Reg. No.															

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

	Marks	BL	CO	PO

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

1. Out of the total amount of global primary energy over _____ comes from fossile fuels. 1 1 1 1
   (A) 2.4% (B) 85%
   (C) 0.7% (D) 33%

2. The world wide reserve/ production of oil is _____ years. 1 1 1 1
   (A) 53 (B) 55
   (C) 113 (D) 44

3. The important feature of renewable energy is that it can be harnessed without release of _____. 1 1 1 1
   (A) Harmful pollutants (B) CO_2
   (C) CO (D) Flue gases

4. Tachometer is used to measure 1 1 1 1
   (A) Light intensity (B) Speed
   (C) Temperature (D) Harmonics

5. The supply voltage to small industries is _____ in a power system. 1 2 2 1
   (A) 33 kV (B) 11 kV
   (C) 6 kV (D) 400 V

6. If voltage is raised form 11 kV to 33kV, line loss would be lowered by _____. 1 2 2 1
   (A) 1/3 (B) $(1/3)^2$
   (C) $(1/3)^3$ (D) 3^2

7. The fundamental frequency of an electrical power system is 50Hz, then the 5th harmonic frequency is 1 2 2 1
   (A) 50 Hz (B) 100 Hz
   (C) 150 Hz (D) 250 Hz

8. The life in hours for LED lamps is _____. 1 1 2 1
   (A) 2,000 – 4,000 (B) 8000
   (C) 30,000 – 60,000 (D) 6,000 – 12,000

9.	What is a ton of refrigeration? (A) 1024 kcal/hr (B) 3024 kcal/hr (C) 3124 kcal/hr (D) 3034 kcal/hr	1	1	3	1
10.	The centrifugal blowers rotates as fast as _____. (A) 1,500 rpm (B) 3,000 rpm (C) 15,000 rpm (D) 30,0000 rpm	1	1	3	1
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	1	1	3	1
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	1	1	3	1
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	1	1	4	1
14.	Product under mandatory labelling is _____. (A) Room air conditioners (B) Ceiling fans (C) Washing machine (D) Computer	1	1	4	1
15.	Who is not designated consumer under the EC act 2001? (A) Fertilizer industry (B) Cement industry (C) Textile industry (D) Automobile industry	1	1	4	1
16.	Each state has to meet _____ of its energy from solar sources. (A) 1% (B) 2% (C) 3% (D) 4%	1	1	4	1
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	1	1	5	1
18.	1 kWh = _____kcal. (A) 10,200 (B) 12,000 (C) 860 (D) 10,500	1	1	5	1
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	1	1	5	1
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	1	1	5	1

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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