Reg. No.:					

**Question Paper Code: 45705** 

## B.E. / B.Tech. DEGREE EXAMINATION, MAY 2018

	Fifth Semester
	Mechanical Engineering
	14UME505 - POWER PLANT TECHNOLOGY
	(Regulation 2014)
	Duration: Three hours  Answer ALL Questions  Maximum: 100 Marks
	PART A - $(10 \times 1 = 10 \text{ Marks})$
1.	Which of the following generating stations has the minimum running cost
	(a) hydroelectric (b) nuclear power (c) thermal power (d) diesel power
2.	In a thermal power plant, cooling towers are used to  (a) Condense low pressure steam (b) Convert water to ice (c) Cool water used in condenser for condensing steam
3.	(d) Cool feed water of boiler  Pulverized coal is a
	(a) Coal free from ash (b) Non-smoking coal (c) Coal which have for large time. (d) Coal broken into write mentioles

- 3

  - (c) Coal which bums for long time (d) Coal broken into uniform particles
- In a steam turbine cycle, the lowest pressure occurs in
  - (a) Turbine in let

(b) Boiler

(c) Condenser

- (d) Super heater
- 5. Which of the following material can be used as a moderator?
  - (a) Graphite
- (b) Heavy water
- (c) Beryllium
- (d) none of these

•		for taking water from t	the intake works	to the
(a) Dam	(b) Reservoir	(c) Penstock	(d) Surge ta	nk
Gas turbine is wide	ely used in			
(a) Pumping st	ations	(b) Aircraft		
(c) Locomotive	es	(d) Automobiles		
The air standard cy	cle of a gas turbine plant	tis		
(a) Dual cycle		(b) Brayton cycle		
(c) Rankine cy	cle	(d) Carnot cycle		
In pumped storage,	the			
-	•	nps		
	· ·		eriods	
	r r r r	8		
•	w moon day	(b) on every full	moon day	
•	•	•	moon day	
	PART - B (5 x 2	2 = 10 Marks)		
What do you under	stand by load duration co	urves?		
List any four high	pressure boilers.			
Indicate the purpos	e of control rod in a nucl	lear power plant.		
Enumerate the fund	ctions of intercooler in ga	as turbine power plant.		
Signify the factors	to be considered in site s	election for geotherma	l energy.	
	PART - C (5 x 1	6 = 80 Marks)		
(a) Draw the layou	nt of a steam power plant	and explain its princip	le of working.	(16)
	Oı	•		
((b) Explain the wo	rking principle of Fluidi	zed Bed Boiler with a 1	neat sketch.	(16)
	(a) Dam  Gas turbine is wide  (a) Pumping state  (c) Locomotive  The air standard cy  (a) Dual cycle  (c) Rankine cycle  (c) Rankine cycle  (a) Power is proceeded by Water is state  (b) Water is re  (d) Downstream  A high tide occur  (a) on every ne  (c) both on new  What do you under  List any four high proceeded by the factors  (a) Draw the layout	turbine is known as  (a) Dam (b) Reservoir  Gas turbine is widely used in  (a) Pumping stations (c) Locomotives  The air standard cycle of a gas turbine plant (a) Dual cycle (c) Rankine cycle  In pumped storage, the  (a) Power is produced by means of pum (b) Water is stored by pumping (c) Water is re circulated through turbin (d) Downstream water is pumped up-str  A high tide occur  (a) on every new moon day (c) both on new moon and full moon day  PART - B (5 x 2)  What do you understand by load duration contains the purpose of control rod in a nucleon significant to be considered in site in the same power plant  One of the purpose of a steam power plant  One of the purpose of a steam power plant  One of the purpose of a steam power plant  One of the purpose of a steam power plant  One of the purpose of a steam power plant  One of the purpose of a steam power plant  One of the purpose of a steam power plant  One of the purpose of a steam power plant  One of the purpose of a steam power plant  One of the purpose of a steam power plant  One of the purpose of a steam power plant  One of the purpose of a steam power plant  One of the purpose of a steam power plant  One of the purpose of a steam power plant  One of the purpose of a steam power plant	turbine is known as  (a) Dam (b) Reservoir (c) Penstock  Gas turbine is widely used in  (a) Pumping stations (b) Aircraft (c) Locomotives (d) Automobiles  The air standard cycle of a gas turbine plant is  (a) Dual cycle (b) Brayton cycle (c) Rankine cycle (d) Carnot cycle  (c) Rankine cycle (d) Carnot cycle  In pumped storage, the  (a) Power is produced by means of pumps (b) Water is stored by pumping (c) Water is re circulated through turbine (d) Downstream water is pumped up-stream during off load per plant is part of the produced by the produced by the produced by the produced by means of pumps  (b) Water is re circulated through turbine (d) Downstream water is pumped up-stream during off load per plant in the produced by the produced by the produced by an every full produced by the p	(a) Dam (b) Reservoir (c) Penstock (d) Surge ta Gas turbine is widely used in  (a) Pumping stations (b) Aircraft (c) Locomotives (d) Automobiles  The air standard cycle of a gas turbine plant is  (a) Dual cycle (b) Brayton cycle (c) Rankine cycle (d) Carnot cycle  (c) Rankine cycle (d) Carnot cycle  In pumped storage, the  (a) Power is produced by means of pumps (b) Water is stored by pumping (c) Water is re circulated through turbine (d) Downstream water is pumped up-stream during off load periods  A high tide occur  (a) on every new moon day (b) on every full moon day (c) both on new moon and full moon day (d) any time  PART - B (5 x 2 = 10 Marks)  What do you understand by load duration curves?  List any four high pressure boilers.  Indicate the purpose of control rod in a nuclear power plant.  Enumerate the functions of intercooler in gas turbine power plant.  Signify the factors to be considered in site selection for geothermal energy.  PART - C (5 x 16 = 80 Marks)  (a) Draw the layout of a steam power plant and explain its principle of working.

17.	(a)	Elaborate the following (i) Chain grate stoker (ii) Spreader stoker. (iii) Multi retort stoker and (iv) under grate stoker. (16)
		Or
	(b)	List the different types of coal-pulverizing mills. Enumerate its significance.  Describe ball mill with a sketch. (16)
18.	(a)	Illustrate with a sketch the working of a nuclear power plant and explain the various components in detail. (16)
		Or
	(b)	Classify hydraulic turbines. Discuss any two types suitable for hydro-electric power generation. (16)
19.	(a)	Demonstrate with a layout structure of the diesel power plant. Discuss its advantages and disadvantages over gas turbine power plant. (16)
		Or
	(b)	Explain the constructional details and operation of a gas turbine power plant. List the advantages and limitations of open and closed cycle gas turbine power plant. (16)
20.	(a)	(i) Explain the power generation from geothermal energy. (8)
		(ii) Explain the construction and working principle of Tidal power plants. (8)
		Or
	(b)	Enumerate the construction of a solar central receiver system. Explain the function and its types. (16)