Reg. No.	R	A	2	0	1	1	0	0	3	0	1	0	9	9	3

B.Tech. DEGREE EXAMINATION, MAY 2023
Sixth Semester

18EEO306T – ENERGY CONSERVATION
(For the candidates admitted from the academic year 2018-2019 to 2021-2022)

Note:
(i) **Part - A** should be answered in OMR sheet within first 40 minutes and OMR sheet should be handed over to hall invigilator at the end of 40th minute.
(ii) **Part - B & Part - C** should be answered in answer booklet.

Time: 3 hours | Max. Marks: 100

PART – A (20 × 1 = 20 Marks)
Answer **ALL** Questions

	Marks	BL	CO	PO
1. Out of the total amount of global primary energy over _____ comes from fossile fuels. (A) 2.4% (B) 85% (C) 0.7% (D) 33%	1	1	1	1
2. The world wide reserve/ production of oil is _____ years. (A) 53 (B) 55 (C) 113 (D) 44	1	1	1	1
3. The important feature of renewable energy is that it can be harnessed without release of _____. (A) Harmful pollutants (B) CO_2 (C) CO (D) Flue gases	1	1	1	1
4. Tachometer is used to measure (A) Light intensity (B) Speed (C) Temperature (D) Harmonics	1	1	1	1
5. The supply voltage to small industries is _____ in a power system. (A) 33 kV (B) 11 kV (C) 6 kV (D) 400 V	1	2	2	1
6. If voltage is raised form 11 kV to 33kV, line loss would be lowered by _____. (A) 1/3 (B) $(1/3)^2$ (C) $(1/3)^3$ (D) 3^2	1	2	2	1
7. The fundamental frequency of an electrical power system is 50Hz, then the 5th harmonic frequency is (A) 50 Hz (B) 100 Hz (C) 150 Hz (D) 250 Hz	1	2	2	1
8. The life in hours for LED lamps is _____. (A) 2,000 – 4,000 (B) 8000 (C) 30,000 – 60,000 (D) 6,000 – 12,000	1	1	2	1

9. What is a ton of refrigeration?
(A) 1024 kcal/hr
(B) 3024 kcal/hr
(C) 3124 kcal/hr
(D) 3034 kcal/hr

10. The centrifugal blowers rotates as fast as _____.
(A) 1,500 rpm
(B) 3,000 rpm
(C) 15,000 rpm
(D) 30,0000 rpm

11. Commonly used fan materials of cooling tower are _____.
(A) Aluminium, glassfiber and hot-dipped galvanized steel
(B) PVC, polypropylene and other polymers
(C) Plastics
(D) Wood

12. Small plant capacity of refrigeration system is considered as _____.
(A) Upto 30 TR
(B) Upto 50 TR
(C) 50 – 250 TR
(D) Over 250 TR

13. According to energy conservation act, building connected to a load of _____ is used for commercial purpose.
(A) 10 kW
(B) 50 kW
(C) 75 kW
(D) 100 kW and above

14. Product under mandatory labelling is _____.
(A) Room air conditioners
(B) Ceiling fans
(C) Washing machine
(D) Computer

15. Who is not designated consumer under the EC act 2001?
(A) Fertilizer industry
(B) Cement industry
(C) Textile industry
(D) Automobile industry

16. Each state has to meet _____ of its energy from solar sources.
(A) 1%
(B) 2%
(C) 3%
(D) 4%

17. A chart in scatter diagram shows a low degree of scatter. It is indicative of _____.
(A) Good fit
(B) Poor fit
(C) Skewed fit
(D) Normal fit

18. 1 kWh = _____ kcal.
(A) 10,200
(B) 12,000
(C) 860
(D) 10,500

19. Payback period = _____.
(A) Capital cost/ annual maintenance cost
(B) Capital cost/ operating cost
(C) Capital cost/ annual net saving
(D) Annual energy bill/ capital cost

20. If money is deposited in the bank at 10% interest, then a ₹. 200 deposit will be _____.
(A) Worth ₹. 220 in one year time
(B) With ₹. 440 in one year time
(C) Worth ₹. 220 in two years time
(D) Worth ₹. 440 in two years time

PART – B (5 × 4 = 20 Marks)
Answer **ANY FIVE** Questions

		Marks	BL	CO	PO
21.	Describe electricity pricing in India.	4	1	1	1
22.	What is availability based tariff?	4	1	1	1
23.	What are the advantages of power factor improvement cost benefits?	4	1	2	1
24.	If the maximum demand is 1500 kVA at 0.85 power factor, calculate the reduction in demand at 0.95 power factor.	4	2	2	1
25.	Describe the types of axial flow fans.	4	1	3	1
26.	What are the duties of state designated agencies to implement the energy conservation act?	4	1	4	1
27.	What are the benefits of energy monitoring and targeting system?	4	1	5	1

PART – C (5 × 12 = 60 Marks)
Answer **ALL** Questions

		Marks	BL	CO	PO
28. a.	Explain the classifications of energy.	12	1	1	1
	(OR)				
b.	Describe audit phase carried out in detailed energy audit.	12	1	1	1
29. a.	Describe (1) harmonics in power systems (2) causes of harmonics (3) effects of harmonics.	12	1	2	1
	(OR)				
b.	Discuss the types and performance of lighting source.	12	1	2	1
30. a.	Explain the types of refrigeration system.	12	1	3	1
	(OR)				
b.	List the energy saving measures of diesel generator sets.	12	1	3	1
31. a.	Discuss the need for integrated energy policy and national action plan on climate change.	12	1	4	1
	(OR)				
b.	Discuss the schemes of BEE under the Energy Conservation Act. Also discuss the Energy Conservation Building Code.	12	1	4	1
32. a.	Describe about (1) Pay back period (2) net present value and cash flow in financial analysis techniques.	12	1	5	1
	(OR)				
b.	Discuss about (1) XY scatter diagram (ii) cumulative sum chart used for energy production data analysis.	12	1	5	1

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