Department of Electrical Engineering
UET (Lahore) Faisalabad Campus

Student Name: Muhammad Asad. Reg. No. 2019EE-383

IS-201-Islamic & Pakistan Studies

Fall 2022, Session 2019 (7th Semester)
Mid-Term Exams

Time Allowed: 60 Minutes
Total Marks: 30

- All the related parts of a question must be solved together.
- Start solution of every new part on a new page.

Islamic Studies					
Q.1		Discuss the advices of Hazrat Luqman to his son and its effects in character building.	06	CLO1	PLO8
Q.2	A	Translate the following verse. ﴿وَمِنَ ٱلنَّاسِ مَن يَشۡتَرِي لَهۡوَ ٱلۡحَدِيثِ لِيُضِلَّ عَن سَبِيلِ ٱللَّهِ بِغَيۡرِ عِلۡمٖ وَيَتَّخِذَهَا هُزُوًاۚ أُوْلَٰٓئِكَ لَهُمۡ عَذَابٞ مُّهِينٞ ۝٦ وَإِذَا تُتۡلَىٰ عَلَيۡهِ ءَايَٰتُنَا وَلَّىٰ مُسۡتَكۡبِرٗا كَأَن لَّمۡ يَسۡمَعۡهَا كَأَنَّ فِيٓ أُذُنَيۡهِ وَقۡرٗاۖ فَبَشِّرۡهُ بِعَذَابٍ أَلِيمٍ ۝٧ إِنَّ ٱلَّذِينَ ءَامَنُواْ وَعَمِلُواْ ٱلصَّٰلِحَٰتِ لَهُمۡ جَنَّٰتُ ٱلنَّعِيمِ ۝٨﴾	03	CLO1	PLO8
	B	And discuss Lah wul Hadithلَهۡوَ ٱلۡحَدِيثِ in the light of Quran and Sunnah.	03		
Q.3	A	Translate the following Hadith أنْظُرُوا إِلَى مَنْ هُوَ أَسْفَلَ مِنْكُمْ، وَلا تَنْظُرُوا إِلَى مَنْ هُوَ فَوْقَكُمْ، فَهُوَ أَجْدَرُ أَنْ لا تَزْدَرُوا نِعْمَةَ اللهِ عَلَيْكُمْ	03	CLO1	PLO8
	B	Discuss the golden principle of leading a peaceful life in the light of this Hadith.	03		
Pakistan Studies					
Q.4		Write the role of women in Pakistan movement.	06	CLO3	PLO 12
Q.5		Write in detail Features of Objective Resolutions 1949.	06	CLO3	PPLO12

EE Department, UET, Lahore
Faisalabad Campus

Reg. No. 2019EE383

EE454 Power System Protection

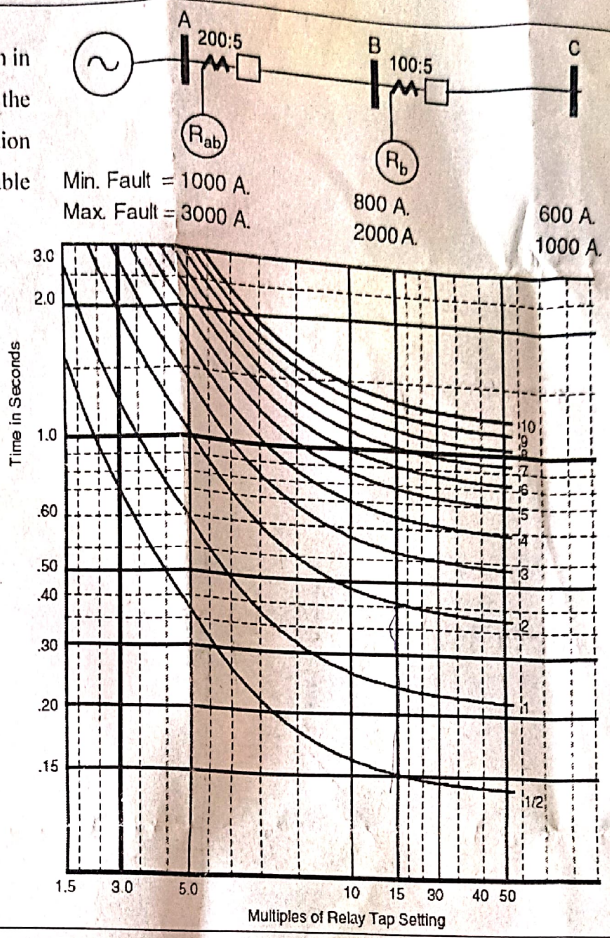
Mid Term Exam (3 Nov. 2022, Session 2019)

- Start solution of every new question on a new page.
- All the related parts of a question must be solved together.

Time Allowed: 60 Minutes
Total Marks: 30

Q.1 For the portion of power system given in the figure, *carry out* calculations for the appropriate settings of the protection relays Rb and Rab. Assume available pickup settings to be 4,6,8,10 and 12A. Note that Rab has to act as a backup protection for Rb, while also giving primary protection to its own section AB. On the other hand, you may assume that Rb does not have to be coordinated with any downstream relay. Use the mentioned CT ratios in your calculations. The maximum load current is 100A.

Both Rab and Rb are inverse time-delay overcurrent relays, for which the characteristic graph is being provided here.



14 CLO1

Q.2 Briefly mention the *application* of the following concepts for power system relaying:

a. 'Ratio correction factor' for Current Transformers

b. 'Security' for power system protection design

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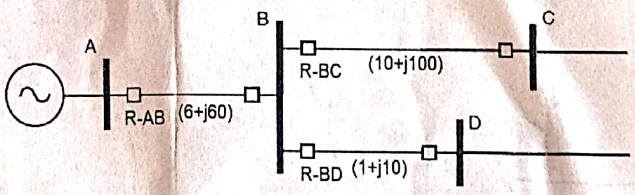
Q.3 With reference to the portion of power transmission system shown in the accompanying figure (with line impedances shown in parenthesis), **evaluate i.e. assess each of the following settings** for the distance relay R-AB, via appropriate calculations. (Marks will be for these calculations).



Note that the CT ratio for the relay is 500:5 and the PT ratio is 13.86kV:69.3V. Also, for the present numerical problem, ignore overlapping of any zone of R-AB with that of the downstream relays R-BC or R-BD.

Zone-1 setting of relay R-AB = 2.6+j26

Zone-2 setting of relay R-AB = 6+j60

Zone-3 setting of relay R-AB = 10.5+j105

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Department of Electrical, Electronics & Telecom Engineering
UET (Lahore) Faisalabad Campus

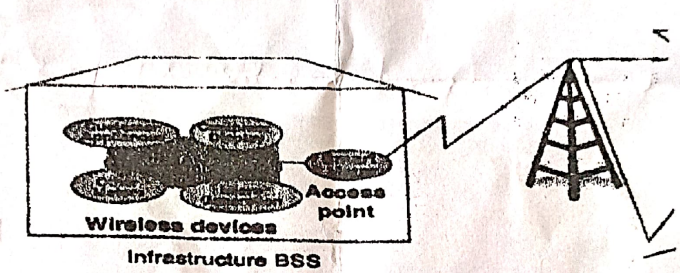
Student Name: Muhammad Asad Reg. No. 2019-EE-383

EE456 Smart Grid

Fall 2022, Session 2019 (07th Semester)
Mid-Term Exams

- All the related parts of a question must be solved together.
- Start solution of every new part on a new page.

Time Allowed: 60 Minutes
Total Marks: 30

Q.1	A	A company in Australian village decided to develop communication infrastructure for smart grid system within some limitations for setup according to main supervision. For Han network the main requirement is low power consumption and wireless. For NAN network within village ranges between 30 to 50 Km, and the main requirement is wireless communication system. **Describe** which communication topology will be most suitable according to limitation and requirement for both HAN and NAN respectively? (Just name) Also **Explain** working of Phasor Measurement Unit that they want to install for NAN communication system? 	05	CLO1, Level 2, Understand	PLO1
	B	**Describe** the main configuration of Logic Link Control (LLC) that the company want to install for communication system for within grid station?	05		
Q.2	A	Construct the flow chart of Incremental Conductance method and **outline** different rules for construction of algorithm?	03	CLO3, Level 4, Analyze	PLO2
	B	A PV array is connected to boost converter through MPPT Technique whose output is 400 V, while solar irradiance decreased to 500 W/m^2 the voltage of converter decreases up to 160 V. As MPPT Technique is continuously changing the duty cycle then **analyze** the reason which cause the voltage to decrease?	02		
	C	A C´uk converter has an input of 12 V and is to have an output of -18 V supplying a 40 W load. Select the duty ratio, the switching frequency (50 kHz), the inductor sizes such that the change in inductor currents is no more than 10 percent of the average inductor current, **outline** the value of inductors and their current waveform?	05		

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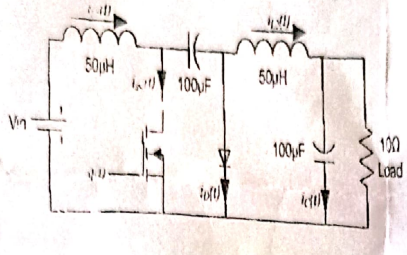
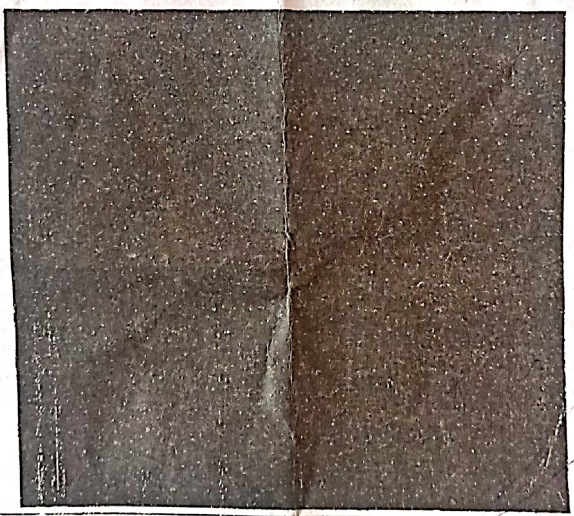
	D	For the Ćuk converter shown, below, draw and **outline** the currents of switch and capacitor I_{sw} and I_{C1} in timing relation with the switching function. 	02		
	E	• In three phase inverter you are to synthesize a three-phase voltage vector $v_{abc} = [-250 \quad 200 \quad 50]^t$. Convert this voltage in d-q frame of reference v_x and **analyze** it. • Using space vector PWM calculate t_a, t_b *and* t_o. • Assume the switching interval is 100 μs. exactly identify the inverter states corresponding to those computed time intervals by drawing the inverter switch states corresponding time interval T_0, T_1 *and* T_2 in sector 4 $[V_{011}, V_{001}]$ $t_a = U\left[\cos\alpha - \frac{1}{\sqrt{3}}\sin\alpha\right]$ $V_a = \frac{2}{\sqrt{3}} \cdot V_x \cdot \sin\left(\frac{\pi}{3} - \alpha\right)$ $T_{abc-dq} = \sqrt{\frac{2}{3}}\begin{bmatrix} 1 & -\frac{1}{2} & -\frac{1}{2} \\ 0 & \frac{\sqrt{3}}{2} & -\frac{\sqrt{3}}{2} \end{bmatrix}$ $t_b = \frac{2}{\sqrt{3}} \cdot U \cdot \sin\alpha$ $V_b = \frac{2}{\sqrt{3}} \cdot V_x \cdot \sin\alpha$ •  Length=600V	08	CLO3, Level 4, Analyze	PLO2