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TEST CODE: PTJEEL SIII

Question Paper

Electrical Engineering, General Awareness,
Reasoning and English

Time Allowed : 2 Hrs.

Question Booklet No.

5300338

Max. Marks : 100

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INSTRUCTIONS FOR CANDIDATE

1. This Question-Booklet contains 100 Questions on the following :-

Section	Subject	Q. No.	Total Ques.
Part-I	Electrical Engineering	1-60	60
Part-II	General Awareness, Reasoning and English	61-100	40
	Total Questions		100

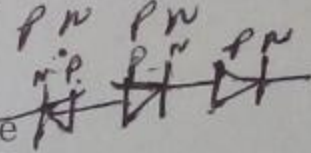
2. There are 16 pages in this Booklet out of which Page No. 1 is for instructions to the candidates. Page Nos. 15 and 16 are meant for Rough Work and page nos. from 2 to 14 contain question of all parts. After opening of the Booklet and before you start answering the questions you must check up this booklet and ensure that it contains all the pages (1-16) and see that no page is missing or repeated. If you find any defect in this booklet, you must get it replaced immediately from the Invigilator within first 10 minutes of start of the Examination.
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6. All questions are compulsory. Each question carries one mark. There is negative marking; $1/4^{\text{th}}$ mark will be deducted for each wrong answer.
7. You are required to mark you answers only on the OMR Answer Sheet which has been provided to you separately with **BLACK BALL POINT PEN ONLY**.
8. Use of Books, Notes and copying and receiving/giving assistance is not allowed. Further, use of calculator-separate or with watch, Tablets any type of mobile phones, Books, slide rules, foot rules, note books or written notes is also prohibited during the examination. Any candidate who is found either copying or receiving, giving assistance or using unfair means will be disqualified and his/her candidature will accordingly be cancelled.
9. This question booklet supplied to the candidate can be retained by the respective candidate after the examination. Only the answered OMR sheet is required to be returned to the room invigilator on completion of examination before you leave examination hall. Any candidate trying to tamper, take them away or found in unauthorized possession of OMR Answer Sheet, is liable for cancellation of candidature or any legal action against him/her.

Electrical Engineering

Q1) Two P-n junction diodes are connected back to back to make a transistor.

Which one is correct?

- a) current gain of such a transistor will be high
 b) current gain of such a transistor will be moderate
 c) it can be used only for P-n-P transistor
 d) it cannot be used as a transistor



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Q2) Which of the following units rating of UPS is done?

- a) VA b) Watt c) Amp. Hr d) KWh

1

Q3) Efficiency of a transformer will be maximum when copper loss equal to:

- a) Hysteresis loss b) Eddy Current Loss
 c) Iron Loss d) none of these

3

Q4) In a DC generator, the effect of Armature reaction is to _____ the field strength under leading pole tips.

- a) strengthen b) weaken
 c) either strengthen or weaken d) none of these

Q5) Commercially, AC power is generated by:-

- a) induction generators b) synchronous generators
 c) motor-generator set d) all of these

Q6) Five capacitors of different ratings such as $C_1 > C_2 > C_3 > C_4 > C_5$ are connected in series. The equivalent capacitance is most near to:-

- a) C_1 b) C_5 c) C_3 d) $C_1 + C_2 + C_3 + C_4 + C_5$

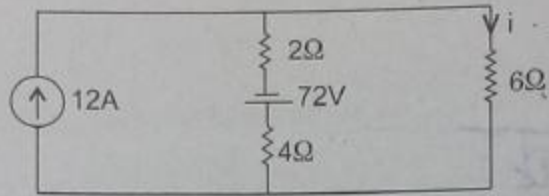
Q7) Which of the following starting method of 3-phase induction motor requires rearrangement of stator winding connection?

- a) direct online b) insertion of resistance in primary
 c) auto transformer d) star delta

Q8) Which of the following parameter cannot be measured by a PMMC type measuring instrument?

- a) voltage b) current c) power d) none of these

Q16) Using Superposition Theorem or otherwise, find the value of 'i' in the shown figure :-



- a) 12A b) 6A c) 0A d) None of these

Q17) When temperature of a magnetic material is increased above the curie point, it becomes :-

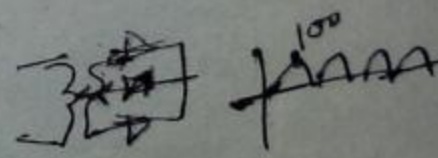
- a) Diamagnetic b) Paramagnetic
 c) Ferromagnetic d) Ferrimagnetic

Q18) The two windings of an auto - transformer are electrically _____ and magnetically _____.

- a) coupled, coupled b) decoupled, decoupled
 c) coupled, decoupled d) decoupled, coupled

Q19) DC motors are still used in industries, primarily because of :-

- a) High Power
 b) Easy availability of DC in industries
 c) Smooth and easy speed control
 d) None of these



Q20) In a centre tap full wave rectifier, 100 V is the peak voltage between the centre tap and one of the secondary. What is the maximum voltage across the reversed biased diode :-

- a) 200 V b) $100\sqrt{2}$ V c) $200\sqrt{2}$ V d) 100 V

Q21) Which of the following is the correct circuit symbol of P - Channel MOSFET?

- a) b) c) d)

3-28 a

Q22) Form factor for a half wave rectified sinusoidal AC wave is :-

- a) 2 b) 1.57 c) 1.11 d) $\sqrt{2}$

Q23) Zero voltage regulation of a transformer may be achieved, only when the PF is :-

- a) 1 b) 0 c) Leading d) Lagging

Q24) Synchronous motors are used as synchronous condenser for :-

- a) improving the power factor of the system
 b) charging of the condenser
 c) running of lift loads
 d) running of electric trains

Q25) The synchronous generators employed at Hydroelectric power plants usually have _____ number of poles as compared to the synchronous generators installed at thermal power plants.

- a) same b) lesser c) more d) none of these

Q26) If the frequency of the applied AC voltage to a 3-phase induction motor is halved while keeping all other things same, then :-

- a) the motor will not run
 b) the motor will run at a higher speed
 c) the motor will run at a lower speed
 d) the motor speed will keep on increasing to infinite

Q27) Which of the following cannot be driven by a shaded pole motor ?

- a) fans b) photocopiers
 c) lifts d) grinder - mixer

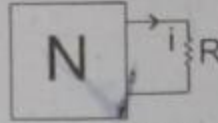
Q28) The unit of magnetic flux is :-

- a) Tesla b) Weber
 c) Ampere - turn d) None of these

Q29) The full load copper loss and iron loss of a transformer are 6800w and 4000 w respectively. The copper loss and iron loss at half load will be respectively :-

- a) 3400 w, 4000 w b) 6800 w, 2000 w
 c) 3400 w, 2000 w d) None of these

Q30) The black box N contains resistances and independent sources.



If $i = 5 \text{ A}$ and 2.5 A for $R = 0 \Omega$ and 2Ω respectively, then the value of i for $R = 3 \Omega$ is :-

- a) 1 A b) 3 A c) 4 A d) 2 A

Q31) A $1000 \mu\text{F}$ capacitor is in series with 1000Ω resistance and the combination is connected across 200 V supply. The time constant of the circuit will be :-

- a) 0.1 s ~~b) $1 \mu\text{s}$~~ c) 1 s d) 106 s

Q32) Cutting of air gap in magnetic circuit results in :-

- a) reduction of reluctance b) increase in reluctance
c) no change in reluctance d) none of these

Q33) A resistor fed from 220 V , dc and 220 V ac separately. Heat generated in the two cases in 30 minutes is H_1 and H_2 respectively, then :-

- a) $H_1 = H_2$ b) $H_1 > H_2$ c) $H_1 < H_2$ d) $H_1 = 1.11 H_2$

Q34) The type of emf induced inside the armature conductor of a DC machine is of :-

- a) pulsating DC nature b) AC nature
c) pure DC nature d) none of these

Q35) In a split phase motor :-

- a) both winding have equal (X/R) ratio
 b) the starting winding has less (X/R) ratio than main winding
 c) the starting winding has more (X/R) ratio than main winding
 d) both windings have only resistance and no reactance

Q36) Which of the following motors can work at unity power factor ?

- a) reluctance motor b) 3ϕ induction motor
c) 3ϕ synchronous motor d) universal motor

Q37) In eddy current damping, disc or former is made of material that is a :-

- a) conductor but non-magnetic b) conductor but magnetic
c) non-conductor but non-magnetic d) non-conductor but magnetic

Q38) The total iron loss in a transformer core at 25 Hz and 50 Hz is 250 W & 800 W respectively. The eddy current loss at 25 Hz is :-

- a) 100 W b) 150 W c) 200 W d) 600 W

Q39) The power in a circuit is $P = I^2R$. The current is measured with an accuracy of + 1.5% and the tolerance band of resistor is ± 1.5%. The linear error is :-

- a) + 1.125% b) + 3.5% c) + 2% d) + 2.5%

Q40) 110 V, 50 Hz single phase supply is needed from a 220 V, 50 Hz source. The ratios of weights of copper needed in a two winding transformer and an auto transformer employed for this purpose, is :-

- a) 2:1 b) 1:2 c) 3:1 d) 1:3

Q41) In a sine wave, maximum rate of change of voltage occurs at :-

- a) ascent of the wave from zero b) positive maximum
c) negative maximum d) between maximum & minimum

Q42) We have three resistance of values 5 Ω, 40 Ω and 10 Ω. Which of the following combinations will give an effective resistance of 13 Ω?

- a) 40 Ω resistance in series with parallel combination of 5 Ω and 10 Ω resistance.
b) 5 Ω resistance in series with parallel combination of 40 Ω and 10 Ω resistance
c) 10 Ω resistance in series with parallel combination of 5 Ω and 40 Ω resistance
d) all the resistances in parallel.

Q43) Under the condition of maximum power transfer for the load, the voltage across load and efficiency are respectively :-

- a) 100 % and 50 % b) 50 % and 25 %
c) 50 % and 100 % d) 50 % and 50 %

Q44) Star - delta starting is equivalent to auto transformer starting with :-

- a) 85 % tapping b) 58 % tapping
c) 50 % tapping d) 75 % tapping

Q45) Potentiometer is :-

- a) null type instrument b) digital instrument
c) deflection type instrument d) all of above

Q46) In a single phase induction machine regular maximum boost is obtained when the angle between the axes of the stator winding and the rotor winding is equal to :-

- a) 0° b) 45° ✓ c) 90° ~~d) 180°~~

Q47) The self-inductance of a long cylindrical conductor due to its internal flux linkage is KH/m . If the diameter of the conductor is doubled, then the self inductance of the conductor due to its internal flux linkages would be :-

- a) $0.5 KH/m$ ✓ b) KH/m c) $1.414 KH/m$ d) $4 KH/m$

Q48) When an electric current flow through a conductor, its temperature rises because of :-

- a) mutual collision between metal atoms
 b) mutual collision between conducting electrons
 c) collision between conduction electrons and atoms
 d) release of conduction electrons from parent atoms

Q49) The cells are connected in parallel when one requires :-

- a) higher current b) higher voltage
 c) constant voltage d) constant current

Q50) A transistor in quiescent state when there is no :-

- a) biasing b) AC signal applied to the input
 c) output d) flow of current.

Q51) Two resistances of 10Ω and 15Ω are connected in parallel. If a third resistance of 5Ω is now connected in parallel with them, then the equivalent resistance of the combination will be :-

- a) less than 5Ω b) greater than 15Ω
 c) between 5 and 15Ω d) none of these

$$\frac{10 \times 15}{10 + 15} = 6$$

$$\frac{6 \times 5}{6 + 5} = 2.73$$

Q52) A 2Ω resistance is connected to a 2A DC current source. How much energy is dissipated in the resistance in 10 seconds?

- a) 1J b) 80J c) 80W d) 10J

$$= I^2 R t$$

$$Q = i t$$

$$2 \times 10 = 20$$

$$A \times 2 \times 10 = 20$$

Q53) As per the analogy between magnetic circuits and electrical circuits, which of the following parameter of the magnetic circuit is analogous to the electric current of the electric circuit :-

- a) magnetic current b) magnetic field
 c) magnetic flux d) magnetic flux density

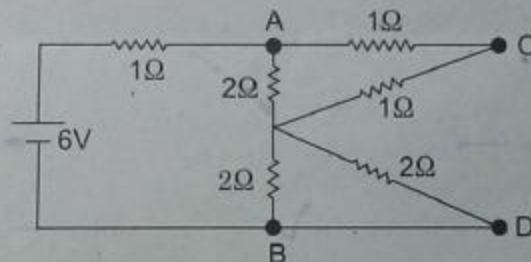
$$C = \frac{Q}{V}$$

Q54) In phasor diagram representation of AC circuit, which of the following parameter of AC is not represented :-
 a) frequency b) phase
 c) magnitude d) none of these

Q55) In phasor diagram of RLC – parallel circuit connected with a current source, reference phasor is usually :-
 a) voltage across source b) current of source
 c) current of resistance d) none of these

Q56) When 220 V, 50 Hz, 1 – phase AC is applied to an Inductor of 1 H, then the Inductor behaves in steady state as : *Current flows*
 a) open circuit b) resistance of 1Ω
 c) reactance of 314Ω d) short circuit

Q57) Find V_{AB} in the shown figure.



a) 3 V b) 2 V c) 6 V d) 4 V

Q58) Which of the following is used for tuning at a frequency in radio circuit?
 a) variable resistor b) variable inductor
 c) variable capacitor d) None of these

Q59) Soft iron is used to manufacture electromagnets because of its :-
 a) high saturation magnetization b) low retentivity
 c) low coercive field d) all of these

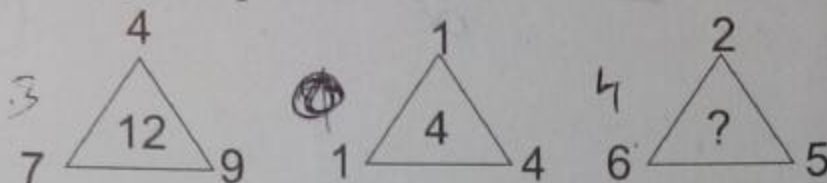
Q60) Transformer efficiency is usually :-
 a) $> 90 \%$ b) $< 50 \%$
 c) between 50% to 75% d) between 75% to 90%

53 + 29 = 82

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General Awareness, Reasoning and General English

61) Which number replace question mark :-



- a) 8
- b) 9
- c) 4
- d) 16

Q62) If the following words are arranged according to dictionary what will be the correct order :-

- 1) Martial
- 2) Marital
- 3) Material
- 4) Matriarch

- a) 4321
- b) 2314
- c) 1234
- d) None of the above

Q63) Complete the series: 1, 1, 3, 9, 6, 36, 10, 100, 15, 225 :-

- a) 15
- b) 16
- c) 20
- d) 25

Q64) If 166 is related to 13, 207 will be related to :-

- a) 9
- b) 11
- c) 15
- d) 44

Q65) In a certain code "RECESSION" is written as "ERECSISNO". How is "ECONOMICS" written in that code?

- a) NOCEOSCIM
- b) CENQOIMSC
- c) CENOOIMCS
- d) CEONOMISC

Q66) A container contains 80 kg of milk. From this container, 8 kg of milk was taken out and replaced by water. This process was further repeated two times. How much milk is now in the container?

- a) 50.1 kg
- b) 53.42 kg
- c) 58.34 kg
- d) 60 kg

Q67) In 10 years "A" will be twice as old as "B" was 10 years ago. If "A" is now 9 years older than B, the present age of "B" is :-

- a) 29 years
- b) 39 years
- c) 49 years
- d) 19 years

Q68) If "yellow" is called "blue", "blue" is called "green", "green" is called "red", "red" is called "white" and "white" is called "black", then the colour of sky will be _____?

- a) Red
- b) Green
- c) Black
- d) White

Yellow - Blue
 Blue - Green
 Green - Red
 Red - White
 White - Black

10A - B
 10A - 10B
 10A - 10B
 10A - 10B

A	B
18	9
28	19

Q77) Transform the sentence :-

Rita is too honest to take bribe.

- a) Rita is so honest that she will not take bribe.
 b) Rita is too honest that she will not take bribe.
 c) Rita is very honest that she will not take bribe.
 d) Rita is so honest to take bribe.

Q78) Interrogative sentence of: "He searched the room very carefully".

- a) Did he search the room very carefully? *Did he search the*
 b) He searched the room very carefully.
 c) Did he searched the room very carefully?
 d) Has he searched the room very carefully?

सकल था

सकल था तुम का रहे थे में — ५०५० वरगता

Q79) Had I known you were coming, I _____ at home.

- a) would stay b) would have stayed
 c) could stay d) will stay

Q80) The meaning of Affable is _____

- a) intense suffering b) courteous
 c) to put off d) rude

Q81) A wiseman lives within his income but a fool lives _____ his means.

- a) besides b) beyond c) without d) above

Q82) Rearrange the following jumbled words to make meaningful sentences.

She was though ambitious poor she was yet.

- a) ambitious though poor she was yet was she.
 b) yet she was though ambitious poor she was.
 c) she was ambitious though she was poor.
 d) though she was poor yet she was ambitious

Q83) I have great fondness _____ Poetry.

- a) for b) of c) about d) in

Q84) Poverty is a standing hindrance _____ great human achievement.

- a) over b) at c) to d) upon

Q85) This custom seems to have organised _____ an East European country.

- a) in b) with c) from d) by

Q86) The maximum strength of the Rajya Sabha is :-

- a) 250 b) 270 c) 300 d) 545

Q87) The President of India is elected by :-

- a) The people of India
b) All the members of the Parliament
c) All the elected Members of the Parliament and of State Legislative Assemblies
d) None of the above

Q88) Which democratic country is said to be federal in form but unitary in character :-

- a) USA b) India c) Ireland d) UK

Q89) The energy of sun is produced by :-

- a) ionization b) nuclear fusion
c) nuclear fission d) oxidation

Q90) Which city will become the first host Summer Olympics for three times :

- a) London b) Rome c) Athens d) Lahore

Q91) For outstanding contribution to which one of the following fields is Shanti Swarup Bhatnagar Prize given :-

- a) Literature b) Performing Arts
c) Science d) Social Service

Q92) The total number of ear bones are :-

- a) 2 b) 4 c) 6 d) 8

Q93) The term "tricks" is associated with which of the following games :-

- a) Polo
b) Billiards
c) Bridge
d) Croquet

Q94) When was the opening ceremony of 2012 Summer Olympics?

- a) July 27, 2012
b) Aug 27, 2012
c) July 17, 2012
d) July 21, 2012

Q95) In which part of the world will the total Solar Eclipse appears which occurs on 13th November 2012 :-

- a) Northern Alaska
b) Eastern Russia
c) Northern Australia and South Pacific
d) South Africa

Q96) Which country took over the rotating presidency of the UN Security Council in June 2012?

- a) India
b) Iraq
c) Iran
d) China

Q97) Who among the following was the special guest of India's Sixty Third Republic Day celebrations?

- a) Yingluck Shinawatra
b) Thaksin Shinawatra
c) Angela Merkel
d) Sheika Hasina Wajed

Q98) No money bill can be introduced in the Legislative Assembly of a State, except on the recommendations of :-

- a) The Parliament
b) The Governor of the State
c) The President of India
d) A Special Committee of Ministers

Q99) Fundamental Duties were included in the Constitution of India on the Recommendation of :-

- a) Balwant Rai Metha Committee
b) Iyenger Committee
c) Swaran Singh Committee
d) Thakkar Committee

Q100) "Chipko" Movement was basically against :-

- a) water pollution
b) noise pollution
c) deforestation
d) cultural pollution

1. (D)	2. (A)	3. (C)	4. (B)	5. (B)	6. (B)	7. (D)	8. (C)	9. (C)	10. (A)
11. (A)	12. (A)	13. (B)	14. (B)	15. (A)	16. (C)	17. (B)	18. (A)	19. (C)	20. (A)
21. (D)	22. (B)	23. (C)	24. (A)	25. (C)	26. (C)	27. (C)	28. (B)	29. (D)	30. (D)
31. (C)	32. (B)	33. (A)	34. (B)	35. (B)	36. (C)	37. (A)	38. (B)	39. (*)	40. (A)
41. (D)	42. (B)	43. (D)	44. (B)	45. (A)	46. (C)	47. (B)	48. (B)	49. (A)	50. (B)
51. (A)	52. (B)	53. (C)	54. (A)	55. (A)	56. (C)	57. (D)	58. (C)	59. (D)	60. (A)
61. (B)	62. (D)	63. (A)	64. (A)	65. (B)	66. (*)	67. (B)	68. (B)	69. (C)	70. (D)
71. (C)	72. (D)	73. (D)	74. (B)	75. (D)	76. (D)	77. (A)	78. (A)	79. (B)	80. (B)
81. (B)	82. (D)	83. (A)	84. (C)	85. (*)	86. (A)	87. (C)	88. (B)	89. (B)	90. (A)
91. (C)	92. (C)	93. (C)	94. (A)	95. (C)	96. (D)	97. (A)	98. (B)	99. (C)	100. (C)