

MGVCL JE

**Previous Year Paper
(Electrical)**

30 Jul, 2021 Shift 1

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GENERAL KNOWLEDGE - GENERAL KNOWLEDGE

Question No.1 Marks: 1.00 Bookmark ☐ The Prime Minister Rozgar Yojana (PMRY) was launched in which year? (A) ☐ 2003 (B) ☐ 1995 (C) ☒ 1993 (Correct Answer) (D) ☐ 2005
Question No.2 Marks: 1.00 Bookmark ☐ Recently, India signed first ever term contract to import crude oil with which country? (A) ☐ China (B) ☒ Russia (Correct Answer) (C) ☐ Nepal (D) ☐ Japan
Question No.3 Marks: 1.00 Bookmark ☐ Which of the following architectures is also known as "Five Principles of Peaceful Co-existence"? (A) ☐ Panchayatana (B) ☒ Panchsheel (Correct Answer) (C) ☐ Vedanga (D) ☐ Manusmriti
Question No.4 Marks: 1.00 Bookmark ☐ The air envelope surrounding the earth is called _____ (A) ☐ Hydrosphere (B) ☐ Lithosphere (C) ☒ Atmosphere (Correct Answer) (D) ☐ Asthenosphere
Question No.5 Marks: 1.00 Bookmark ☐ Recently, Dr. Subir Vithal Gokarn passed away due to illness. He is a/an _____ (A) ☒ Former RBI Deputy Governor (Correct Answer) (B) ☐ Former Finance Minister (C) ☐ Former IAS Officer (D) ☐ Former Chief Minister of Gujarat

Question No.6

Marks: 1.00

Bookmark ☐

In which of the following States, Tarapur Nuclear Power Plant is located?

- (A) ☐ Assam
- (B) ☒ Maharashtra (Correct Answer)
- (C) ☐ Bihar
- (D) ☐ Uttar Pradesh

Question No.7

Marks: 1.00

Bookmark ☐

Dena Bank and Vijaya Bank recently got merged with which of the following banks?

- (A) ☐ State Bank of India
- (B) ☐ Punjab National Bank
- (C) ☐ Indian Overseas Bank
- (D) ☒ Bank of Baroda (Correct Answer)

Question No.8

Marks: 1.00

Bookmark ☐

What is the full form of the acronym 'BCCI' in sports?

- (A) ☐ Board of Common Cricket in International
- (B) ☒ Board of Control for Cricket in India (Correct Answer)
- (C) ☐ Board of Cricket Committee in India
- (D) ☐ Board of Cricket Commentary in International

Question No.9

Marks: 1.00

Bookmark ☐

The term NEFT (in banking), is an abbreviation of _____

- (A) ☐ Net Electronics Funds Transfer
- (B) ☐ Net Electronics Financial Transfer
- (C) ☒ National Electronic Funds Transfer (Correct Answer)
- (D) ☐ National Electronics Financial Transaction

Question No.10

Marks: 1.00

Bookmark ☐

Who has won the 'World Games Athlete Of the Year 2019' ?

- (A) ☐ Marina Chernova
- (B) ☒ Rani Rampal (Correct Answer)
- (C) ☐ Stanislav Horuna
- (D) ☐ Rhea Stinn

ENGLISH KNOWLEDGE - ENGLISH KNOWLEDGE

Question No.1

Marks: 1.00

Bookmark ☐

Replace the underlined phrase grammatically and conceptually with the help of the given options. If the given sentence is correct then select the option 'The given sentence is correct'.

The new client had to pay money to initiates a account and activate their service

- (A) ☐ had to pay money to initiate a
- (B) ☒ had to pay money to initiate an (Correct Answer)

- (C) ☐ The given sentence is correct
(D) ☐ have to pay money to initiate an

Question No.2

Marks: 1.00

Bookmark ☐

Choose the word which expresses nearly the **opposite** meaning of the given word "
QUANDARY "

- (A) ☐ Clutch
(B) ☐ Dilemma
(C) ☒ **Certainty (Correct Answer)**
(D) ☐ Embarrassment

Question No.3

Marks: 1.00

Bookmark ☒

Fill in the blanks with suitable Article from the given alternatives.

Bread is _____ predominant food prepared from a dough of flour and water

- (A) ☒ **a (Correct Answer)**
(B) ☐ an
(C) ☐ No article
(D) ☐ the

Question No.4

Marks: 1.00

Bookmark ☒

Choose the best option from the given alternatives which can be substituted for the
given word/sentence.

A disease prevailing in a locality

- (A) ☐ Habitat
(B) ☐ Host
(C) ☐ Epic
(D) ☒ **Endemic (Correct Answer)**

Question No.5

Marks: 1.00

Bookmark ☐

Find the word which is correctly spelt from the given options.

- (A) ☒ **Various (Correct Answer)**
(B) ☐ Absurrd
(C) ☐ Abolishid
(D) ☐ Wrinkel

Question No.6

Marks: 1.00

Bookmark ☐

In the following question, one part of the sentence may have an error. Find out which
part of the sentence has an error and select the option corresponding to it. If the
sentence contains no error, Select "No error" option. (Avoid punctuation errors)

- (A) Bubin together with / (B) her parents are coming / (C) to attend the party. / (D) NO
ERROR
(A) ☐ D
(B) ☐ C

- (C) ☐ A
(D) ☐ B (Correct Answer)

Question No.7

Marks: 1.00

Bookmark ☐

Choose the word which best expresses the similar **meaning** of the given word " CALLOW "

- (A) ☐ Sophisticated
(B) ☐ Mature
(C) ☐ Immature (Correct Answer)
(D) ☐ Calm

Question No.8

Marks: 1.00

Bookmark ☒

Find the word which is correctly spelt from the given options.

- (A) ☐ Benifited
(B) ☐ Diminished
(C) ☐ Ambience (Correct Answer)
(D) ☐ Suppresed

Question No.9

Marks: 1.00

Bookmark ☐

Fill in the blanks with suitable Preposition from the given alternatives.

The match was dedicated _____ Indian fast bowler Zaheer, who has announced his retirement from international cricket

- (A) ☐ to (Correct Answer)
(B) ☐ from
(C) ☐ since
(D) ☐ against

Question No.10

Marks: 1.00

Bookmark ☐

Rearrange the following to form a meaningful sentence and find the most logical order from the given options.

P: 60 countries using dance as a tool for
Q: building social cohesion and resolving
R: conflict throughout the world
S: battery Dance has travelled far and wide across

- (A) ☐ SPQR (Correct Answer)
(B) ☐ PQSR
(C) ☐ SPRQ
(D) ☐ PQRS

ELECTRICAL ENGINEERING - ELECTRICAL ENGINEERING

Question No.1

Marks: 1.00

Bookmark ☐

..... is the rms value of the total current comprising the AC and DC components of the current in the circuit breaker pole at the instant of contact separation.

- (A) ☐ Making current

- (B) ☐ Symmetrical breaking current
- (C) ☒ Asymmetrical breaking current (Correct Answer)
- (D) ☐ Symmetrical short circuit current

Question No.2

Marks: 1.00

Bookmark ☐

Voltage dips cannot be caused by which of the following:

- (A) ☐ Switching on of Large Loads
- (B) ☒ Capacitive Switching (Correct Answer)
- (C) ☐ Local and Remote faults
- (D) ☐ Inductive Loading

Question No.3

Marks: 1.00

Bookmark ☐

In underground cables, the electrostatic stress is at contactor surface and at the sheath.

- (A) ☐ zero, zero
- (B) ☐ zero, minimum
- (C) ☐ minimum, maximum
- (D) ☒ maximum, minimum (Correct Answer)

Question No.4

Marks: 1.00

Bookmark ☐

Consider the following two statements and choose the correct answer.
Statement 1: The V-curves of a synchronous motor show relationship between armature current and supply voltage.
Statement 2: The plot of power factor against the field current of synchronous motor is known as inverted V curves.

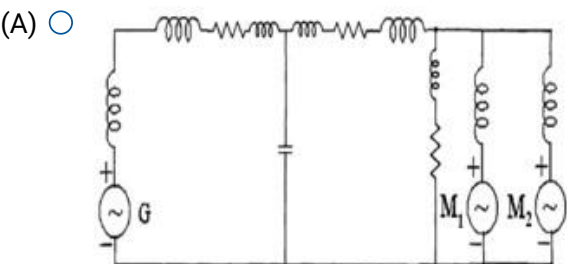
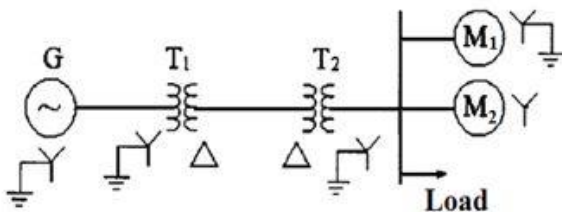
- (A) ☐ Statement 1 is TRUE and Statement 2 is FALSE
- (B) ☒ Statement 1 is FALSE and Statement 2 is TRUE (Correct Answer)
- (C) ☐ Both Statement 1 and Statement 2 are TRUE
- (D) ☐ Both Statement 1 and Statement 2 are FALSE

Question No.5

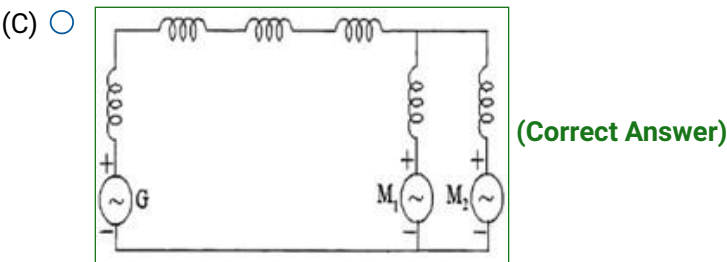
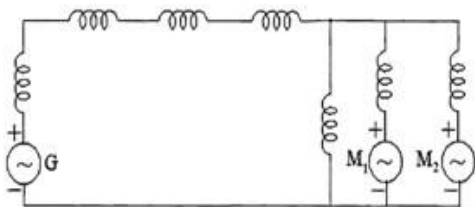
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Bookmark ☒

The single line diagram of the simple power system is shown in Fig. The corresponding reactance diagram is



- (A) ☐
- (B) ☐



Question No.6

Marks: 1.00

Bookmark ☒

Three equal star-connected inductors take 8 kW at 0.8 power factor when connected to a 460 V three - phase 3-wire supply. If one of the inductor in phase – Y is short circuited, then the line current in phase-Y is Assume RYB sequence.

- (A) ☒ 37.6 A (Correct Answer)
(B) ☐ 27.6 A
(C) ☐ 21.7 A
(D) ☐ 31.7 A

Question No.7

Marks: 1.00

Bookmark ☐

Determine the ohmic value of the current limiting reactor per phase external to a 30 MVA, 11 kV, 50 Hz, three phase synchronous generator which can limit the current on short circuit of 5 times the full load current. The reactance of the synchronous generator is 0.05 pu.

- (A) ☐ 0.405 Ω
(B) ☐ 0.805 Ω
(C) ☐ 0.305 Ω
(D) ☒ 0.605 Ω (Correct Answer)

Question No.8

Marks: 1.00

Bookmark ☐

Match the following:

Buses	Known Values
A. Slack bus	(i) P, V
B. Generator bus	(ii) P, Q
C. Load bus	(iii) V, δ

- (A) ☐ A = (ii), B = (iii), C = (i)
(B) ☒ A = (iii), B = (i), C = (ii) (Correct Answer)
(C) ☐ A = (iii), B = (ii), C = (i)

(D) ☐ A = (ii), B = (i), C = (iii)

Question No.9

Marks: 1.00

Bookmark ☐

A fully controlled natural commutated 3-phase bridge rectifier is operating with a firing angle $\alpha = 30^\circ$. The peak to peak voltage ripple expressed as a ratio of the peak output dc voltage at the output of the converter bridge is

(A) ☐ $1 - \frac{\sqrt{3}}{2}$

(B) ☐ $\sqrt{3} - 1$

(C) ☐ $\frac{\sqrt{3}}{2}$

(D) ☒ 0.5 (Correct Answer)

Question No.10

Marks: 1.00

Bookmark ☐

The expression for voltage regulation of a short transmission line for lagging power factor is given by:, where, 'I' is the line current, 'VR' is the receiving end voltage, 'R' is the line resistance and 'X' is the line reactance.

(A) ☐ $\frac{IX \cos \Phi_R - IR \sin \Phi_R}{V_R}$

(B) ☐ $\frac{IX \cos \Phi_R + IR \sin \Phi_R}{V_R}$

(C) ☒ $\frac{IR \cos \Phi_R + IX \sin \Phi_R}{V_R}$ (Correct Answer)

(D) ☐ $\frac{IR \cos \Phi_R - IX \sin \Phi_R}{V_R}$

Question No.11

Marks: 1.00

Bookmark ☐

A THHN conductor will have 75°C termination on one end and a 60/75°C termination on the other, which ampacity column will be used?

(A) ☐ 60°C column

(B) ☒ 75°C column (Correct Answer)

(C) ☐ 90°C column

(D) ☐ none of the above

Question No.12

Marks: 1.00

Bookmark ☒

What is the largest thermal power plant in India?

(A) ☐ Mundra Thermal Power Station

(B) ☐ Talcher Super Thermal Power Station

(C) ☐ Sasan Ultra Mega Power Plant

(D) ☒ Vindhyachal Thermal Power Station (Correct Answer)

Question No.13

Marks: 1.00

Bookmark ☐

..... is the short time reduction in the rms voltage between 0.1 to 0.9 p.u for a duration of

- (A) ☐ Voltage sag, greater than 1 minute
 (B) ☐ Voltage swell, 0.5 cycle to 1 minute.
 (C) ☒ **Voltage sag, 0.5 cycle to 1 minute. (Correct Answer)**
 (D) ☐ Voltage swell, greater than 1 minute

Question No.14

Marks: 1.00

Bookmark ☐

A given solar cell has the following specifications:

Open-circuit voltage, V_{oc} : 0.7 V

Short-circuit current, I_{sc} : 3.5 A

Fill factor, FF: 0.6

Input power, P_{in} : 10 W

If the solar cell operates at maximum power point, calculate the efficiency.

- (A) ☐ 12.70%
 (B) ☒ **14.70% (Correct Answer)**
 (C) ☐ 13.70%
 (D) ☐ 15.70%

Question No.15

Marks: 1.00

Bookmark ☐

Which type of connection is employed for current transformers for the protection of delta- star connected 3-phase transformer?

- (A) ☒ **star-delta (Correct Answer)**
 (B) ☐ star-star
 (C) ☐ delta-star
 (D) ☐ delta-delta

Question No.16

Marks: 1.00

Bookmark ☒

In a single phase energy meter, the series electromagnet is energized by a of

- (A) ☐ voltage coil, thick wire of few turns
 (B) ☐ current coil, thin wire of more turns
 (C) ☐ voltage coil, thin wire of more turns
 (D) ☒ **current coil, thick wire of few turns (Correct Answer)**

Question No.17

Marks: 1.00

Bookmark ☐

For sea water with $\sigma = 5$ mho/m and $\epsilon_r = 80$, what is the distance for which radio signal can be transmitted with 90% attenuation at 25 kHz?

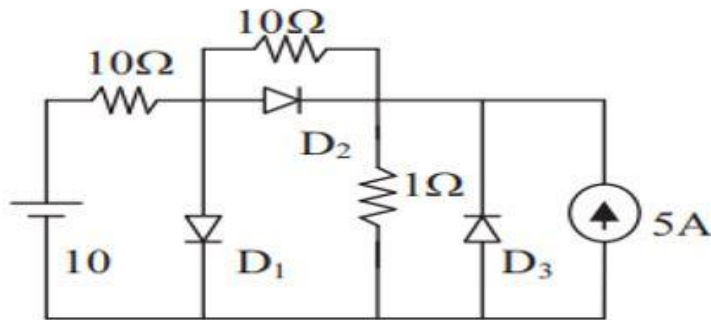
- (A) ☐ 32.7 m
 (B) ☐ 327 m
 (C) ☒ **3.27 m (Correct Answer)**
 (D) ☐ 0.327 m

Question No.18

Marks: 1.00

Bookmark ☒

What are the states of the three ideal diodes of the circuit shown in Fig.?



- (A) ☒ **D₁ ON, D₂ OFF, D₃ OFF (Correct Answer)**
 (B) ☐ D₁ ON, D₂ OFF, D₃ ON
 (C) ☐ D₁ OFF, D₂ ON, D₃ OFF
 (D) ☐ D₁ OFF, D₂ ON, D₃ ON

Question No.19

Marks: 1.00

Bookmark ☒

A balanced delta connected load of $8+j6\ \Omega$ per phase is connected to a 415 V, 50 Hz, 3-phase supply lines. If the input power factor is improved to 0.9 by connecting a star connected capacitor bank, then the required kVAR of the bank is

- (A) ☒ **10.98 kVAR (Correct Answer)**
 (B) ☐ 16.98 kVAR
 (C) ☐ 14.98 kVAR
 (D) ☐ 8.98 kVAR

Question No.20

Marks: 1.00

Bookmark ☐

Stability of power system can be improved by

1. Reducing voltage of transmission
 2. Using parallel transmission lines
 3. Using series compensators
- Which of the above statements are correct?

- (A) ☐ 1 and 2 only
 (B) ☒ **2 and 3 only (Correct Answer)**
 (C) ☐ 1 and 3 only
 (D) ☐ All 1, 2 and 3

Question No.21

Marks: 1.00

Bookmark ☐

Which among the following are included in the two part tariff?

- i. Fixed charges
- ii. Running charges
- iii. Semi fixed charges

- (A) ☐ (i) and (iii) only
 (B) ☐ (ii) and (iii) only
 (C) ☒ **(i) and (ii) only (Correct Answer)**
 (D) ☐

(D) (i), (ii) and (iii)

Question No.22

Marks: 1.00

Bookmark ☐

Insulation Power Factor testing on an oil-filled transformer is not helpful in determining

-
- (A) ☐ Movement of the windings (change in capacitance)
- (B) ☐ **Turns ratio values (Correct Answer)**
- (C) ☐ Condition of paper insulation (change in watts losses)
- (D) ☐ Whether the oil test indicates moisture

Question No.23

Marks: 1.00

Bookmark ☐

A coil having an inductance of 100 mH is magnetically coupled to another coil having an inductance of 900 mH. The coefficient of coupling between the coils is 0.45. Calculate the equivalent inductance if the two coils are connected in series aiding.

- (A) ☐ 932 mH
- (B) ☐ 730 mH
- (C) ☐ 1135 mH
- (D) ☐ **1270 mH (Correct Answer)**

Question No.24

Marks: 1.00

Bookmark ☐

The power factor angle of a purely inductive circuit is

- (A) ☐ 60°
- (B) ☐ 30°
- (C) ☐ **90° (Correct Answer)**
- (D) ☐ 45°

Question No.25

Marks: 1.00

Bookmark ☐

A new generation of smart meters is known as

- (A) ☐ SMETS3
- (B) ☐ SMETS4
- (C) ☐ SMETS1
- (D) ☐ **SMETS2 (Correct Answer)**

Question No.26

Marks: 1.00

Bookmark ☐

The frequency of the emf in the stator of a 4-pole induction motor is 50 Hz, and that in the rotor is 2 Hz. What is the slip and at what speed is the motor running?

- (A) ☐ **4%, 1440 rpm (Correct Answer)**
- (B) ☐ 3%, 1455 rpm
- (C) ☐ 4%, 1455 rpm
- (D) ☐ 3%, 1440 rpm

Question No.27

Marks: 1.00

Bookmark ☒

At what range of wind speed is the electricity from the wind turbine is generated?

- (A) ☐ 450 – 650 mph
- (B) ☐ 100 – 125 mph

- (C) ☐ 250 – 450 mph
(D) ☐ 30-35 mph (Correct Answer)

Question No.28

Marks: 1.00

Bookmark ☒

In a 3-phase, 4-wire, 400/230 V system, a lamp (L_1) of 100 W is connected to one phase and neutral and a lamp (L_2) of 150 W is connected to the second phase and neutral. If the neutral wire is disconnected accidentally, what will be the voltage across a 100 W lamp (L_1)?

- (A) ☐ 160 V
(B) ☐ 120 V
(C) ☐ 180 V
(D) ☐ 240 V (Correct Answer)

Question No.29

Marks: 1.00

Bookmark ☒

The current flowing to a balanced delta connected load through line 'a' is 15 A when the conductor of line 'b' is open. With the current in line 'a' as reference, compute the symmetrical components of the line currents. Assume the phase sequence of 'abc'.

- (A) ☐ $I_{a0} = 0 \text{ A}$
 $I_{a1} = (7.5 + j4.33) \text{ A}$ (Correct Answer)
 $I_{a2} = (7.5 - j4.33) \text{ A}$
- (B) ☐ $I_{a0} = 0 \text{ A}$
 $I_{a1} = (-7.5 - j13) \text{ A}$
 $I_{a2} = (-7.5 + j13) \text{ A}$
- (C) ☐ $I_{a0} = 0 \text{ A}$
 $I_{a1} = (7.5 + j4.33) \text{ A}$
 $I_{a2} = (-7.5 - j4.33) \text{ A}$
- (D) ☐ $I_{a0} = 0 \text{ A}$
 $I_{a1} = (7.5 - j13) \text{ A}$
 $I_{a2} = (7.5 + j13) \text{ A}$

Question No.30

Marks: 1.00

Bookmark ☒

A grid interactive solar system:

- (A) ☐ supplies power to as well as receives power from the grid as required (Correct Answer)
(B) ☐ always receives power from the grid
(C) ☐ always supplies power to the grid
(D) ☐ works only when the grid fails

Question No.31

Marks: 1.00

Bookmark ☐

An RC series circuit with $R = 150 \Omega$ and $C = 2 \mu\text{F}$ is excited by a DC source of 15V by closing the switch at $t = 0$ with an initially uncharged capacitor. The initial and final voltages across the capacitor respectively are

- (A) ☐ 10 V, 15 V

- (B) ☐ 15 V, 10 V
(C) ☐ 0 V, 10 V
(D) ☐ 0 V, 15 V (Correct Answer)

Question No.32

Marks: 1.00

Bookmark ☐

Murray loop test is performed on a faulty cable 300 m long. At balance, the resistance connected to the faulty core was set at 15 Ω and the resistance of the resistor connected to the sound core was 45 Ω . Calculate the distance of the fault point from the test end.

- (A) ☐ 75 m
(B) ☐ 450 m
(C) ☐ 225 m
(D) ☐ 150 m (Correct Answer)

Question No.33

Marks: 1.00

Bookmark ☒

The necessary equation to be solved during the load flow analysis using Fast-Decoupled method is given below:

where B' and B'' are formed using the imaginary part of the bus admittance matrix Y_{bus} , n is the total number of buses in the system, m is the number of voltage regulated buses. The size of matrix B' is

$$\frac{\Delta P}{|V_i|} = -B' \Delta \delta$$

$$\frac{\Delta Q}{|V_i|} = -B'' \Delta |V|$$

- (A) ☐ $(m-1) \times (m-1)$
(B) ☐ $(n-m) \times (n-m)$
(C) ☐ $(n-1) \times (n-1)$ (Correct Answer)
(D) ☐ $(n-m-1) \times (n-m-1)$

Question No.34

Marks: 1.00

Bookmark ☒

In 2019, India stands position in the consumption of electricity in the world.

- (A) ☐ Fourth
(B) ☐ First
(C) ☐ Second
(D) ☐ Third (Correct Answer)

Question No.35

Marks: 1.00

Bookmark ☐

While selecting the gas for a circuit breaker, the property of gas that should be considered is its

- (i) dielectric strength
(ii) non-inflammability
(iii) non-toxicity
(A) ☐ (i), (ii) and (iii) (Correct Answer)
(B) ☐ (i) only

- (C) ☐ (i) and (ii) only
(D) ☐ (i) and (iii) only

Question No.36

Marks: 1.00

Bookmark ☒

By inserting a plate of dielectric material between the plates of a parallel plate capacitor at constant potential, the energy stored in the capacitor is increased five times. The dielectric constant of the material is

- (A) ☐ 1/5
(B) ☐ 1/25
(C) ☐ 25
(D) ☒ 5 (Correct Answer)

Question No.37

Marks: 1.00

Bookmark ☐

As per guidelines, if the ratio of carbon dioxide (CO₂) and carbon monoxide (CO) in dissolved gas analysis is, it is predicted that the condition of paper insulation inside the transformer is poor.

- (A) ☐ IEC-899, less than 11
(B) ☒ IEC-599, more than 11 (Correct Answer)
(C) ☐ IEC-899, more than 11
(D) ☐ IEC-599, less than 11

Question No.38

Marks: 1.00

Bookmark ☐

Two-wattmeter method is used to measure the power taken by a 3-phase induction motor on no load. The wattmeter readings are 375 W and -50 W. Calculate the reactive power taken by the load.

- (A) ☐ $\frac{425}{\sqrt{3}} \text{ VAR}$
(B) ☐ $325\sqrt{3} \text{ VAR}$
(C) ☒ $425\sqrt{3} \text{ VAR}$ (Correct Answer)
(D) ☐ $\frac{325}{\sqrt{3}} \text{ VAR}$

Question No.39

Marks: 1.00

Bookmark ☒

Consider the following statements and choose the correct option:
Statement 1: The magnitude of earth fault current for a given fault position within a winding depends upon the method of neutral grounding.
Statement 2: Earth fault protection for an electric motor is provided by means of instantaneous overcurrent relay.

- (A) ☐ Statement 1 is FALSE and Statement 2 is TRUE
(B) ☐ Both Statement 1 and Statement 2 are TRUE
(C) ☐ Both Statement 1 and Statement 2 are FALSE
(D) ☒ Statement 1 is TRUE and Statement 2 is FALSE (Correct Answer)

Question No.40

Marks: 1.00

Bookmark ☐

A 16 A, Type B Miniature Circuit Breaker (MCB) will disconnect a fault in 0.1s when the fault current is

- (A) ☐ greater than 32 A
 (B) ☒ **between 48 A and 80 A (Correct Answer)**
 (C) ☐ less than 16 A
 (D) ☐ between 16 A and 48 A

Question No.41

Marks: 1.00

Bookmark ☐

An eight-pole wave-connected armature has 600 conductors and is driven at 625 rev/min. If the flux per pole is 20 mWb, determine the generated emf.

- (A) ☐ 250 V
 (B) ☐ 325 V
 (C) ☒ **500 V (Correct Answer)**
 (D) ☐ 125 V

Question No.42

Marks: 1.00

Bookmark ☒

The normal percentage bias setting of differential relay used for transformer protection will be

- (A) ☐ above 75%
 (B) ☒ **between 10% and 50% (Correct Answer)**
 (C) ☐ between 50% and 75%
 (D) ☐ below 10%

Question No.43

Marks: 1.00

Bookmark ☒

If a 415 V, 50 Hz, star-connected, three-phase squirrel-cage induction motor is operated from a 415 V, 70 Hz supply, the torque that the motor can now provide while drawing rated current from the supply

- (A) ☐ increases or reduces depending upon the rotor resistance
 (B) ☒ **reduces (Correct Answer)**
 (C) ☐ remains the same
 (D) ☐ increases

Question No.44

Marks: 1.00

Bookmark ☐

The operating time of an inverse definite minimum time (IDMT) overcurrent relay corresponding to plug-setting multiplier (PSM) = 1 and time-multiplier setting (TMS) = 1 will be

- (A) ☐ zero
 (B) ☐ 3 sec
 (C) ☒ **infinite (Correct Answer)**
 (D) ☐ 1 sec

Question No.45

Marks: 1.00

Bookmark ☐

For protection of inter-turn fault in transformer, the relays preferred are

- (A) ☐ Overcurrent relay and differential relay
 (B) ☒ **Buchholz's relay and differential relay (Correct Answer)**

- (C) ☐ Buchholz's relay, overcurrent relay and differential relay
(D) ☐ Overcurrent relay and Buchholz's relay

Question No.46

Marks: 1.00

Bookmark ☐

Which of the following are the advantages of Aerial Bunched Cables (ABC)?

- (A) ☐ Elimination of theft of energy
(B) ☐ Reduced height of supports
(C) ☐ Higher safety and reliability
(D) ☐ **All of the above (Correct Answer)**

Question No.47

Marks: 1.00

Bookmark ☐

An electric potential field is produced in air by point charges $1 \mu\text{C}$ and $4 \mu\text{C}$ located at $(-2, 1, 5)$ and $(1, 3, -1)$ respectively. The energy stored in the field is

- (A) ☐ 12.50 mJ
(B) ☐ 2.57 mJ
(C) ☐ **5.14 mJ (Correct Answer)**
(D) ☐ 10.28 mJ

Question No.48

Marks: 1.00

Bookmark ☐

Simultaneous tripping of the circuit breaker at both ends of a transmission line is achieved by

- (A) ☐ distance protection
(B) ☐ overcurrent protection
(C) ☐ **pilot protection (Correct Answer)**
(D) ☐ none

Question No.49

Marks: 1.00

Bookmark ☒

A single phase motor connected to 400 V, 50 Hz supply takes 30 A at a power factor of 0.7 lagging. Calculate the capacitance required in parallel with the motor to raise the power factor to 0.9 lagging.

- (A) ☐ **89.5 μF (Correct Answer)**
(B) ☐ 79.5 μF
(C) ☐ 99.5 μF
(D) ☐ 69.5 μF

Question No.50

Marks: 1.00

Bookmark ☒

A transformer designed for operation at 60 Hz supply is working at 50 Hz supply system without changing its voltage and current ratings. Compared to the full load efficiency at 60 Hz, the full load transformer efficiency at 50 Hz.

- (A) ☐ increases by 30%
(B) ☐ **decreases marginally (Correct Answer)**
(C) ☐ remains unaltered
(D) ☐ increases marginally

Question No.51

Marks: 1.00

Bookmark ☐

..... is the process of actuating equipment operation at remote locations.

- (A) ☐ Data acquisition
- (B) ☐ Data processing
- (C) ☒ **Supervisory control (Correct Answer)**
- (D) ☐ Supplementary control

Question No.52

Marks: 1.00

Bookmark ☐

Calculate the capacitance per meter of a $50\ \Omega$ load cable that has an inductance of 50 nH/m.

- (A) ☐ 10 pF
- (B) ☐ 30 pF
- (C) ☒ **20 pF (Correct Answer)**
- (D) ☐ 40 pF

Question No.53

Marks: 1.00

Bookmark ☐

An alternator is supplying load of 300 kW at a power factor of 0.5 lagging. If the power factor is raised to unity, how many more kilowatts can alternator supply for the same kVA loading?

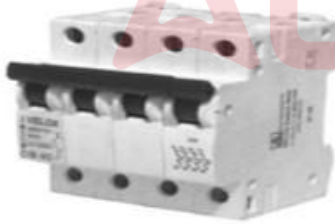
- (A) ☐ 600 kW
- (B) ☐ 150 kW
- (C) ☒ **300 kW (Correct Answer)**
- (D) ☐ 450 kW

Question No.54

Marks: 1.00

Bookmark ☐

The miniature circuit breaker (MCB) shown in Fig. is a



- (A) ☐ two pole MCB
- (B) ☐ three pole MCB
- (C) ☒ **four pole MCB (Correct Answer)**
- (D) ☐ five pole MCB

Question No.55

Marks: 1.00

Bookmark ☐

Case 1: The PV connected to the DC bus was injecting 20 kW of power constituting of 1 kW of loss.

Case 2: The same PV is connected to the AC bus constituting to 1.5 kW loss.

Find out the change in efficiency from Case 1 to Case 2?

- (A) ☐ 5% decrease
- (B) ☒ **2.5% decrease (Correct Answer)**
- (C) ☐ 5% increase

(D) ☐ 2.5% increase

Question No.56

Marks: 1.00

Bookmark ☐

A thermistor is inherently suitable for temperature measurement involving

- (A) ☐ high span and low sensitivity
- (B) ☒ low span and high sensitivity (Correct Answer)
- (C) ☐ high span and high sensitivity
- (D) ☐ low span and low sensitivity

Question No.57

Marks: 1.00

Bookmark ☐

Determine maximum permissible load which a 15 MVA, ONAN cooled transformer to IS : 2026 can take for 6 hr, if the initial load on it was 12 MVA. The weighted ambient temperature is 20°C. Assume the permissible load kVA as a fraction of rated kVA is 1.25.

- (A) ☒ 18.75 MVA (Correct Answer)
- (B) ☐ 9.6 MVA
- (C) ☐ 12 MVA
- (D) ☐ 15 MVA

Question No.58

Marks: 1.00

Bookmark ☐

Three resistances 750 Ω, 600 Ω and 200 Ω are connected in parallel. The total current is 1 A. Determine the voltage applied.

- (A) ☐ 200 V
- (B) ☐ 100 V
- (C) ☐ 150 V
- (D) ☒ 125 V (Correct Answer)

Question No.59

Marks: 1.00

Bookmark ☐

An RLC series circuit consists of R = 16 Ω, L = 5 mH and C = 2 μF. Calculate the quality factor.

- (A) ☐ 5.125
- (B) ☐ 4.125
- (C) ☒ 3.125 (Correct Answer)
- (D) ☐ 2.125

Question No.60

Marks: 1.00

Bookmark ☐

A given solar cell has the following specifications: $I_{sc} = 4\text{ A}$ and $V_{oc} = 0.7\text{ V}$. Consider that 20 identical cells with the above specifications are to be interconnected to create a PV module. What is the open-circuit voltage of the PV module if all the solar cells are connected in a series configuration?

- (A) ☐ 12.6 V
- (B) ☐ 11.2 V
- (C) ☐ 0.7 V
- (D) ☒ 14 V (Correct Answer)

COMPUTER KNOWLEDGE - COMPUTER KNOWLEDGE

Question No.1

Marks: 1.00

Bookmark ☐

Which of the following malicious programs does not replicate automatically?

- (A) ☐ Virus
- (B) ☐ Trap doors
- (C) ☒ Trojan horse (Correct Answer)
- (D) ☐ Worm

Question No.2

Marks: 1.00

Bookmark ☐

Which generation of computers used vacuum tubes?

- (A) ☒ First Generation (Correct Answer)
- (B) ☐ Fourth Generation
- (C) ☐ Second Generation
- (D) ☐ Third Generation

Question No.3

Marks: 1.00

Bookmark ☒

In Microsoft Word, which of the following menu is used to add Headings that are displayed automatically in the top margin of all pages?

- (A) ☐ View Menu
- (B) ☐ Format Menu
- (C) ☒ Insert Menu (Correct Answer)
- (D) ☐ Tools Menu

Question No.4

Marks: 1.00

Bookmark ☐

In computer networks, the nodes are

- (A) ☐ the computer that originates data
- (B) ☐ the computer that routes data
- (C) ☐ the computer that terminates data
- (D) ☒ all the mentioned above (Correct Answer)

Question No.5

Marks: 1.00

Bookmark ☒

A _____ is a device that forwards packets between networks by processing the routing information included in the packet.

- (A) ☐ Bridge
- (B) ☐ Firewall
- (C) ☒ Router (Correct Answer)
- (D) ☐ all the mentioned above

Question No.6

Marks: 1.00

Bookmark ☐

1 terabyte is equal to

- (A) ☐ 1024 bytes
- (B) ☐ 1024 kilobytes
- (C) ☒ 1024 gigabytes (Correct Answer)
- (D) ☐ None of these

Question No.7

Marks: 1.00

Bookmark ☒

Which of the following features of Microsoft Word automatically moves to the next line while reaching the end of current line? (A) ☐ Carriage return (B) ☐ Enter (C) ☒ Word wrap (Correct Answer) (D) ☐ None of these	
Question No.8 The operating system is the most common type of _____ (A) ☒ System Software (Correct Answer) (B) ☐ Communication (C) ☐ Application Software (D) ☐ Firmware	Marks: 1.00 Bookmark ☒
Question No.9 Which of the following is an independent malicious program that spread copies of itself from computer to computer? (A) ☒ Worm (Correct Answer) (B) ☐ Virus (C) ☐ Trojan horse (D) ☐ Trap door	Marks: 1.00 Bookmark ☐
Question No.10 Which of the following is the layer of a computer system between the hardware and the user program? (A) ☐ Application Software (B) ☒ Operating System (Correct Answer) (C) ☐ System Environment (D) ☐ None of these	Marks: 1.00 Bookmark ☐
GUJARATI LANGUAGE AND GRAMMAR - GUJARATI LANGUAGE AND GRAMMAR	
Question No.1 માણસઃ ઘર :: પશુઃ (A) ☐ પાતાળ (B) ☒ ગુફા (Correct Answer) (C) ☐ અંતરિક્ષ (D) ☐ આકાશ	Marks: 1.00 Bookmark ☐
Question No.2 દુર્ગતિ' શબ્દનો વિરુદ્ધાર્થી શબ્દ કયો છે? (A) ☐ કુગતિ (B) ☒ સુગતિ (Correct Answer) (C) ☐ સળંગગતિ (D) ☐ અદુર્ગતી	Marks: 1.00 Bookmark ☐

Question No.3

Marks: 1.00

Bookmark ☐

નીચે પૈકી 'અચરજ'નો પર્યાયી શબ્દ કયો છે?

- (A) ☐ વિસ્મય (Correct Answer)
- (B) ☐ શાશ્વત
- (C) ☐ જગત
- (D) ☐ રજ

Question No.4

Marks: 1.00

Bookmark ☒

1. મંગલ + આચરણ - મંગલાચરણ
2. હરિ+ઇન્દ્ર - હરિન્દ્ર
3. નર+ ઈશ - નરેશ
4. પ્રતિ+અક્ષ - પ્રતિક્ષ
ઉપરોક્ત વર્ણવેલમાંથી કઈ સંધિ સાચી છે.

- (A) ☐ 2,3,
- (B) ☐ 1,4
- (C) ☐ 1, 3 (Correct Answer)
- (D) ☐ 2,1

Question No.5

Marks: 1.00

Bookmark ☒

આપેલ વિકલ્પો પૈકી દ્રવ્યવાચક સંજ્ઞાનું વાક્ય કયું છે?

- (A) ☐ આજકાલ ઠંડી હવા પ્રસરવા લાગી છે. (Correct Answer)
- (B) ☐ ગુરુ એવો હોવો જોઈએ જેની વાણીમાં મીઠાસ હોય.
- (C) ☐ મહારાષ્ટ્રમાં અનેક શહેરો છે.
- (D) ☐ રણવીરને બોલીવુડનો બાહુબલી કહી શકાય.

Question No.6

Marks: 1.00

Bookmark ☒

જ્યાં ઉપમેયનો ઉલ્લેખ જ કરવામાં ન આવે અને ઉપમાન જ ઉપમેય હોય ત્યારે દ્રષ્ટાંત અલંકાર બને છે. - આ કથન સત્ય છે કે નહિ અને જો ખોટું હોય તો સત્ય કથન કયું હોઈ શકે?

- (A) ☐ સાચું છે.
- (B) ☐ ખોટું છે,
જ્યાં ઉપમેયનો ઉલ્લેખ જ કરવામાં ન આવે અને ઉપમાન જ ઉપમેય હોય ત્યારે વિરોધાભાસ અલંકાર બને છે
- (C) ☐ ખોટું છે,
જ્યાં ઉપમેયનો ઉલ્લેખ જ કરવામાં ન આવે અને ઉપમાન જ ઉપમેય હોય ત્યારે અનન્વય અલંકાર બને છે
- (D) ☐ ખોટું છે,
જ્યાં ઉપમેયનો ઉલ્લેખ જ કરવામાં ન આવે અને ઉપમાન જ ઉપમેય હોય ત્યારે અતિશયોક્તિ અલંકાર બને છે (Correct Answer)

Question No.7

Marks: 1.00

Bookmark ☐

મારુતારુનો ઝગડો હજી ખતમ થયો નથી, ચારપાંચ વર્ષ થઈ ગયા અને રાતદિવસ સાથે ઉઠવા-બેસવાનું તો ચાલુ જ છે. ઉપરોક્ત વાક્યમાં ક્યા ક્યા વ્યાકરણીય સમાસનો ઉપયોગ કરાયો છે?

- (A) ☐ દ્વન્વ, મધ્યમપદલોપી
- (B) ☐ દ્વન્વ (Correct Answer)

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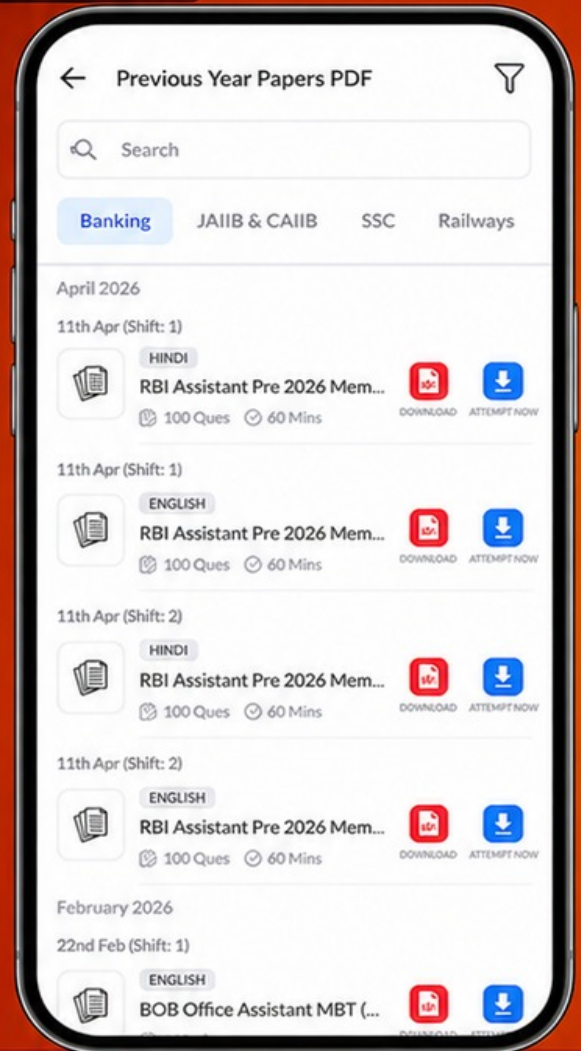
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- (C) ☐ તત્પુરુષ,
(D) ☐ અવ્યવીભાવ, મધ્યમપદલોપી

Question No.8

Marks: 1.00

Bookmark ☐

જવાબ: ધુમાડો: બરફ :

- (A) ☐ શીતળતા
(B) ☐ ગરમી
(C) ☒ બાષ્પ (Correct Answer)
(D) ☐ તાપમાન

Question No.9

Marks: 1.00

Bookmark ☐

નીચેના રુઢિપ્રયોગો ને અર્થ સાથે સાંકળી જોડી બનાવો.

1. કાન કરડવા ---- 1. બાતમી મળી જવી
2. કાન ફૂંકવા ----- 2. વાત પર ધ્યાન ન આપવું
3. કાને વાત પહોંચવી ---- 3. કાન ભંભેરણી કરવી
4. કાને ન ધરવું ----- 4. ગુસપુસ વાતો કરવી

- (A) ☐ 1-3
2-4
3-1
4-2

- (B) ☐ 1-2
2-3
3-4
4-1

- (C) ☒ 1-4
2-3
3-1
4-2
(Correct Answer)

- (D) ☐ 1-3
2-2
3-4
4-1

Question No.10

Marks: 1.00

Bookmark ☒

જીવનમાં તડકોછાયો એતો એક ઘટમાળ છે. વાક્યમાં ક્યા સમાસનો ઉપયોગ કરવામાં આવ્યો છે?

- (A) ☒ ઢઢઢ (Correct Answer)
(B) ☐ તત્પુરુષ
(C) ☐ ઉપપદ
(D) ☐ કર્મધારય