

IV- SEM /ELECT. & MECH. ENGG/2019(W)

EET-403-GENERATION TRANSMISSION AND DISTRIBUTION

Full Marks: 80

Time : 3 Hours

Answer any FIVE Questions including Q No. 1 & 2

Figures in the right hand margin indicates marks

1.	<p>Answer ALL the following questions in brief:</p> <ul style="list-style-type: none">(a) Define plant capacity factor.(b) What is the function of air pre-heater in a thermal plant?(c) What do you mean by ferranti effect?(d) What is two part tariff?(e) Define peak load on power station.(f) What are the various types of line supports?(g) Define safety factor of insulators.(h) What is sag in overhead line?(i) What is grading of cables?(j) Define demand factor.	2x10															
2.	<p>Answer any SIX questions:</p> <ul style="list-style-type: none">(a) Draw a neat schematic diagram of a hydro-electric plant and explain the function of various components. http://www.sctevtonline.com(b) What are the causes of low power factor and how it can be improved?(c) State the advantages of HVDC transmission over HVAC transmission.(d) Explain different types of insulators used in overhead lines.(e) Discuss ring main distribution system.(f) A consumer is offered electricity at the following tariff: Rs 70 per KVA of his maximum demand plus 5 paise per unit consumed. The consumer has an aggregate motor load of 250 KW at power factor of 0.8 lagging. Calculate the consumer's actual bill for a load factor of 100 percent.(g) Explain methods of cable laying.	5x6															
3.	<p>A two wire DC distribution AB is 300m long is loaded as below:</p> <table border="1" data-bbox="199 1601 1372 1825"><thead><tr><th><u>At point</u></th><th><u>distance from supply end A (in meter)</u></th><th><u>Load in ampere</u></th></tr></thead><tbody><tr><td>C</td><td>50</td><td>20</td></tr><tr><td>D</td><td>100</td><td>30</td></tr><tr><td>E</td><td>200</td><td>80</td></tr><tr><td>B</td><td>300</td><td>50</td></tr></tbody></table> <p>If the supply end voltage is 250v, calculate the voltage at the different load points. The resistance of the distributor is 0.0001Ω per conductor per meter.</p>	<u>At point</u>	<u>distance from supply end A (in meter)</u>	<u>Load in ampere</u>	C	50	20	D	100	30	E	200	80	B	300	50	10
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(Turn over) 1/2

4.	Explain Kelvin's law for economical size of the conductor with graph and discuss its merits and limitations.	10
5.	An overhead 3 phase transmission line delivers 5000 KW at 22 KV at 0.8pf lagging. The resistance and reactance of each conductor is 4Ω and 6Ω respectively. Determine I. Sending end voltage. II. Percentage regulation. III. Line losses IV. Transmission efficiency. V. Also draw the vector diagram.	10
6.	A transmission line has a span of 150m between level supports. The conductor has across sectional area of 2 cm^2 . The tension in the conductor is 2000 Kg. If the specific gravity of the conductor material is 9.9 gm/cm^3 and wind pressure is 1.5 Kg/m length. Calculate the vertical sag.	10
7.	What is corona? Discuss the factors which affect corona. Note down the advantages and disadvantages. Also describe the various methods for reducing corona effect in an overhead transmission line.	10
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