### उप अभियंता(विद्युत) सहायक विद्युत निरीक्षक, गट-अ सा.बां.वि. [जाहिरात क्र.३३५-२०१३] परीक्षेचा दिनांक : १८ ऑगस्ट, २०१३ [ऑनलाईन परीक्षा ]

#### उत्तरतालिका

महाराष्ट्र लोकसेवा आयोगामार्फत " उप अभियंता(विद्युत) सहायक विद्युत निरीक्षक, गट-अ सा.बां.वि. [जाहिरात क्र.३३५-२०१३] " या परीक्षेच्या प्रश्नपत्रिकेची उत्तरतालिका उमेदवारांच्या माहितीसाठी वेबसाईटवर प्रसिध्द करण्यात आली आहे. सदर उत्तरतालिकेतील प्रश्न-उत्तरासंबंधी उमेदवारांना निवेदन करावयाचे असल्यास ती अधिप्रमाणित स्पष्टीकरण/संदर्भासह उपसचिव (गोपनीय), महाराष्ट्र लोकसेवा आयोग,बँक ऑफ इंडिया बिल्डिंग, ३ रा मजला, हुतात्मा चौक, मुंबई-१ येथे पाठवावे. यासंदर्भात दि. २६ ऑगस्ट, २०१३ पर्यंत आयोगाकडे पोहोचलेल्या निवेदनांचीच दखल घेतली जाईल. तद्नंतर आलेली निवेदने विचारात घेतली जाणार नाहीत, याची कृपया नोंद घ्यावी.

# Deputy Engineer (Electrical) / Assistant Electrical Inspector Group A – Public Works Department

## Section-1(General Aptitude- Q 'n no-1-25)

Q No1	For which special reason was the Right to Information bill needed in 2005?
1	Increasing awareness about policy.
2	Making it easier for government officials.
3	Making government more responsible.
4	Increasing citizen participation.
Answer - 3	

Q No2	Who cannot make an RTI application?
1	Corporations
2	Individual citizen
3	Workers in a factory
4	Government employees
Answer - 1	

Q No3	What information can be withheld under RTI?
1	The data collected about defence personnel
2	Public works which are yet to be completed
3	Treaties made with other countries on border security.
4	That which could lead to breach of national security.
Answer - 4	

Q No4	Which of these organisations would not come under the RTI?
1	Non government organisation funded by State
2	Central Bureau of Investigation.
3	Semi Autonomous organisation
4	Public works departments
Answer - 2	

Q No5	Who appoints the officers of the Central Information Commission?	
1	Chief Justice of India	
2	President of India	
3	Cabinet Secretary	
4	UPSC.	
Answer - 2		

Q No6	What is the main focus of the right to Education Act,2009.
1	To bring all the private and aided Schools under governmental control
2	To offer free and compulsory Education to children between six to Fourteen years.
3	To make-up the shortage of trained teachers through the services of parents.
4	To make Secondary Education accessible to all children in the whole country.
Answer - 2	

Q No7	Which of these approaches would help to solve the twin problem of earthquake and flood in the Himalaya?
1	Increase forest cover in the upper reaches .
2	Design modern sturdy buildings
3	Live with Nature, not meddle with it
4	Control the rivers with dams and barrages
Answer - 3	

Q No8	What did the recent law regarding mining rights declare?
1	Minerals belong to the State not the land.
2	All minerals found in a place are owned by the owner of the land
3	All minerals are the property of the State along with the land
4	All the land and the minerals belong to the Panchayat.
Answer - 2	

Q No9	Which city has applied to the UNESCO to be considered a Heritage city?
1	Mumbai
2	Kolkata
3	Agra
4	Delhi
Answer - 4	

Q No	Which mineral has the Indian Rare Earths Ltd been permitted to export ?
10	
1	Monazite
2	Uranium
3	Lithium
4	Thorium
Answer - 1	

Q No	What is BHEEM?
11	
1	Road roller
2	Rocket to be launched in to space
3	New diesel locomotive engine
4	Mars exploratory vehicle launched
Answer - 3	

Q No 12	What is the best reason why special status is provided to tribal and indigenous communities?	
1	Providing more facilities exclusively for tribes	
2	Bringing Tribal people into the mainstream	
3	creating more jobs in government sector	
4	ensuring equality as per Constitution	
Answer	Answer - 2	

Q No	Which are the sectors where FDI is not allowed in India, both under the Automatic Route	
13	as well as under the Government Route	
1	Defence Equipment .	
2	Electronic goods.	
3	Solar Technology.	
4	Agricultural Food processing.	
Answer	Answer - 4	

Q No	Which Indian movie has been adjudged the best in the millennium by England?	
14		
1	Mother india	
2	Sholay	
3	Mughal-e-Azam	
4	Alam - ara	
Answer - 3		

Q No	What privileges do the heritage sites enjoy?
15	
1	Status and security
2	Money for upkeep and care
3	Expertise and labour
4	Advertisement
Answer - 2	

Q No	Which Nonagenarian in the world is considered a symbol of peace and non-violence
16	today?
1	Dalai lama
2	Pope Francis
3	Aung Sang Su Chi
4	Nelson Mandela
Answer - 4	

Q No	What efforts are being made all over the world to preserve the identity of Indigenous
17	tribes?
1	protection in their natural habitat
2	provision of special status for tribes
3	Recording of their habits and customs
4	Special educational facilities.
Answer - 1	

Q No	In which city was the first Asian games held?
18	
1	Beijing
2	Singapore
3	Colmbo
4	Delhi
Answer - 4	

Q No 19	which of the following forms of the classical dance was patronized by the Mughal rulers?
1	Kathkali
2	Kathak
3	Bharatnatyam
4	Manipuri
Answer - 2	

Q No 20	Who won the Wimbledon women single championship in 2013?	
20		
1	Serena williams	
2	Anna Sharpova	
3	Sabine Lisciki	
4	Marion Bartoli	
Answe	Answer - 4	

Q No	What does IBL stand for?
21	
1	International badminton league
2	Indian basketball league
3	Indian badminton league
4	International basketball league
Answer - 3	

Q No	What controversial issue has Snowden raised?
22	
1	Creating a policy for internet privacy.
2	Protection of privacy on internet.
3	Increasing the access to internet.
4	Creating awareness about safety.
Answer - 2	

Q No	The duration of the current (12 <sup>th</sup> ) five year plan is:
23	
1	2011-16
2	2012-17
3	2013-18
4	2010-15
Answer - 2	

Q No 24	As per 2013-14 railway budget, Indian Railway will introduce a new hyper luxury class which is known as	
1	Udaan	
2	Anand	
3	Apoorva	
4	Anubhuti	
Answer	Answer - 4	

Q No	The first woman to climb Mt Everest with artificial limbs?	
25		
1	Bachindri Pal	
2	Raha Moharrak	
3	Tamae Watanabe	
4	Arunima Sinha	
Answer - 4		

## Section-2 (Electrical engineering- Q 'n no-26-100)

Q No	The First nuclear power plant was installed in India at
26	
1	Kota
2	Kalpakkam
3	Tarapur
4	Narora
Answer - 3	

Q No 27	The estimated value of installed power plant capacity requirements in India now is
21	
1	3.5 x 10 <sup>5</sup> MW
2	2.5 x 10 <sup>5</sup> MW
3	1.5 x 10 <sup>5</sup> MW
4	1 x 10 <sup>5</sup> MW
Answer - 2	

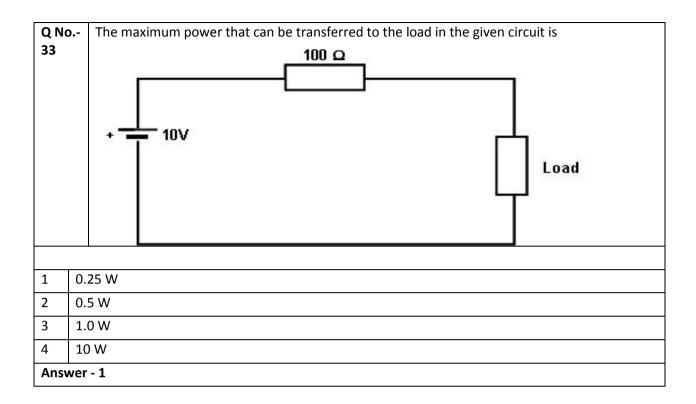
Q No	Which one of the following is NOT considered as commercial energy?
28	
1	Electrical Energy
2	Oil Energy
3	Coal Energy
4	Solar Energy
Answer - 4	

Q No 29	The Bureau of Energy Efficiency (BEE) has been established in order to
1	Provide policy frame work and direction to national energy conservation
2	Promote power generation avenues in India.
3	Train engineers in Power sector for better performance
4	Increase Transmission efficiency by reduction of losses
Answer - 1	

Q No 30	As per the Electricity Act 2003, the term <b>cogeneration</b> means
1	Interconnection of power systems
2	Production of energy by nonconventional methods
3	Working of power generating agencies together
4	A process which simultaneously produces two or more forms of useful energy
Answer - 4	

Q No 31	Which one of the following is a characteristic of an Ideal voltage source ?
1	The voltage is in direct proportion to current
2	It has zero internal resistance
3	It has infinite internal resistance
4	Open circuit voltage is equal to voltage on full load
Answer - 2	

Q No 32	The number of branches in a network having 4 nodes and 3 independent loops will be
1	5
2	6
3	7
4	8
Answer - 2	



Q No	,	
34	A. The line voltages are equal	
	B. The phase difference between line voltages is same	
	C. The impedances in phases are equal	
1	A, B, C only	
2	A and C only	
3	A and B only	
4	B and C only	
Answe	Answer - 1	

Q No 35	The circuit shown in the figure illustrates a  C  C
1	low pass filter
2	high pass filter
3	band pass filter
4	band reject filter
Answei	- 2

Q No 36	The iron losses in a single phase transformer are 5000 watts. The full load copper losses are 6400 watts. At half load, the copper losses and iron losses will be respectively
1	3200 watts and 2500 watts
2	3200 watts and 5000 watts
3	1600 watts and 1250 watts
4	1600 watts and 5000 watts
Answer - 4	

Q No	In a transformer zero voltage regulation can be obtained by
37	
1	Resistive loads
2	Inductive loads
3	Capacitive loads
4	Combination of resistive and inductive loads
Answer - 3	

Q No	A power transformer will operate at highest efficiency when
38	
1	Iron losses are equal to copper losses
2	Iron losses are less than copper losses
3	Iron losses are more than copper losses
4	Eddy current losses are equal to hysterisis losses.
Answer - 1	

Q No 39	Two transformers are operating in parallel. The load shared will depend on their
1	Efficiency
2	Ratings
3	Turns ratio
4	Per unit impedance
Answer - 2	

Q No 40	Which one of the following combinations of 3 phase transformer can operate in parallel ?
1	Star / star and start / delta
2	Delta / star and delta / delta
3	Delta / star and delta / star
4	Delta / delta and delta / delta
Answer - 3	

Q No	Which one of the motors should NOT be run on no load?
41	
1	DC shunt motor
2	DC series motor
3	Induction motor
4	Synchronous motor
Answer - 2	

Q No 42	Wave winding is employed is a DC machine of
1	high current and low voltage rating
2	low current and high voltage rating
3	high current and high voltage rating
4	low current and low voltage rating
Answer - 2	

Q No 43	The most economical method of electrical braking is
1	Plugging
2	Dynamic braking with separate excitation
3	Dynamic braking with self excitation
4	Regenerative braking
Answer - 4	

Q No 44	A single phase motor fails to start and gives humming noise. The reason could be
1	Low voltage
2	High voltage
3	Blown fuses
4	Shorted stator winding
Answer - 4	

Q No 45	If the phase sequences of applied voltage in a 3 phase induction motor is changed, the result will be that
1	No torque will be developed
2	Direction of rotation of the motor will change
3	The slip will increase
4	Motor will draw more current
Answer - 2	

Q No 46	For the same output, the space required by a steam power station is less than
1	diesel power station
2	atomic power station
3	hydropower station
4	gas turbine power station
Answer - 3	

Q No	In a thermal power station, the feed water coming to the economizer is heated using
47	
1	low pressure steam
2	high pressure stem
3	furnace heat
4	flue gases
Answer - 4	

Q No 48	A load curve shows the relationship between
48	
1	load and time
2	units generated and time
3	load and current
4	energy output and current
Answer - 1	

Q No	The advantages of interconnected power systems is
49	
1	less reserve capacity requirement and higher reliability
2	high reserve capacity requirement and high power factor
3	high reserve capacity and low reliability
4	less faults and high power factor
Answer - 1	

Q No 50	Heavy water is used in nuclear plants as
1	fuel and coolant
2	coolant and moderator
3	shield and moderator
4	fuel and reflector
Answer - 2	

Q No 51	As compared with a solid conductor of the same radius, corona appears on a stranded conductor at low voltage, because the stranding of the conductor
1	helps ionization process
2	makes the current flow spirally
3	produces surfaces of smaller radius
4	reduces the value of current
Answer - 3	

Q No 52	High voltage transmission lines are transposed to
1	reduce corona losses
2	prevent interference with telephone lines
3	prevent short circuit between lines
4	reduce transmission losses
Answer - 2	

Q No 53	In underground cables, the electrostatic stress is
1	maximum at the conductor surface
2	maximum at the sheath
3	minimum at conductor surface
4	same at the conductor and sheath
Answer - 1	

Q No 54	The pu impedance of a line to 50 MVA, 132 KV base is 0.4, the pu impedance to a 100 MVA, 132 KV base will be
1	0.2
2	0.6
3	0.8
4	1.6
Answer - 3	

Q No	In HVDC transmission system, the AC harmonics which are eliminated by 12 pulse bridge	
55	converters are	
1	3 <sup>rd</sup> harmonics	
2	3 <sup>rd</sup> , 5 <sup>th</sup> and 7 <sup>th</sup> harmonics	
3	3 <sup>rd</sup> and 5 <sup>th</sup> harmonics	
4	5 <sup>th</sup> and 7 <sup>th</sup> harmonics	
Answer	Answer - 4	

Q No 56	In case of an unbalanced star connected load supplied from an unbalanced 3 phase 3 wire system, the load currents will consist of	
1	positive sequence components only	
2	negative sequence components only	
3	zero sequence components only	
4	positive and negative sequence components only	
Answer	Answer - 4	

Q No 57	In case of an Air blast circuit breaker, current chopping will be observed, when which one of the following is switched off?	
1	long overhead line	
2	bank of capacitors	
3	transformer on no load	
4	heavy load	
Answer	Answer - 3	

Q No	In distance protection, the relay measures
58	
1	negative sequence impedance of the line from relay upto the fault point
2	positive sequence impedance of the line from relay upto the fault point
3	self impedance of the relay upto the fault point
4	zero sequence impedance of the relay upto the fault point
Answer - 2	

Q No 59	Differential relays protect the equipment against
1	over current
2	internal faults
3	reverse current
4	reverse power
Answer - 2	

Q No	Load flow study is used for
60	
1	system planning
2	economic considerations
3	fault calculations
4	stability consideration
Answer - 1	

Q No 61	The sensitivity of a potentiometer can be increased by
02	
1	decreasing the length of potentiometer wire
2	decreasing the resistance of potentiometer wire
3	increasing the length of potentiometer wire
4	increasing the voltage applied
Answer - 3	

Q No 62	A moving iron voltmeter draws a current of 1 mA for full scale value of 100V. If it draws a current of 0.5 mA, the meter reading will be
1	25V
2	50V
3	100V
4	200V
Answer - 1	

Q No	Which one of the following digital voltmeters is most suitable to eliminate effect of period
63	noise
1	ramp type
2	integrating type
3	successive approximation type
4	servo type
Answer - 4	

Q No 64	While measuring power in a balanced 3 phase, 3 wire circuit by 2 wattmeter method, the readings of the watt meters are equal and positive. The power factor is	
1	Zero	
2	0.5	
3	0.866	
4	Unity	
Answer	Answer - 4	

Q No	According to regulations, the megger voltage for testing 500 V installation should be
65	
1	1000V
2	750V
3	500V
4	250V
Answer - 1	

Q No 66	As per the electricity regulations in India, what should be the permissible percentage voltage drop at the consumers premises ?
1	± 3%
2	± 6%
3	± 10%
4	± 12%
Answer - 2	

Q No	Which one of the following neutral systems requires the lightning arrestor of least voltage	
67	rating ?	
1	Insulated	
2	solidly earthed	
3	resistance earthed	
4	reactance earthed	
Answer	Answer - 2	

Q No 68	Series capacitor is used in a transmission line to
00	
1	reduce line loss
2	limit short circuit current
3	compensate the voltage drop
4	improve load power factor
Answer - 3	

Q No 69	According to regulations, the total connected load and the number of points on a lighting sub circuit should not exceed	
1	700 watts and 8 points	
2	800 watts and 10 points	
3	900 watts and 10 points	
4	1000 watts and 10 points	
Answer	Answer - 2	

Q No	Earthing gives protection against
70	
1	Temperature rise
2	Over loading
3	Voltage protection
4	Electric shocks
Answer - 4	

Q No	A ring main distribution system is preferred to a radial distribution system because	
71	A. Power factor is higher	
	B. Voltage drop in the feeder is less	
	C. Supply is more reliable	
1	A and B only	
2	A and C only	
3	A, B and C only	
4	B and C only	
Answer	Answer - 4	

Q No	On which one of the following faults the rating of a circuit breaker is usually determined?
72	
1	Symmetrical
2	Line to line
3	Single line to ground
4	Double line to ground
Answer - 1	

Q No	An isolator is used to break the circuit under
73	
1	No load conditions
2	Fault conditions
3	Abnormal current flow
4	Over voltage conditions
Answer - 1	

Q No 74	Which one of the following sequence of operations is to be followed for operation of circuit breaker, isolator and earthing switch while opening a circuit ?
1	Open circuit breaker → open isolator → close earthing switch
2	Open isolator → open circuit breaker → close earthing switch
3	Open earthing switch → open isolator → open circuit breaker
4	Open circuit breaker → close earthing switch → open isolator
Answer - 1	

Q No 75	A bus coupler circuit breaker is utilized in a substation for joining the
1	transmission line with station bus bar
2	main and transfer bus in a substation
3	generator with transfer bus
4	neutral of the generator with earth
Answer - 2	

Q No 76	If the secondary of a current transformer is open circuited when the primary is carrying current the effect will be that the
1	primary current will become zero
2	high voltage will be induced across secondary causing flash over
3	high voltage will be induced across primary
4	secondary current and voltage will become zero
Answer	- 2

Q No	Which one of the bus bar arrangement is more reliable and flexible ?
77	
1	mains and transfer bus scheme
2	one and half breaker scheme
3	double main bus bar scheme
4	single bus bar scheme
Answer - 2	

Q No	A bus bar is rated by
78	
1	current and frequency
2	voltage and frequency
3	current, voltage and frequency
4	current, voltage, frequency and short circuit current
Answer - 4	

Q No 79	What is the maximum transmission voltage substation in India
1	400 kV
2	500 kV
3	750 kV
4	1000 kV
Answer - 3	

Q No	The electronic cable fault locaters work on the principle of
80	
1	wheat stone bridge
2	reflection of voltage impulse
3	charging and discharging the cable
4	fall of potential
Answer - 2	

Q No	One tonne of refrigeration (1 TR) means that the heat removing capacity is
81	
1	21 kJ/min
2	41 kJ/min
3	210 kJ/min
4	410 kJ/min
Answer - 3	

Q No 82	In a vapour compression system, the condition of refrigerant after passing through the compressor and before entering the condenser is
1	wet vapour
2	dry vapour
3	high pressure saturated liquid
4	super heated vapour
Answer - 4	

Q No	The Freon group of refrigerant are
83	
1	halo- carbon refrigerants
2	hydro- carbon refrigerants
3	in organic refrigerants
4	high pressure refrigerants
Answer - 1	

Q No 84	During humidification process which one of the following increases ?	
04		
1	wet bulb temperature	
2	dry bulb temperature	
3	relative humidity	
4	specific humidity	
Answer	Answer - 3	

Q No	If the speed of a Fan is reduced by 10% the power consumption will
85	
1	decrease by 13%
2	increase by 23%
3	increase by 33%
4	decrease by 23%
Answer - 3	

Q No 86	For fans, the relation between discharge and speed is indicated by the relationship (where Q and N represent the discharge and speed respectively)
1	Q1/Q2 = N1/N2
2	$Q1/Q2 = (N1/N2)^2$
3	$Q1/Q2 = (N1/N2)^3$
4	$Q1/Q2 = (N1/N2)^4$
Answer - 1	

Q No	Which type of control gives maximum benefits for fan application from energy saving	
87	point of view?	
1	discharge damper control	
2	inlet guide vane control	
3	variable pitch control	
4	speed control	
Answer	Answer - 4	

Q No	The pressure to be considered for calculating the power required for centrifugal fans is:
88	
1	suction static pressure
2	discharge pressure
3	total static pressure
4	static plus dynamic pressure
Answer - 3	

Q No	Motor used for driving blowers and fans is usually
89	
1	slip ring induction motor
2	squirrel cage induction motor
3	dc shunt motor
4	cascade controlled ac motor
Answer - 2	

Q No	A heat pump working on a reverse carnot cycle has a co-efficient of performance (COP) of
90	5. It works as a refrigerator taking 1 kW of work input. The referigerating effect will be
1	2 kW
2	3 kW
3	4 kW
4	5 kW
Answer - 3	

Q No 91	The flicker effect of fluorescent lamps is more visible at
1	lower voltages
2	lower frequencies
3	higher voltages
4	higher frequencies
Answer - 2	

Q No	The purpose of choke in a fluorescent tube circuit is to
92	
1	improve power factor
2	reduce radio interference
3	produce high voltage for starting
4	reduce the flicker
Answer - 3	

Q No	Which one of the following lamps gives higher luminous efficiency at selected colours for
93	the same wattage ?
1	metal halide lamps
2	compact fluorescent lamps
3	mercury vapour lamps
4	sodium vaour lamps
Answer - 1	

Q No	Which one of the following requires the highest level of illumination ?
94	
1	machine shop
2	Printing
3	operation theatre
4	drawing halls
Answer - 3	

Q No	The light emitting diodes (LED) have
95	
1	characteristics similar to pnp junctions
2	characteristics similar to npn junctions
3	higher forward and lower reverse breakdown voltage ratings
4	lower forward and higher reverse breakdown voltage ratings
Answer - 3	

Q No 96	The plates of a lead acid battery are most likely to be short circuited if
1	high voltage charging is used
2	too much distilled water is used
3	sediment is collected at the bottom
4	battery is charged very slowly
Answer - 4	

Q No 97	In lead acid batteries, sedimentation occurs due to
1	Battery remaining idle for long periods
2	Over charging of batteries at slow rate
3	Over charging of batteries at high rate
4	Slow charging of batteries at low rate
Answer - 3	

Q No	The function of MOSFET in an uninterrupted power supply (USP) is to	
98		
1	cut off over load circuit and restart the supply	
2	generate and amplify oscillation signals	
3	act as switching device at the output section	
4	detect abnormal conditions at the input section	
Answer - 3		

Q No	In a Diesel Generator (DG) set, the white smoke indicates
99	
1	presence of water in the combustion chamber
2	improper combustion
3	burning of oil in combustion chamber
4	worn out piston rings
Answer - 1	

Q No	The SAE number of the oil used in DG Sets denotes
100	
1	oil viscosity
2	oil density
3	oil flash point
4	oil ambient temperature
Answer - 1	