

 **Pages**

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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(S) B.TECH DEGREE EXAMINATION, MAY 2019 | | | | | | |
| **Course Code: EC303** | | | | | | |
| **Course Name: APPLIED ELECTROMAGNETIC THEORY** | | | | | | |
| Max. Marks: 100 | | | **Set 2** | Duration: 3 Hours | | |
|  | | | | | | |
| **PART A** | | | | | | |
|  |  | ***Answer any two full questions, each carries 15 marks.*** | | | Marks | |
| 1 | a) | Definition+ Equation | | | (2 )+(1) | |
|  | b) | Derivation steps+ final equation | | | (5 )+(2) | |
|  | c) | Applying Laplaceequation, it reduces to , find constants with appropriate boundary condition  The final equation is | | | (3)+(2) | |
| 2 | a) | Derivation and final equation | | | (5)+(2) | |
|  | b) |  | | | (4)+(4) | |
| 3 | a) | List | | | (4) | |
|  | b) | Similarly for H | | | (3)+(3) | |
|  | c) | Electric field inside the capacitor  The displacement current density,  Applying ampere’s law ,  A/m | | | (3)+(2) | |
|  |  |  | | |  | |
| **PART B** | | | | | | |
| ***Answer any two full questions, each carries 15 marks.*** | | | | | | |
| 4 | a) | Definition | | | (3 ) | |
|  | b) | Derivation steps + final equation = | | | (3 )+(2) | |
|  | c) | Definition and derivation | | | (4+3) | |
| 5 | a) | Derivation of pointing theorem | | | (10) | |
|  | b) | Definition. | | | (5) | |
| 6 | a) | Diagram | | | (3) | |
|  | b) | Derivation of V and I | | | (4)+(3) | |
|  |  | η= 316Ω | | | (5) | |
| **PART C** | | | | | | |
| ***Answer any two full questions, each carries 20 marks.*** | | | | | | |
| 7 | a) | Explanation | | | | ( 4) |
|  | b) | and steps | | | | (3)+ (5) |
|  | c) | 10+ j0.0358Ω  = | | | | (8) |
| 8 | a) | TM Neat diagram | | | | (5)+(5) |
|  | b) | Diagram and evaluation of length and location of stub | | | | (5)+(5) |
| 9 | a) | TE Mode in rectangular wave guide | | | | 8+2 |
|  | b) | Comparing the expression,β  =2.83ˣ | | | | (7) |
|  | c) | Cut off frequencies are  m = 1 n = 0 TE10 =0.75GHz  m = 2 n = 0 TE20 =1.5GHz  m = 3 n = 0 TE30 =2.25GHz | | | | (3) |
| \*\*\*\* | | | | | | |