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|  | **Dayananda Sagar College of Engineering**  **Shavige Malleshwara Hills, Kumaraswamy Layout, Banashankari, Bangalore-560078, Karnataka**  **Tel : +91 80 26662226 26661104 Extn : 2731 Fax : +90 80 2666 0789**  **Web - http://www.dayanandasagar.edu Email : hod-ece@dayanandasagar.edu**  **( An Autonomous Institute Affiliated to VTU, Approved by AICTE & ISO 9001:2008 Certified )**  **( Accredited by National Assessment & Accreditation Council (NAAC) with 'A' grade )** |  |
| **Department of Electronics & Communication Engg.**  **Continuous Internal Evaluation – III** | | |

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| Course Name : **POWER ELECTRONICS & APPLICATIONS** | Date : | 18/08/2021 |
| Course Code : **18EC6DECPE** | Day : | Wednesday |
| Semester : 6 | Timings : | 11:15 A.M – 12:45 P.M |
| Max Marks : 50 M | Duration : | 1½ Hrs. |

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| No. |  | Question Description | Mks | CO &  Levels |
| Q1 | (a) | A single phase full bridge inverter has load R = 2 Ω, and dc voltage source Vs = 230 V. Find the rms value of the fundamental load current.  i) 96 A  ii) 0 A  iii) 103 A  iv) none of the mentioned | 1 |  |
|  | (b) | A certain full bridge type inverter circuit has its rms value of fundamental load current component given by W. The fundamental frequency component of the load current would be given by  i) W sin ωt  ii) (W/√2) sin ωt  iii) √2 W sin ωt  iv) sin ωt | 1 |  |
|  | (c) | In a half wave circuit, forced commutation is essential when the  i) load is inductive  ii) load is resistive  iii) source voltage is below 150 V  iv) none of the mentioned | 1 |  |
|  | (d) | A single phase full bridge inverter is fed from a dc source such that the fundamental component of output voltage = 230 V. Find the rms value of SCR and diode current respectively, for a R load of 2 Ω.  i) 115 A, 80 A  ii) 81.33 A, 36.2 A  iii) 36.2 A, 0 A  iv) 81.33 A, 0 A | 1 |  |
|  | (e) | In Ideal case, the Charging current for 200Ah battery would be \_\_\_\_\_\_\_\_\_ ?  i) 10 A  ii)12 A  iii)15 A  iv)20 A | 1 |  |
|  | (f) | In Real case, the Charging current for 200Ah battery would be \_\_\_\_\_\_\_\_\_ ?  i)20-22 A  ii)14-16 A  iii)12-14 A  iv)10-12 A | 1 |  |
|  | (g) | One (1) Ah = \_\_\_\_\_\_\_\_?  i) 1C  ii) 1200C  iii) 2400C  iv) 3600C | 1 |  |
|  | (h) | The commercial lead acid cell has 15 plates. The number of negative plates would be\_\_\_\_\_\_\_  i)6  ii)7  iii)8  iv)9 | 1 |  |
|  | (i) | Nickel-Cadmium batteries are preferred more than Lead-Acid batteries in military applications because——–  i) Can be easily charged and discharged.  ii) Discharge rate is higher  iii)Delivers large amount of power  iv)All of the above | 1 |  |
|  | (j) | Storage batteries are rated according to ——–  i)Ambient Temperature  ii)Discharge Rate  iii)A and C  iv)None of the above | 1 |  |
| Q2 | a | Enlist few reasons due to which an inverter fails to switch on. | 4 | CO5, L2 |
|  | b | Elaborate on the principle of operation of inverters with diagrams if necessary. | 6 | CO5,L3 |
| Q3 |  | Explain Switch mode power supplies with a neat block diagram. | 10 | CO6, L2 |
| Q4 |  | With a neat diagram, Explain Single phase bridge inverters | 10 | CO5, L3 |
|  |  | OR |  |  |
| Q5 |  | Classify Uninterrupted Power supplies and Elaborate in UPS systems. | 10 | CO6, L3 |
| Q6 |  | What is a battery charger? Elaborate on automatic battery charger with trickle charging arrangement. | 10 | CO6, L3 |
|  |  | OR |  |  |
| Q7 |  | Explain in detail, the emergency lighting system. | 10 | CO6,  L2 |