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Subject Code: KME076

Roll No: | | | | | | | | | | | | | |

B.TECH
(SEM- VII) THEORY EXAMINATION 2021-22
POWER PLANT ENGINEERING

Time: 3 Hours *Total Marks: 100*

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt *all* questions in brief.

Q no.	Question	Marks	CO
a.	Define brake power.	2	1
b.	List the components of fixed cost.	2	1
c.	List out conventional power plants?	2	2
d.	What is boiler efficiency?	2	2
e.	What are the applications of diesel engine power plant?	2	3
f.	What do you mean by turbo charging?	2	3
g.	Name the different types of fuel cells.	2	4
h.	Define the term "Breeding".	2	4
i.	Explain Transformer protection.	2	5
j.	Briefly explain fossil fuel pollution.	2	5

SECTION B

2. Attempt any *three* of the following:

Q no.	Question	Marks	CO
a.	The value of equipment is Rs. 500,000 and its salvage value at the end of its useful life of 15 years is Rs. 100,000. Find the value of the equipment at the end of 5 years of its use by the following methods:- (i) Straight line depreciation. (ii) Sinking fund depreciation, when it is compounded annually at 10%.	10	1
b.	What do you mean by 'Supercritical Boilers' and 'Super charged Boiler'?	10	2
c.	Explain how reheating improves the efficiency of a simple open cycle gas turbine plant.	10	3
d.	Explain the working of a typical fast breeder nuclear reactor power plant, with neat diagram.	10	4
e.	What are the properties of materials used for conductor? Name the materials used for conductors.	10	5

SECTION C

3. Attempt any *one* part of the following:

Q no.	Question	Marks	CO
a.	A consumer has following connected load: 10 lamps of 60 W each, 2 heaters of 1000 W each. Max. Demand = 1500 W. on the average he	10	1

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	uses 8 lamps for 5 hrs a day and each heater for 3 hrs a day. Find his average demand, load factor and monthly energy consumption.		
b.	What do you understand by cost of electrical generation?	10	1

4. Attempt any *one* part of the following:

Q no.	Question	Marks	CO
a.	Draw the general layout of steam power plant and explain its major components.	10	2
b.	Explain the working principle of FBC with a neat sketch.	10	2

5. Attempt any *one* part of the following:

Q no.	Question	Marks	CO
a.	A four stroke diesel engine consumes 20 kg/hr. when the engine develops an output of 80 KW. Calculate the brake and indicated specific fuel consumption, if the mechanical efficiency of the engine is 80%. Also determine the brake and indicated thermal efficiency if the CV of fuel is 45000KJ/kg.	10	3
b.	Discuss the effect of pressure ratio on Brayton cycle output and efficiency.	10	3

6. Attempt any *one* part of the following:

Q no.	Question	Marks	CO
a.	Distinguish between controlled and uncontrolled nuclear chain reaction.	10	4
b.	Explain different types of collectors used in a solar power plant.	10	4

7. Attempt any *one* part of the following:

Q no.	Question	Marks	CO
a.	What is a circuit breaker? What are the different types of circuit breakers that are employed in typical power stations?	10	5
b.	What is the function of 'bus bar'? Draw different types of bus bar arrangements and discuss their relative merits and demerits.	10	5