Kafr Elsheikh University
Faculty of Engineering
Department: Electrical Engineering
Year : 4th year(1997) 2016-2017
Subject: Electrical Engineering

Date: 10-1-2017
Time Allowed: 3:00 hr.
Full Mark: 70 Marks.
Final Exam: --
Academic Code: EPM
Exam: One page

Answer the Following Questions:

Q1 **15**

i- State the commercial and domestic of power electronic applications.
ii- What are the structure of power electronic systems?
iii- Sketch the UPS "uninterruptible power supply"

Q2 **15**

i. What are the advantages of Thyristors?
ii. State the types of Thyristors.
iii. Explain the MOSFET Regions of Operation

Q3 **20**

i. Sketch Voltage Doubler Circuits.
ii. The total voltage ripple of a Cock-Walton type voltage multiplier is 18 kV at a supply frequency of 90 Hz. If the load current is 3.799 mA and the circuit capacitance is 0.03518 μF, calculate:

1- The number of stages
2- The percentage ripple
3- The maximum secondary voltage of the supply
4- The total voltage drop and the regulation

Assume that: The optimum number of stages for minimum voltage drop is 17 stages.

Q4 **20**

i. State the best High-voltage measurements type.
ii. For a series impedance of 130 kΩ resistance, 500 mH and 15nF residual inductance and capacitance respectively, the ammeter reading is 80 mA at a frequency of 50 Hz. Calculate the error arose when neglecting both the residual capacitance and the residual inductance.

End of Exam Questions, Good Luck

b) The perpendicular offsets taken at 10 m intervals from a survey line to an irregular boundary are 2.25, 3.85, 4.50, 6.80, 5.20, 7.35, 8.90 and 5.45 meters. Determine the area enclosed between the survey line, the irregular boundary, the first and last offsets by: Average-ordinates rule, Trapezoidal rule and Simpson's rule.

Question (3) (30%)

a) The following coordinates were calculated in closed traverse

Stations	X-coordinates	Y-coordinates
A	7200.054	7640.842
B	7204.601	8103.036
C	7369.177	8001.383
D	7356.207	7759.292

Compute the area of traverse by two methods.

b) The accompanying longitudinal and cross sections show that the ground level at 2 m interval, is as follows:

distance	0	2	4	6	8	10	12	14
elevation	15	14.59	14.33	13.25	11.96	13.10	13.10	13.10

If the formation level for first point = 14.00 m and gradient of formation line is 1:16 failing, and that the section side slope at 1 unit vertically to 2 units horizontally and 8.0 m wide:

1) Calculate the depth of cut and height of fill for every point?
2) Calculate the volume of cut and fill?

Good Luck

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