AR 19

Reg. No



Time: 3 hrs

## GIET UNIVERSITY, GUNUPUR – 765022

B. Tech (Seventh Semester – Regular) Examinations, November – 2022

## BPEEL7011 / BPEEE7011 - Smart Grid

(EE & EEE )

Maximum: 70 Marks

	Answer ALL Questions						
The figures in the right hand margin indicate marks.PART – A: (Multiple Choice Questions)(1 x 1)							
<u>Q.1</u>	1. Answer ALL questions	[CO#] [PO#]					
a.	Which of the following is one of the key features of a smart grid?	CO 1 PO 1					
	(i) Limited sensors (ii) Pervasive control						
	(iii) Centralized generation (iv) Electromechanical opera	tion					
b.	In a Smart Grid ECO system, a normal consumer is expected to be able to turn to	CO 1 PO 1					
	(i) A Non-consumer (ii) A careful consumer						
	(iii) A prosumer (iv) Both careful consume Prosumer	r and					
c.	In a typical AC micro grid which of the following helps to regulate voltage and frequency in the islanded mode of operation?	CO 1 PO 2					
	(i) Diesel generator (ii) Connected inverter						
	(iii) Grid (iv) PMSG wind						
d.	Which of the following factor should be identical for two alternators running in pa	arallel? CO 1 PO 2					
	(i) Voltage (ii) Phase sequence						
	(iii) Frequency (iv) All the above						
e.	When two batteries are connected in parallel, it should be ensured that	CO 2 PO 2					
	(i) They have same e.m.f. (ii) they have same make						
	(iii) they have same ampere hour (iv) they have identical capacity resistance	internal					
f.	A relay is used to	CO 2 PO 3					
	(i) Break the fault current (ii) Sense the fault						
	(iii) Sense the fault and direct to trip (iv) None of these the circuit breaker						
g.	What is meant by CDM?	CO 2 PO 3					
	(i) Coal development mechanism (ii) Clean Development Mechan						
	(iii) Clean Development movement (iv) Clean Development Measur						
h.	1 1	CO 3 PO 3					
	(i) Leading (ii) Lagging						
	(iii) Both of these (iv) Any of these	~ ~ ~ ~ ~ ~					
i.	The main features of Smart Substation is	CO 3 PO 3					
	(i) Improving power quality, (ii) Control of voltage pollut reliability and load profile	ion					
	(iii) Demand Response (iv) All the above						
j.	CCHP means	CO 4 PO 3					
J .	(i) Coupled Cooling Heat and (ii) Combined Cooling Hydr Power and Power						
	(iii) Coupled Cooling Hydrogen (iv) Combined Cooling He Heat and Power Power	eat and					

PART – B: (Short Answer Questions)				(2 x 10 = 20 Marks)		
<u>Q.2.</u>	Answer ALL questions		[CO#]	[PO#]		
a.	Define Smart Grid?		CO 1	PO 1		
b.	Write any two functions of Smart grid?		CO 1	PO 1		
с.	Enumerate any two advantages of Smart Grid?		CO 1	PO 2		
d.	How Distributed generation plays a role in smart grid?		CO 1	PO 2		
e.	Explain about WAN and HAN?		CO 2	PO 2		
f.	Explain any two benefits of Wide Area measurement system?		CO 2	PO 3		
g.	Explain about Smart Appliances?		CO 2	PO 3		
h.	Describe any main two features of Automatic Meter reading?		CO 3	PO 3		
	Write the advantages of the variable speed WECS with respect to the constant WECS?	speed	CO 3	PO 3		
j.	Explain about Fuel Cell-Based Hydrogen Electricity (FCHE) ?		CO 4	PO 3		
PART – C: (Long Answer Questions)				(10 x 4 = 40 Marks)		
Answ	er ALL questions	Marks	[CO#]	[PO#]		
3.a	Explain the main differences between Conventional grid and Smart Grid	10	CO 1	PO 1		
	(OR)					
b.	Describe the overall Functions of Smart Grid:	5	CO 1	PO 1		
c.	Explain the need of the Smart Grid along with features	5	CO 1	PO 2		
4.a	Explain the Communication Technologies of Smart Grid in terms of LAN, HAN and WAN	10	CO 2	PO 2		
	(OR)					
b	Explain about the features Wide Area Measurement System along with its benefits	10	CO 2	PO 2		
5. a.	Write short notes on i) Smart appliances ii) smart meters	10	CO 3	PO 2		
	(OR)					
b.	Explain about Outage Management System (OMS) along with its main functions	5	CO 3	PO 3		
c.	Explain about Plug in Hybrid Electric Vehicles (PHEV) and the types of PHEVs.	5	CO 3	PO 3		
6. a.	Explain the concept of Variable speed wind generators	5	CO 4	PO 3		
b.	Write short notes on i) fuel cells ii) Micro turbines	5	CO 4	PO 3		
	(OR)					
c.	Explain the Advantages and disadvantages of Distributed Generation	10	CO 4	PO 3		

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