

Program: BE Electrical Engineering

Curriculum Scheme: Rev2012

Examination: Final Year Semester VIII

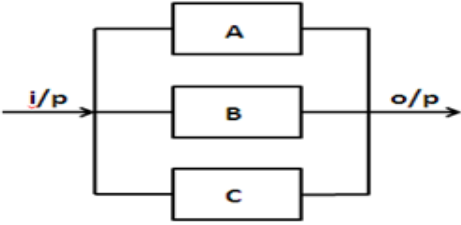
Course Code: **EEC803** and Course Name: **Power System Planning and Reliability**

Time: 1 hour

Max. Marks: 50

Note to the students: - All the Questions are compulsory and carry equal marks.

Q1.	Which one is considered as a weather independent load or base load?
Option A:	Domestic load
Option B:	Commercial load
Option C:	Agriculture load
Option D:	Industrial load
Q2.	Energy forecasts are used to determine _____
Option A:	capacity of generation , transmission and distribution
Option B:	type of facilities required
Option C:	further development in load
Option D:	installing of new power plant
Q3.	What is the demand factor of residential load?
Option A:	70-95%
Option B:	90-95%
Option C:	75-85%
Option D:	85-95%
Q4.	Process in which the network specifications are determined in an effective and reliable manner is known as:
Option A:	Load forecasting
Option B:	Reactive power planning
Option C:	Transmission planning
Option D:	Generation planning
Q5.	Which one is not an objective of reactive power compensation?
Option A:	Power factor improvement
Option B:	Voltage support
Option C:	Harmonics elimination
Option D:	Frequency control
Q6.	Which one is a non-iterative load flow method?
Option A:	DC load flow method
Option B:	Gauss-Seidal load flow method
Option C:	Newton Raphson load flow method
Option D:	Decoupled load flow method
Q7.	What is the period of medium term planning?
Option A:	3-6 years

Option B:	3-8 years
Option C:	2-5 years
Option D:	3-5 years
Q8.	Which of the following statements is true about bath-tub curve?
Option A:	The early phase represents wearout failures.
Option B:	The middle phase represents wearout failures.
Option C:	The last phase represents random failures.
Option D:	The middle phase represents random failures.
Q9.	The reliability for the system whose cut-set diagram is
	
Option A:	$1 - \begin{pmatrix} Q_A + Q_B + Q_C \\ -Q_A Q_B - Q_A Q_C \\ -Q_B Q_C + Q_A Q_B Q_C \end{pmatrix}$
Option B:	$R_A R_B R_C$
Option C:	$R_A + R_B + R_C \\ - R_A R_B - R_A R_C \\ - R_B R_C + R_A R_B R_C$
Option D:	$1 - (Q_A Q_B Q_C)$
Q10.	Which of the following statement is true in Reliability studies?

Option A:	A tieset fails only if all its components fails
Option B:	A system fails if any of its tie set fails
Option C:	A cutset fails only if all its components fails
Option D:	A system fails only if all of its minimal cut set fails
Q11.	"The probability of a device performing its function adequately for the intended period of time under specified operating condition" is
Option A:	Efficiency
Option B:	Planning
Option C:	Reliability
Option D:	Forecasting
Q12.	A system consists of 10 identical components all of which must work for system success. What is the system reliability if reliability of each component is 0.88?
Option A:	0.999
Option B:	0.107
Option C:	0.598
Option D:	0.278
Q13.	Loss of Energy Expectation for a study period where E_i is the energy curtailment during an outage O_i and p_i is the probability of the outage is given by:
Option A:	$\prod p_i E_i$
Option B:	$\prod (p_i + E_i)$
Option C:	$\sum p_i E_i$
Option D:	$\sum (p_i + E_i)$
Q14.	Probability of exactly r successes or $(n-r)$ failures in n trials having probability of success p can be expressed using binomial distribution as:
Option A:	${}_n C_r p^{(n-r)} (1-p)^r$
Option B:	${}_n C_r p^r (1-p)^{(n-r)}$
Option C:	${}_n P_r p^r (1-p)^{(n-r)}$

Option D:	${}_n P_r p^{(n-r)}(1-p)^r$
Q15.	Which of the following statements is true about LOLE?
Option A:	The reciprocal of LOLE is a frequency parameter.
Option B:	LOLE in <i>hrs/year</i> is obtained by multiplying the <i>days/year</i> value by 24
Option C:	LOLE is the average number of time units that the load exceeds the available generating capacity.
Option D:	LOLE measures the expected energy that will not be supplied to the load.
Q16.	2-state Markov model is applicable for:
Option A:	Base load unit
Option B:	Rapid start unit
Option C:	Hot reserve unit
Option D:	Cold reserve unit
Q17.	Unit Availability is given as:
Option A:	$\mu/(\mu+\lambda)$
Option B:	$r/(m+r)$
Option C:	r/T
Option D:	$\lambda/(\mu+\lambda)$
Q18.	What will the total power capacity in a system when three 50 MW unit and one 70 MW unit is operated at FOR of 0.02 and 0.03 respectively?
Option A:	170MW
Option B:	150MW
Option C:	220MW
Option D:	70MW
Q19.	If FOR is 0.02 of five 25 MW generating capacity, how much will be the operating if three units are in DOWN state?
Option A:	100 MW
Option B:	125 MW
Option C:	75 MW
Option D:	50 MW
Q20.	What is the probability when 50 MW unit is operating if generating system consist of three 25 MW units each having FOR of 0.04.
Option A:	0.1045
Option B:	0.11
Option C:	0.8847
Option D:	0.8404
Q21.	Which risk is associated with dispatch decision of operating reserve unit?
Option A:	Unit commitment risk
Option B:	Response risk

Option C:	Energy index risk
Option D:	Failing to start risk
Q22.	Outage replacement rate of an operating reserve unit with failure rate λ , repair rate μ and very small lead time T is given by:
Option A:	$\frac{\mu}{\lambda + \mu}$
Option B:	$\frac{\lambda}{\lambda + \mu}$
Option C:	λT
Option D:	$\frac{\lambda T}{\lambda + \mu}$
Q23.	The probability that a unit fails and is not replaced during lead time is known as
Option A:	Operating Reserve
Option B:	Outage Replacement Rate
Option C:	Outage Reserve
Option D:	Operating Replacement Rate
Q24.	Transmission line outages due to a ground fault on a breaker, a stuck breaker condition, a bus fault or a combination of these outages is an example for:
Option A:	Independent outage
Option B:	Dependent outage
Option C:	Common mode outage
Option D:	Station originated outage
Q25.	Average customer Curtailment index (ACCI) is
Option A:	total energy not supplied/ total number of customer affected
Option B:	total energy not supplied/ total number of customer served
Option C:	total energy supplied/ total number of customer affected
Option D:	total energy supplied/ total number of customer served

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Question	Correct Option (Enter either 'A' or 'B' or 'C' or 'D')
Q1.	D
Q2.	B
Q3.	A
Q4	C
Q5	D
Q6	A
Q7	C
Q8.	D
Q9.	D
Q10.	C
Q11.	C
Q12.	D
Q13.	C
Q14.	B
Q15.	C
Q16.	A
Q17.	A
Q18.	C
Q19.	D
Q20.	B
Q21.	B
Q22.	C
Q23.	B
Q24.	C
Q25.	A