FACULTY OF ENGINEERING

B.E. 2/4 (Civil) I-Semester (Suppl.) Examination, May / June 2017

Subject : Surveying – I

Time : 3 hours   **Max. Marks : 75**

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

PART – A (25 Marks)

1 Draw a sketch showing page of a field book describing a chain line with offset and other markings. 2
2 What is the slope correction for a length of 30m along a gradient of 1 in 15? 3
3 The magnetic bearing of a line is 150^0 30' 06". What is the true bearing of the line if the magnetic declination is 1^0 30' 55" E? 3
4 Define dip and Arbitrary meridian. 2
5 What are the advantages of plane table surveying? 3
6 Describe the method of radiation method of plane table surveying. 2
7 Draw a sketch showing internal focusing and external focusing telescopes. 2
8 The sensitivity of a bubble tube is 20 seconds. A staff is held at distance of 360m. What is the error in reading if the bubbles is out by one division? 3
9 Define grade contour. 2
10 Write the formula used for calculation of two-level section with usual notations shown in a sketch. 3

PART – B (5 x 10 = 50 Marks)

11 a) P and Q are two points 200 m apart along a bank of a river which flows from east to west. The bearings of a tree on the far bank as observed from A and B are N 50^0 and N $43^{0'}$ W respectively. Determine width of the river. 7

    b) What is the correct length of a line which is measured as 350 m with a 20m tape, 10 cm too long? 3

12 A closed compass traverse survey was conducted round a compound wall and the WCB were observed. Determine which of the stations are affected by local attraction and calculate their corrected bearings. 10

Line	Fore Bearing	Back Bearing
PQ	74^0 20'	256^0 00'
QR	107^0 20'	286^0 20'
RS	224^0 50'	44^0 50'
SP	3306^0 40'	126^0 00'

Also determine, the true bearing of the lines if the magnetic declination is 1^0W.

..2

13 a) Write the resection method for solving three point problem based on Lehmann's rules? Draw sketches to show the salient details.   7

b) Explain the principle of traversing method of plane table surveying with a sketch.   3

14 Determine the missing data from the following level field book and apply usual checks :   10

Station	BS	IS	FS	Rise	Fall	RL	Remark
1	3.120					?	BM
2	?		?	1.325		125.505	TP
3		2.320			0.055		
4		?				125.850	
5	?		2.655				TP
6	1.620		3.205		2.165		TP
7		3.625					
8			?			123.090	TBM

15 a) Write the characteristics of contour with example sketches.   5

b) Derive an expression to determine error due to curvature effect on staff readings.   5

16 a) Find the volume of impounded water in the contours using Trapezoidal and prismoidal rules :   6

Contours (m)	Area enclosed (hectares)
200	20
205	110
210	420
215	890
220	1200

b) Briefly write errors in i) chaining and   ii) compass surveying   4

17 a) State and write the different methods of contouring and explain the methods of interpolation of contour values.   6

b) In a railway cutting the width at the formation level is 12 m. The sides of the cutting slope are 1 : 2 and the original ground has a lateral slope of 1 in 12. Determine the cross-sectional area of the two-level section, when the average depth at the center-line being 2.1 m?   4

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FACULTY OF ENGINEERING & INFORMATICS
B.E. 2/4 (EE/Inst./M/P/ IT) I – Semester (Suppl.) Examination, May / June 2017

Subject : Environmental Studies

Time : 3 Hours   Max. Marks: 75

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

PART – A (25 Marks)

1 Define Drought.   (2)
2 Discuss benefits and problems associated with dams.   (3)
3 What is soil erosion?   (2)
4 Discuss the role of producers in an Ecosystem.   (3)
5 Enumerate various levels of Biodiversity with examples.   (3)
6 Enumerate the effects of global warming.   (2)
7 What is meant by endangered and endemic species ? Give examples.   (3)
8 Explain why consumerism is a threat to sustainability.   (2)
9 Enumerate the effects of soil pollution on environment.   (2)
10 Discuss various applications of solar energy.   (3)

PART – B (50 Marks)

11 (a) Explain the importance and need of public awareness of environmental studies. (5)
   (b) Discuss various non renewable energy resources.   (5)

12 (a) Explain the energy dynamics in an ecosystem.   (5)
   (b) Discuss ecological pyramids with examples.   (5)

13 (a) Explain : (i) Rain water harvesting (ii) Population explosion   (5)
   (b) Explain various causes, effects and control measures of thermal pollution. (5)

14 (a) Explain biotic and abiotic components of an ecosystem.   (5)
   (b) Discuss and explain the objectives and various strategies of biodiversity
       conservation.   (5)

15 (a) What are the adverse effects of solid wastes? Enumerate the methods of solid waste
       disposal and discuss their feasibility.   (5)
   (b) Explain the causes and consequences of green house effect.   (5)

16 (a) Describe sources, effects and control measures of noise pollution.   (5)
   (b) Write short notes on :   (5)
       (i) Acid Rain   (ii) Soil conservation technique

17 (a) Explain disaster management cycle.   (5)
   (b) Discuss various issues involved in the enforcement of environmental legislation. (5)

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FACULTY OF ENGINEERING

B.E. 2/4 (ECE) I-Semester (Supplementary) Examination, May / June 2017

Subject : Electrical Technology

Time : 3 hours   **Max. Marks : 75**

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

PART – A (25 Marks)

1	Draw the torque-speed characteristics of DC shunt motor.	2
2	Draw the magnetization characteristics of DC generator. What do you mean by critical resistance?	3
3	Write the relation between phase and line quantity of current and voltage of 3ϕ star connected system.	2
4	Write about armature reaction in DC machine.	3
5	What is meant by synchronous impedance of an alternatior?	2
6	Define efficiency and regulation of transformer.	3
7	Draw the phasor diagram of transformer on No Load.	2
8	An 8-pole, 50 Hz, 3ϕ induction motor has a rotor emf frequency of 2Hz. Calculate slip and speed.	3
9	Draw slip torque characteristic of 3ϕ induction motor.	2
10	Mention the differences between squirrel cage and slip ring induction motor.	3

PART – B (50 Marks)

11 a) Explain the various speed control methods of DC series motor.   5
   b) A DC shunt generator has the following data : No. of poles = 4 ; No. of slots = 50, each slot having 12 conductors ; armature resistance = 0.09Ω ; field resistance = 100 Ω Flus per pole = 20m wb ; connected load resistance = 20Ω, speed = 1000 rpm.
   Calculate the voltage across the load resistance.   5

12 Explain the measurement of power by two-wattmeter method.   10

13 a) Determine voltage regulation by the synchronous impedance method.   5
   b) Write about armature reaction in alternator.   5

14 a) Explain the advantages and disadvantage of auto transformer. 4
   b) A 10 KVA 200 / 400V, 50Hz, 1ϕ T/f has following test result
   OC TEST – 200V, 1.3A, 120W on LV side
   SC TEST – 22V, 30A, 200W on HV side
   Calculate i) Magnetising and core loss component at 50Hz and lated voltage
   ii) magnetizing branch impedance   iii) Regulation at full load at 0.8 pf
   leading. 6

15 a) Describe star / delta starter of a 3ϕ induction motor. 5
   b) Explain the operation of a capacitor start induction motor. 5

16 a) Explain about 3-point starter in DC motor. 5
   b) Derive the torque-slip equation for a 3ϕ induction motor and also the equation
   for slip at which maximum torque occur. Draw the curve also. 5

17 a) Using double revolving theory, explain why a single phase induction motor is not
   self starting. 5
   b) Derive torque equation of DC motor. 5

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FACULTY OF ENGINEERING

B.E. 2/4 (A.E.) I - Semester (Suppl.) Examination, May / June 2017

Subject : Automotive Electrical and Electronics

Time : 3 Hours   Max. Marks: 75

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

PART – A (25 Marks)

1 Explain how a battery is a Electrochemical device.   (2)
2 Why LED lighting system is preferred in automobile?   (3)
3 Why D.C. series motor is preferred for starting purpose?   (2)
4 Explain about a solenoid switch with a neat circuit diagram.   (3)
5 Discuss about armature reaction in DC generator.   (3)
6 Explain importance of Bridge rectifiers.   (3)
7 What is onboard diagnostics systems?   (2)
8 Briefly explain about charging system.   (3)
9 List different types of Sensors.   (2)
10 What is microprocessor and its applications?   (2)

PART – B (50 Marks)

11 Briefly explain principle of working of Lead-acid battery along with its constructional details.   (10)

12 Discuss about working of different starter drive units.   (10)

13 Explain how direct current is generated in a DC generator.   (10)

14 Explain about automotive electromagnetic interference.   (10)

15 Discuss about position displacement and speed sensing sensors.   (10)

16 Explain working principle of a stepper motor.   (10)

17 Write short notes on the following:
   (a) Insulated and earth return system   (5)
   (b) Cutout relay   (5)

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FACULTY OF ENGINEERING

B.E. 2/4 (CSE) I-Semester (Supplementary) Examination, May 2017

Subject : Logic and Switching Theory

Time : 3 hours   **Max. Marks : 75**

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

PART – A (25 Marks)

1 Draw the equivalent AND, OR, NOT gates using NAND gates.   3
2 Perform Hexadecimal addition 59F and E46.   2
3 Use algebraic manipulation to prove that $X'Y'Z + YZ + XZ = Z$ 2

$$(X + Y)[X'(Y' + Z')]' + X'Y' + X'Z' = 1$$

4 Convert the following to indicated bases   2
      7562.45 to octal
      175.175 to binary
5 Distinguish between combinational and sequential logic circuits.   2
6 Distinguish between Mealy and Moore model.   2
7 Write the VHDL code for 4x1 multiplexer.   3
8 What is the difference between synchronous binary counters and ripple counters?   3
9 Realize Half subtractor.   3
10 Write a verilog data flow description for 2 to 4 decoder circuit.   3

PART – B (50 Marks)

11 a) Simplify Boolean function with a map method.
      $F(A, B, C, D) = \Sigma m(0, 1, 2, 4, 6, 10, 13, 14)$ and obtain expression in SOP and POS form.   6
   b) Write DeMorgan's law and prove.   4

12 a) Obtain the characteristics and excitation tables for RS, JK, T and D flip-flops.   6
   b) Write a Verilog code for JK flip-flop.   4

13 Design a BCD counter with JK flip-flops.   10

14 Design a combinational circuit whose input is a 4-bit number and whose output is the 2's complement of the input number.   10

15 a) Simplify the Boolean function to a minimum number of literals :   5
      $XY + X'Z + YZ$
      $ABC + A'B + ABC'$
   b) Express the complement of the function given in sum of minterms and draw the logic diagram $F(x, y, z) = \Sigma m (0, 3, 6, 7)$.   5

16 How do identify a symmetric functions? Explain with an example.   10

17 a) Implement the following function with a multiplexer :
      $F(A, B, C, D) = \Sigma m(0, 1, 3, 4, 8, 9, 15)$ 4
   b) For the following function $F(w, x, y, z) = \Sigma m(0, 1, 2, 3, 4, 8, 9, 11)+d(10, 13)$ find all prime implicants.   6

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