GANPAT UNIVERSITY
PH.D. ENTRANCE TEST - 2017
FACULTY OF ENGINEERING & TECHNOLOGY
[ELECTRICAL ENGINEERING]
SECTION –B Total Marks : 50

Instruction:
- Each Question carries equal marks.
- All questions are compulsory.
- Make suitable assumptions if required.

1	Dc cables used for HVDC transmission is [a] Mass impregnated oil-filled cable. [b]Dry caused polymeric insulated cable with metallic screen and outer covering [c] Oil or liquid impregnated paper cable. [d] Any of the above.	1
2	Shrot Circuit ratio of an HVDC Grid is : [a] DC Power Flow/KVA. [b]AC MVA/DC MW. [c] Voltage/Current at the Short ckt. Point. [d] Short Circuit MVA at Converter bus rated DC power MWatt	1
3	In 12 pilse connections, transformers are connected: [a] Delta/Delta (Both) [b] Star/star (Both) [c] Star/Delta(Both) [d] One Star/Star and other Star/Delta.	1
4	Compared to SCRs, IGBT Have : [a] More Turn-On, Turn-Off Time. [b] Less Turn-On, Turn-Off Time. [c] Both have same characteristics. [d] Turn-On- Turn-Off Times can be more or less depending on the circuit.	1
5	During commutation in a Converter: [a] Voltage is exchanged. [b] Current is transformed from one switch to the other. [c]DC Voltage is blocked. [d] None of the above.	1
6	Power Factor of rectifier with firing angle α and commutation overlap μ is : [a] $\cos\alpha + \cos(\alpha+\mu)$. [b] $\cos\alpha + \cos(\alpha-\mu)$. [c] $\frac{1}{2}[\cos\alpha - \cos(\alpha+\mu)]$. [d] $\frac{1}{2}[\cos\alpha + \cos(\alpha-\mu)]$.	1
7	If base resistance on DC Side is 120Ω,the base impedance on ac side will be: [a] $20 \times \pi$. [b] $10 \times \pi$. [c] $30 \times \pi$. [d] $120/\pi$.	1
8	Power transfer through AC system depends on: [a] Sending and receiving end voltages [b] Phase angle difference between sending end & receiving end voltages. [c] Reactance of the line. [d] All of the above.	1
9	Harmonic Filters are protected by: [a] Over Current Relays [b] Lightning Arresters. [c] Spark Gaps. [d]None off the avobe.	1
10	Size of an AC Filter and it's MVAR capacity is much less in VSC schemes as : [a] No harmonics are generated. [b] Harmonics generated are of much higher order. [c] Filter need not supply RKVA at Power Frequency and harmonics generated are at	1

	switching frequency and higher.1 [d] None of the above.	
11	The resistance of each arm of the Wheatstone bridge is 10 Ω. Resistance of 10 Ω is connected in series with the galvanometer, then equivalent resistance across the battery will be: [a] 20 Ω [b] 40 Ω, [c] 15 Ω, [d] 10 Ω.	1
12	Norton's theorem is _____ form of an equivalent circuit. [a] Both Voltage and Current. [b] Current. [c] Voltage. [d] None of the above.	1
13	In the analysis of the transistor circuit, we usually use _____ theorem. [a] Norton's. [b] Thevenin's [c] Reciprocity [d] Super Position.	1
14	One KWh is equal to: [a] 36×10^3 Joules. [b] 10^3 Joules. [c] 36×10^5 Joules. [d] 10^5 Joules	1
15	Two electric lamps of 40 Watts each are connected in parallel. The power consumed by the combination is : [a] 20 Watt [b] 60 Watt [c] 80 Watts [d] 100 Watts.	1
16	An electric motor operating at 100V dc draws current of 10 A. If motor's efficiency is 25 %,Then resistance value of the windings of the motor is: [a] 5 Ω [b] 7.5 Ω [c] 15 Ω [d] 25 Ω	1
17	In a cable capacitor, voltage gradient is maximum at the surface of the: [a] Sheath [b] conductor [c] insulator [d] earth.	1
18	An Oil Circuit Breaker is rated for 1000 MVA, 2000Amp, 66 KV, 3-phase, 3 sec. What is it's rated symmetrical breaking current? [a] 8750 Amp [b] 2000 Amp [c] 10000Amp [d] 15151 Amp.	1
19	For Relay, Plug setting Multiplier = [a] Primary Current/(Relay Current x C.T. Ratio) [b] Secondary Current/(Relay Current x C.T. Ratio) [c] Primary Current/(C.T. Ratio) [d] Primary Current/(Relay Current)	1
20	Carrier current protection is normally used for : [a] HV cables only. [b] HV Transmission line only [c] HV transmission and cables only. [d] None of above.	1
21	The rotation of disc of an induction disc relay the poles is [a] from unshaded pole to shaded pole [b] from shaded pole to unshaded pole [c] It depends upon magnitude of current. [d] It depends upon the CT secondary connection.	1
22	The p.u. impedance value of an alternator corresponding to base value 13.2kV and 30 MVAis 02 p.u. The p.u.value for the base values 13.8 kV and 50MVA will be: [a] 0.306 p.u. [b] 0.33 p.u. [c] 0.318 p.u. [d] 0.328 p.u.	1
23	For rural electrification in a country like India with complex network it is preferable to use: [a] Air blast C.B. [b] Oil C.B. [c] Vacuum C.B. [d] M.O. C.B.	1
24	Shunt Compensation in an EHV is resorted to : [a] Improve the stability [b] Reduce the fault level [c] Improve the voltage profile [d] As a substitute of synchronous phase modifier.	1
25	For the stability and economic reasons, we operate the transmission line with power	1

	angle in the range : [a] 10° to 25° [b] 30° to 45° [3] 60° to 75° [4] 65° to 80°	
26	In a 400kV power network, 360kVis recorded at 400kV bus. The reactive power absorbed by a shunt reactor rated for 50 MVAR, 400kV connected at the bus is [a] 61.73 MVAR [b] 55.5MVAR [c] 45 MVAR [d] 40.5 MVAR.	1
27	For a two-machine system with losses, with the transfer-impedance being resistive, the maximum value of sending-end power P_{1max} and maximum receiving-end power P_{2max} will occur at power-angle(ϑ) in such a manner that. [a] both P_{1max} and P_{2max} occur at power angles $\vartheta < 90°$. [b] both P_{1max} and P_{2max} occur at power angles $\vartheta > 90°$. [c] P_{1max} occur at $\vartheta > 90°$ and P_{2max} occur at $\vartheta < 90°$. [d] [c] P_{1max} occur at $\vartheta < 90°$ and P_{2max} occur at $\vartheta > 90°$.	1
28	Consider the following statements about the utility of delta-connected tertiary windings in star-star connected power transformer. [1] It makes supply available for small loads. [2] It provides low reactance paths for zero sequence currents. [3]It is used to suppress harmonics voltages. [4] It is used to allow flow of earth fault current for operation of protective relays. Which of these statements are exactly correct? [a] 1 and 2 [b] 2,3 and 4. [c] 1,3 and 4 [d] 1,2,3 and 4.	1
29	Zero ssequence currents can flow from a line into a transformer bank if the windings are : [a] grounded star/delta [b] delta/star [c] star/ grounded star [d] delta/delta.	1
30	The magnetizing current in a transformer is rich in [a] 3rd Harmonic [b] 5th Harmonic [c] 7th Harmonic [d] 13th Harmonic	1
31	In large synchronous generator, dampers are provided in order to [a] increase stability [b] eliminate harmonics effects [c] reduce voltage fluctuations [d] both [a] and [b].	1
32	Which of the following statements about a squirrel cage induction motor is incorrect? [a] It has no commutator and no slip-ring. [b] It is provided with cage rotor which is simple and robust in construction. [c] It has high starting torque. [d]Almost 90% of Induction motors are of this type.	1
33	An Induction motor has synchronous speed of 1500 rpm, what will be the slip when it is running on a speed of 1450 rpm? [a] +3.33% [b] -3.33% [c] +3% [d] -3%.	1
34	The starting torque of 3 -phase induction motor varies as: [a] V^2 [b] V [c] √V [d] 1/V	1
35	IC 7483 is a : [a] TTL binary adder [b] TT block [c] 8-bit binary subtractor [d] none of above	1
36	A 555 timer can be used as: [a] an astable multivibrator only. [b] A monostable mutivibrator [c] A frequency divider only. [d] An astable multivibrator or a monostable multivibrator or a frequency divider.	1
37	The maximum firing angle that can be obtained by a pure resistive trigger circuit used in phase control circuit is:	1

	[a] 45° [b] 90° [c] 135° [4] 180°	
38	How many SCRs are connected in series with 800V rating to be used for a 3kV circuit using derating factor of 15%.: [a] 3 [b] 4 [c] 5 [d] 6	1
39	Which semiconductor power device out of the following is not a current triggered device? [a] Thyristor [b] GTO [c] Triac [d] MOSFET	1
40	Which material is used for accurate and stable time base circuit in digital frequency meter? [a] quartz [b] Rochelle salt [c] aluminum [d] none of these.	1
41	A digital voltmeter has a read-out range from 0 to 9999. When full scale reading is : [a] 0.001 [b] 1000 [c] 3 digit [d] 1mVolt.	1
42	Both ALU and the control section have special-purpose storage location called: [a] Address [b] Accumulators [c] Registers [d] decoders.	1
43	Software is : [a] for connecting the ROMs and RAMs to the main microprocessors. [b] Typing of a given programme in card punching machine. [c] The impermanent informational structure. [d] For providing the required IC Chips for Microprocessor	1
44	The performance of a single phase full converter as influenced by source inductance is given by the relation : [a] $\cos(\alpha+\mu)=\cos(\alpha-\frac{\omega Lslo}{Vm})$ [b] $\cos(\alpha+\mu)=\cos(\alpha-\frac{2\omega Lslo}{Vm})$ [c] $\cos(\alpha+\mu)=\cos(2\alpha-\frac{\omega Lslo}{Vm}$ [d] $2\cos(\alpha+\mu)=\cos(\alpha-\frac{\omega Lslo}{Vm})$	1
45	A 3-ϕ VSI supplies purely inductive 3-ϕ load. Upon Fourier Analysis, the output voltage waveform is found to have an hth order harmonic of magnitude αh times that of the fundamental frequency component (α_h <1). The load current than would have an hth order harmonics magnitude. [a] Zero. [b] α_h time the fundamental frequency component. [c] h. α_h times the fundamental frequency component. [d] α_h/h times the fundamental frequency component.	1
46	Voltage induced in rotor of Induction Motor when it runs at synchronous speed is (a) Very near input voltage to stator [b] Slip time the input voltage [c] zero [d] none of these.	1
47	A bar metal bar is heated electronically by : [a] Emission Heating [b] Di-electric heating [c] Induction heating [d] Conductive heating.	1
48	If the frequency of current in chopper is increased from 200MHz to 800MHz, the skin depth of penetration would become: [a] four times [b] Equal to radius of conductor [c] halved [d] Two fold.	1
49	A SMPS operating at 20kHZ to 100kHZ range uses as the main switching elements: [a] SCR [b] MOSFET [c] Transistor [d]SIT	1
50	Which of the following software is not fully used for Electrical System simulation purpose? [a] Matlab [b] PSCAD [c] Mi-Power [d] AutoCaD.	1

Answer Sheet for Objective question paper od PhD Entrance - [Electrical]

Question No.	Answer choice	Question No.	Answer choice
1	B	26	D
2	D	27	A
3	D	28	D
4	B	29	C
5	B	30	A
6	C	31	D
7	A	32	C
8	D	33	A
9	B	34	A
10	C	35	A
11	D	36	D
12	B	37	B
13	A	38	C
14	C	39	D
15	C	40	A
16	B	41	D
17	B	42	C
18	A	43	C
19	A	44	A
20	B	45	D
21	A	46	A
22	A	47	C
23	C	48	D
24	C	49	B
25	B	50	D