.V. side.

(ii) Calculate the output secondary voltage when delivering 3 kW at 0.8 p.f. lagging, the input primary voltage being 200 V. Find the percentage regulation also.

14 (a) Explain the basic working principle of single phase split phase inductor motor.

(b) Explain the operation of a capacitor start induction motor.

15 Draw the block diagram representation of thermal power station and explain each part of it.

16 (a) Three resistors 10, 20 and 20 ohms are connected in star to the terminals A, B and C of a 3-phase, 3 wire supply through two single-phase wattmeters for measurement of total power with current coils in line A and C and pressure coils between A and B and C and B. Calculate (i) the line current (ii) the readings of each wattmeter. The line voltage is 400 V.

(b) Explain about hydroelectric power station.

17 (a) A 3-phase star connected alternator is rated at 1600 KVA, 13000 V. The armature resistance and synchronous reactance are 1.5Ω and 30 Ω respectively per phase. Calculate percentage voltage regulation for a . load of 1290 KW at power factor of 0.8 lagging.

(b) Explain about 3-point starter in DC motor.

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Code No. 14032/BL

FACULTY OF ENGINEERING

B.E. 2/4 (AE) I-Semester(Backlog) Examination, October 2021

Subject: Automotive Electrical and Electronics

Time: 2 hours **Max. Marks: 75**

Note: Missing data, if any, may be suitably assumed.

PART – A

Answer any seven questions. **(7x3 = 21 Marks)**

1 Name various essential accessories of a vehicle.
2 What is gassing in batteries?
3 What is the specialty of Bendix drive?
4 State any two troubles of starting motor.
5 Which single unit regulator is required for battery charging with alternator system and why?
6 What is the purpose of voltage regulator and current regulator?
7 CDRI stands for _____and executed by _____ type of electronic engine management system.
8 What is electromagnetic interference?
9 Name various sensors used for position displacement.
10 What is a microprocessor?

PART – B

Answer any three questions. **(3x18 = 54 Marks)**

11 Name various tests performed on a battery. Explain them in detail.

12 Write short notes on :
(a) Series motor and its characteristics.
(b) Principle and construction of starter motor.

13 With a neat sketch explain the working of
(a) Cut-out relay
(b) Voltage and Current regulators

14 Write a short note on :
(a) Series motor and its characteristics
(b) Principle and construction of starter motor

15 Compare the working principle of alternator and dynamo and then bring out the functional superiority of alternator and why?

16 Bring out in detail the different subsystems of an automotive electronic engine management system as well as overall automotive functioning system.

17 Write short notes
(a) Various sensors used for pressure measurement
(b) Stepper motor relay

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FACULTY OF ENGINEERING

B. E. 2/4 (CSE) I – Semester (Backlog) Examination, October 2021

Subject: Logic & Switching Theory

Time: 2 hours **Max. Marks: 75**

Note: Missing data, if any, may be suitably assumed.

PART – A

Answer any seven questions. **(7x3 = 21 Marks)**

1. Convert the decimal number to the indicated bases.
   (i) 27.315 to binary.
   (ii) 1938.257 to hexadecimal.
2. Reduce the following expression using Boolena theorems: $XY+\overline{YZ}+WX\overline{Z}$.
3. State and prove De Morgan's theorem using truth table.
4. Prove NAND gates are universal gates.
5. Realize full adder using 2 half subtractors.
6. Compare Latch and a Flip flop.
7. Write the VHDL-code to design 2-bit counter.
8. Draw the functional diagram for 3-to-8 line decoder.
9. List out the properties of Symmetric Network.
10. Distinguish between a Synchronous counter and ripple counter.

PART – B

Answer any three questions. **(3x18 = 54 Marks)**

11. (a) Convert the given expressions.
    (i) F(A,B,C)=AC+BA+BC to standard SOP form.
    (ii) F(A,B,C)=(A+B)(A+C)(B+C) to standard POS form.
    (b) What is the difference between canonical form and standard form?
12. Simplify the following Boolean function using tabulation method

    $F(W,X,Y,Z)=\sum m(1,2,3,5,9,12,14,15)+d(4,8,11)$

    and realize the function with basic gates.
13. Design a BCD-to-Excess-3 code converter and realize with minimum no of gates.
14. (a) Draw the logic diagram 4-to-1 line multiplexers with common selection inputs and common enable input.

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(b) Draw the logic diagram of a SR Latch using Nor gates and explain its operation using excitation table.

15. Design a mod-12 synchronous counter using JK flip flop.

16. (a) Write a procedure to identify whether a given function is symmetric or not.

(b) Draw the contact network for the function

$F(W,X,Y,Z)=\sum(1,2,4,6,9,10,11)$

17. Write short notes on:

(a) Parity Generator and checker.

(b) Shift Registers.

(c) Adders.

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Code No. 15018/AICTE/BL

FACULTY OF ENGINEERING

B.E. (Civil/EEE/EIE/CSE) III-Semester (AICTE) (Backlog) Examination, October 2021

Subject: Environmental Science

Time: 2 hours **Max. Marks: 70**

Note: Missing data, if any, may be suitably assumed.

PART – A

Answer any five questions. **(5x2 = 10 Marks)**

1 Explain the scope of Environmental education.
2 What is meant by the principle "To live and let live"? What is its significance?
3 Differentiate between the concepts of food chain, food web and trophic levels.
4 Explain briefly the conservation methods of biodiversity.
5 What are the effects of noise pollution?
6 Write the main objectives of Environmental Acts.
7 How is life style related to our growing municipal solid waste problem?
8 List the objectives of rain water harvesting.
9 Write the significance of sustainable environmental quality.
10 Write the Ethical basis of environmental education and awareness.

PART – B

Answer any four questions. **(4x15 = 60 Marks)**

11 (a) Explain the need for public awareness about environment.
(b) What is deforestation? Explain its causes and effects.

12 (a) Discuss the significance of food chains, food webs.
(b) Discuss the significance of Eltonian pyramids to maintain balanced ecosystem.

13 (a) Explain the following Producers, Consumers and Decomposers.
(b) Agricultural expansion and intensification has raised concern about the state of Agro-ecosystems. Explain.

14 (a) Discuss the growing energy needs of our country. Critically examine the sun energy option.
(b) Explain the merits and demerits of Bio-energy.

15 Write critical notes on :
(a)Eutrophication
(b)Biological magnification

16 (a) What is ozone hole? What are the causes of ozone hole formation?
(b)Discuss the effects of Ozone layer depletion and its remedial measures.

17 (a) Write and explain the salient features of Forest Conservation Act of the Indian Constitution.
(b) Name and briefly discuss the three functional elements of solid waste management and explain recycling is an integral part of solid waste management.

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Code No. 15038/AICTE/BL

FACULTY OF ENGINEERING

B.E. III – Semester(ECE/M/P/AE/IT) (AICTE) (Backlog) Examination, October 2021

Subject: Indian Constitution

Time: 2 Hours **Max. Marks: 70**

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

PART – A

Note: Answer any five questions. **(5x2 = 10 Marks)**

1. Explain the main features of the Government of India Act 1919.
2. Discuss the main reason behind the formation of the Constituent Assembly.
3. Describe the Composition of the Electoral College which elects the President of India.
4. How the Union Council of Ministry is formed?
5. What are the functions of the Urban Government?
6. What is Right to Equality?
7. Explain the Socialistic Directive Principles.
8. What are the Fundamental Duties which a Citizen of India needs to follow?
9. Explain the Centre-State Administrative Relations.
10. Explain the functions of the National Commission for Women.

PART – B

Note: Answer any four questions. **(4x15 = 60 Marks)**

11. Explain the main features of the Government of India Act 1935.

12. Discuss in detail the fundamental features of the Indian Constitution.

13. Describe the Emergency Powers of the President of India.

14. Examine the powers and functions of the Chief Minister.

15. Explain the Fundamental Rights as enshrined in the Constitution of India.

16. Examine the composition and functions of NITI Aayog.

17. Analyze the role of the National Human Rights Commission in protecting the Human Rights of the people.

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Code No. 15151/AICTE/BL

FACULTY OF ENGINEERING

B.E. III - Semester (CME) (AICTE) (Backlog) Examination, October 2021

Subject: Data Structures

Time: 2 Hours **Max. Marks: 70**

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

PART – A

Note: Answer any five questions. **(5x2 = 10 Marks)**

1 Write ADT for graphs.
2 Write about Time complexity.
3 How do you test whether stack is full?
4 In a binary tree with 9 nodes give the maximum number of leaf nodes.
5 When do u say that undirected graph is connected?
6 List advantages of data structure.
7 State the advantages(s) of binary search over sequential search.
8 What is a linear data structure?
9 What is the prefix notation of (a +b) * (c +d)?
10 Given a binary tree of height 6, how many nodes will be present in a complete binary tree?

PART – B

Note: Answer any four questions. **(4x15 = 60 Marks)**

11 (a) Write a program to implement queue using arrays.
(b) Explain in detail about insertion and deletion of elements in single linked list.

12 (a) Write about operations of Binary Search trees.
(b) Write in detail about AVL Tree rotations.

13 (a) Explain Breadth First Search with suitable example.
(b) Explain Dijkstra, the Shortest Path Algorithm.

14 (a) Explain in detail Heap sort and discuss its time complexity.
(b) Write a program to implement merge sort.

15 (a) What is Sparse Matrix? Explain different representations of sparse matrix.
(b) Construct an AVL tree using the following:
1 2 3 4 5 6 7 8 9 8 5 14

16 (a) Write an algorithm to evaluate a postfix expression.
(b) Write about Red Black Trees.

17 (a) Write notes on binary tree.
(b) List out the applications of graphs, trees.

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Code No. 14526/CBCS/BL

FACULTY OF ENGINEERING
B.E. III - Semester (CBCS) (EE/Inst/M/P/CSE) (Backlog) Examination, Oct 2021

Subject: Environmental Sciences

Time: 2 Hours **Max. Marks: 70**

PART – A

Note: Answer any five questions. **(5x2 = 10 Marks)**

1 Discuss advantages & disadvantages of dams.
2 Write a note on Hot spots of biodiversity.
3 What is Estuary.
4 What are the causes and effects & control measures of Thermal pollution?
5 Write a note on Environmental Ethics.
6 Discuss land degradation.
7 Write a note on nitrogen cycle.
8 Tell about Electrostatic precipitator.
9 What are the benefits of Mangrove forest?
10 Highlight effect of Hg on human health?

PART – B

Note: Answer any four questions. **(4x15 = 60 Marks)**

11 (a) Explain Biogeographical zones of India.
(b) Define aquifer. What are the uses & over utilizations of water resources?

12 (a) Differentiate between renewable & non-renewable energy resources. Give any two examples of non-conventional energy resources.
(b) Explain structure & zonation of Lake Ecosystem.

13 (a) What are the problems associated with unchecked plastic waste? How to manage it.
(b) Discuss In-site & Ex-site conservation.

14 (a) Write a detail note on watershed management.
(b) Explain wild life protection Act.

15 (a) Define Air Pollution. What are the health & environmental effects of particulate matters? Through which equipment particulate matters can be controlled.
(b) Write a note on ozone layer depletion.

16 (a) Discuss Disaster Management Cycle
(b) What are the reasons and effects of Kerala flood?

17 (a) Describe the sources effects & control measures of Noise Pollution.
(b) Write a note on
(i) Geothermal energy
(ii) Role of decomposers in nature
(i) Water conservation.

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Code No:14518/CBCS/BL

FACULTY OF ENGINEERING

B.E III-Semester (CBCS) (CIVIL)(Backlog) EXAMINATION, October 2021

Subject: SURVEYING-I

Time: 2 Hours **Max. Marks: 70**

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

PART – A

Note: Answer any five questions. **(5x2 = 10 Marks)**

1. Define surveying. State the principles of surveying.
2. What is well-conditioned triangle? Why it is preferred to an ill-conditioned triangle.
3. What is a magnetic declination? Mention different types of declination.
4. How would you detect the presence of local attraction in an area?
5. State the advantages of Plane Table surveying
6. What is meant by orientation in plane table survey? Explain briefly
7. What is Bench mark? Mention different types of bench marks.
8. The staff reading at a distance of 80m from a level with a bubble at centre is 1.52m, and when it is moved 5 divisions out of the centre, the reading is 1.60m. Find the angular Value of the bubble.
9. State the prismoidal rule. What are its limitations?
10. Define a contour. State the various characteristics of contour lines

PART-B

PART – B

Note: Answer any four questions. **(4x15 = 60 Marks)**

11. a) Explain the process of indirect ranging.
    b) In passing an obstacle in the form of a pond, stations A and D on the main line, were taken on the opposite sides of the pond. On the left of AD, a line AB, 200m long was laid down and a second line AC, 250m long was ranged on the right of AD, the points B, D and C being in the same straight line. BD and DC were then chained and found to be 125m and 150m respectively. Find the length of AD.

12. The following bearings were observed in running a compass traverse.

Line	FB	BB
AB	S 45°30´E	N 45°30´W
BC	S 60°0´E	N60°40´W
CD	N5°30´E	S 3°20´W
DE	N 54°30´W	S 51°40´W

Determine the corrected bearings due to the local attraction.

13. Explain in detail about three point problem in plane table surveying.

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14. The following is the page of a level field book from which several values are Missing. Reconstruct the page and fill all the entries when X mark is present. Apply all necessary checks?

Station	B.S	I.S	F.S	Rise	Fall	R.L	Remarks
1	1.385					100.00	B.M
2		1.430			X	X	
3		X			0.395	X	
4		1.275				X	
5	0.630		0.585	X		X	C.P
6		0.920			X	100.34	
7		X			0.210	X	
8			1.740		X	X	

15. a) State and prove the trapezoidal rule
    b)The following perpendicular offsets were taken from a chain line to an irregular boundary. Find the area by using a) Trapezoidal rule b) Simpson's rule

Distance (m)	0	10	20	30	40	50	60	70
Offset (m)	3.10	4.20	5.35	6.45	7.15	8.25	7.95	5.20

16. (a) Enumerate the difference between prismatic compass and surveyor's compass.
    (b) Explain the direct and indirect methods of contouring.

17. Write short notes on any two:
    (a) Errors in chaining.
    (b) Bowditch's method
    (c) Radiation method of plane table survey.

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