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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**  FIFTH SEMESTER B.TECH (S) DEGREE EXAMINATION, MAY 2019 | | | | | |
| **Course Code: AE307** | | | | | |
| **Course Name: SIGNALS AND SYSTEMS** | | | | | |
| Max. Marks: 100 | | |  | Duration: 3 Hours | |
|  | | | | | |
| **PART A** | | | | | |
|  |  | ***Answer any two full questions, each carries 15 marks.*** | | | Marks |
| 1 | a) | (i) Period Period   rational number; Time period=1/5 sec  Periodicsignal  (ii),  ; ;Time period N =24 ,  Periodic signal | | | (1)  (1)  (.5)  (1)  (1)  (.5) |
|  | b) | Equation  Steps  Energy signal, Energy=25 | | | (1)  (2)  (2) |
|  | c) | Diagrams  (i)    (ii) | | | (2)  (3) |
| 2 | a) | (i) has memory, causal, not stable  (ii) has memory, causal, stable  (iii) has memory, not causal, not stable | | | (3)  (3)  (3) |
|  | b) | (i)  (ii)=0 ; | | | (1)  (1)  (1)  (1)  (1)  (1) |
| 3 | a) | (i)Equation  Diagram  Steps&Calculation  (ii)Equation  Diagram&calculation  {6,5,3,11,14,6} | | | (1)  (2)  (2.5)  (2)  (1)  (5)  (1.5) |
| **PART B** | | | | | |
| ***Answer any two full questions, each carries 15 marks.*** | | | | | |
| 4 | a) | Diagram of system, magnitude and phase response  Equation and explanation of both continuous time and discrete time signals | | | (1.5)  (6) |
|  | b) | Sampling theorem  Aliasing | | | (4)  (3.5) |
| 5 | a) | Hilbert Transform Equation  Any two properties | | | (3)  (4) |
|  | b) | (i)  Steps  N=17  (ii) Steps  N=19 | | | (1.5)  (1.5)  (2)  (3) |
| 6 | a) | Equation and steps | | | (4)  (1) |
|  | b) | Equation and steps | | | (4)  (1) |
|  | c) | Equation  Proof | | | (1)  (4) |
|  |  |  | | |  |
| **PART C** | | | | | |
| ***Answer any two full questions,each carries 20 marks.*** | | | | | |
| 7 | a) | (i)Definition and steps  (ii)Definition and Steps | | | (4)  (1)  (4)  (1) |
|  | c) | (i) Definition and steps  (ii) Definition and steps  Poles are at z = 1/2 and z = -1/3  Zeros are at z = 0 and z = 1/12 | | | (3)  (1)  (4)  (1)  (1) |
| 8 | a) | (i)Steps  (ii)Steps | | | (4)  (2)  (3)  (1) |
|  | b) | Steps | | | (4)  (1) |
|  | c) | Causality Explanation.  Stability Explanation | | | (2.5)  (2.5) |
| 9 | a) | (i) Steps  (ii)Steps | | | (4)  (1)  (4)  (1) |
|  | b) | Steps  u[-n-1] - | | | (4)  (1) |
|  | c) | Steps  Find H(z)= Y(z)/X(z) | | | (3)  (2) |
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