UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, July 2020

Course: Hydro Power Generation   Semester: VIII
Program: Int B.Tech ET+IPR   Time 03 hrs.

Course Code: PSEG 362   Max. Marks: 100

Instructions:

1. **Attempt all the questions (Theory, Numerical, Case study etc.) on A4 size blank sheets.**
2. **Attempt all questions serially as per question paper.**
3. **Answer should be neat and clean. Draw a free hand sketch for circuits/tables/schematics wherever required.**
4. **Scan the whole answer script and check the resolution carefully before upload on the blackboard. Note that answer scripts will be considered for evaluation only through Blackboard. No other mode of submission is acceptable.**
5. **You are expected to be honest about each attempt which you make to progress in life**
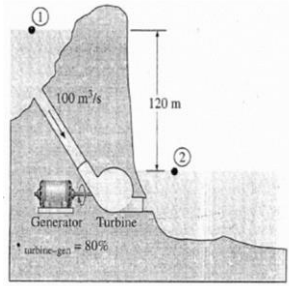
	SECTION A 40 Marks		
S. No.		**Marks**	**CO**
Q 1	Explain with a neat sketch the governing principle of pelton turbine.	**20**	**CO4**
Q 2	Describe in detail few important types of dams.	**20**	**CO3**
	SECTION B 60 Marks		
Q 3	Enumerate the factors affecting the site selection of hydroelectric plants.	**10**	**CO2, CO3**
Q 4	Explain various components and functions of a hydroelectric generation system.	**10**	**CO2**
Q 5	If the catchment area of a reservoir is 50 km^2 and average rainfall is 150 cm/year. Find the power in kW for which station having mean head of 40 meters should be designed. Only 75 % of rainfall is utilized and expected load factor of station is 75 %. Assume the turbine and generator efficiencies are 88 % and 93 % respectively.	**10**	**CO1**

NOTE : The submission time of the Question Paper Answer Sheet is 24 Hhrs from the scheduled time (*exceptional provision due to extraordinary circumstance due to COVID-19 and due to internet connectivity issues in the far-flung areas*).
No Submission will be entertained after 24 Hrs

Q 6	Derive the expression of specific speed of water turbine in terms of speed, power and head.	**10**	**CO4**
Q 7	What are approaches to tackle sedimentation problem of reservoir?	**4**	**CO1**
Q 8	Estimate the electric power output of hydro plant given below:	**4**	**CO2**
Q 9	What are the major reasons for balancing Hydro-thermal mix?	**4**	**CO2**
Q 10	Briefly explain the function of surge tank.	**4**	**CO3**
Q 11	It is required to develop 10 MW at 236 rpm under a head of 500 m with single jet. Calculate specific speed of the turbine.	**4**	**CO4**

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