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| **Scheme of Valuation/Answer Key**  (Scheme of evaluation (marks in brackets) and answers of problems/key) | | | | | |
| **APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**  THIRD SEMESTER B.TECH DEGREE EXAMINATION, DECEMBER 2018 | | | | | |
| **Course Code: EC201** | | | | | |
| **Course Name: NETWORK THEORY** | | | | | |
| Max. Marks: 100 | | |  | Duration: 3 Hours | |
| **PART A** | | | | | |
|  |  | ***Answer any two full questions, each carries 15 marks.*** | | | Marks |
| 1 | a) | Theorem statement with expression- 1 mark each, proof- 3 marks each | | | ( 8) |
|  | b) | Vth= 50 V (3 marks), Rth= 12.5 Ω(2 marks), I8Ω =2.44 A(2 marks) | | | ( 7) |
| 2 | a) | I2Ω = -0.62 A, I1=1.34A, I2=-0.62A, I3=-1.68A 2+2+2+2 | | | (8) |
|  | b) | V1=67.25 V, V2=48V, I100Ω= 0.48A 3+2+2 | | | (7) |
| 3 | a) | Theorem statement 2 marks, proof 6 marks, ZL= ZS\*= RS - jXS | | | (8) |
|  | b) | I1= 6A, I3=3A, I2Ω= 3A 2+3+2 | | | (7) |
| **PART B** | | | | | |
| ***Answer any two full questions, each carries 15 marks.*** | | | | | |
| 4 | a) | Y(s) = (s+4)/((s+2)(s+3)) y(t)= 2 e-2t – e-3t 4+4 | | | ( 8) |
|  | b) | i(0-)=i(0+)=1.5 A, I(s)= 1.5/(s+4), i(t)=1.5 e-4t 2+3+2 | | | ( 7) |
| 5 | a) | V2/V1 = 1/ (s2+3s+1) | | | (7) |
|  | b) | V2/ Ig= 1/(s3+2s2+3s+2) | | | (8) |
| 6 | a) | i(t)= 1/R [e-(1/RC)t u(t) – e-(1/RC)(t-T) u(t-T)] | | | (7) |
|  | b) | Zeros : s=0, and s= -2, double poles at s= -1 6 marks, plot – 2 marks | | | (8) |
| **PART C** | | | | | |
| ***Answer any two full questions, each carries20 marks.*** | | | | | |
| 7 | a) | Z11= 11/5 , Z12= 4/5, Z21= 4/5, Z22= 6/5 (2.5+2.5+2.5+2.5) | | | (10) |
|  | b) | Y11= ¼, Y21= -1/4, Y12= -7/4, Y22= -5/4 (2.5+2.5+2.5+2.5) | | | (10) |
| 8 | a) | f0= 1/(2π) power factor= R/R=1, current= V/R, voltage VL0= VC0  7+1+1+1 | | | (10) |
|  | b) | R=10Ω, L= 1H, C= 400μF 3+3+4 | | | (10) |
| 9 | a) | 2 marks for each one 5\*2 | | | (10) |
|  | b) | Capacitance c = 49.41 μF, ZD= 404.78Ω, I=0.543 A 4+3+3 | | | (10) |
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