

MAHARASHTRA STATE BOARD OF SKILL DEVELOPMENT EXAMINATION, MUMBAI

Examination—July, 2020

CERTIFICATE COURSE IN BASIC ELECTRICAL ENGINEERING

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(BEŮĚ MŮĚ—100)

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1. (+) E[®]E d[™]aEÉ VÉEMÉE |E[®]ú :—

- (1) $\begin{aligned} & \text{fEE}^{\text{R}}\text{fEO}^{\text{P}}\text{E} \text{ E}^{\text{E}}\text{tOE} \text{ ExE}^{\text{af}}\text{EEfEEhEaOE} \text{ 1/2P}^{\text{E}} \text{ +EE<R}^{\text{E}}\text{E1/2P} \text{ +Ea1/2Pu} \text{ 1/2P} \div \text{+EE<R}^{\text{E}}\text{E}^{\text{E}}\text{EO} \div \\ & \text{EE1/2E}^{\text{E}}\text{SEO} = \text{REO} \text{ 1/2P} \text{ EOE} \text{EO} \text{ +EEhE} \text{ EvE}^{\text{E}}\text{E} \text{ 1/2E} \text{ 1/2P}^{\text{E}} \text{ +EE<R}^{\text{E}}\text{E}^{\text{E}} \text{ 0} \text{ P}^{\text{E}}\text{fEE} \text{ GoP}^{\text{E}} \\ & \text{EO}^{\text{R}}\text{fEE}^{\text{E}}\text{E} \dots\dots\dots \text{; 0} \text{ 0} \text{ fEE}^{\text{E}} \text{ EOE} \text{EO} \text{ xE}^{\text{E}}\text{EO} \end{aligned}$

(+) 4 (d) 5.486 (E) 4.5.

- (2)] \dot{x}° Ej;oiÉú½ ÈÖ'Èİ Æñù'hªÉE°EE`ò EEÉ®üEEİ.

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- (3) |EE®UEE EEtOE ExafEE|EEhEa°EI ½PE ±EE<QE [®U]UEOME
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(+) $\vdash \text{Ev}^a \text{E} \circ \text{ExE}$ (4) $\vdash \text{ExE} \text{E} \text{ExE}$ (E0) $\vdash \text{Ex}^0 \text{E} \text{E} \text{ExE}$

- [illegible]

(+) $\text{SE} \rightarrow \text{E} \rightarrow \text{E}$ (E) $\text{E} \rightarrow \text{E} \rightarrow \text{E}$ (E) $\text{E} \rightarrow \text{E} \rightarrow \text{E}$

- (5) $\int_{\pm \infty}^{\pm \infty} x^\alpha e^{-x} dx = \Gamma(\alpha+1)$
 $\int_{-\infty}^{+\infty} x^\alpha e^{-x} dx = \Gamma(\alpha+1)$
 $\int_{-\infty}^{+\infty} x^\alpha e^{-x} dx = \Gamma(\alpha+1)$

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- (1) 100 iEa 500 +i{E0+[⊗]u {EaEESaEE qEEj}0 °EiE0}0 E0[⊗]u EEE 0 E'EEExBS[⊗]u °EiE0}0 VE0[⊗]u EE[E[⊗]uEEiE.
- (2) =SSÉ jÉ EEVp "EEVh^aEE°EE 0 E0[⊗]u }Áx°E; dEÉu EE[E[⊗]uEEiE.
- (3) 0E0÷°]qEEÉ'EvEa 33 Ea. ½p. <+fE]ÁE0 {EEÉ[⊗]u}Áx°EE'Ej0 Ea+EO VEEiEa
- (4) 3 {E0.bE-}0. E[⊗]uEa ½pEVEa 3 {EEaE b+E+ mE0[⊗]uEa ½paf.
- (5) jÁx°E; dEÉuEEVÉa E0E[E[⊗]u +EEÉ ½p EEaEbMSaEE E'E[⊗]uEE E0[⊗]u ½pafEa

(b) $\hat{E}^{\circ}(\text{Fe}^{3+}/\text{Fe}^{2+}) = 0.77 \text{ V}$:-

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- $$\begin{array}{ll}
 (1) \quad \{ \emptyset, +^{\text{a}}\mathbb{E}, +^{\text{a}}\mathbb{U} \} & (2) \quad +^{\text{a}}\mathbb{E}, \circ\mathbb{E},]\mathbb{E}, \{\mathbb{E}\} \\
 (3) \quad \{\mathbb{E}, B\pm\mathbb{E}, +^{\text{a}}\mathbb{E}, \circ\mathbb{E}\} & (4) \quad <\mathbb{E}B\pm\mathbb{E}, \circ\mathbb{E}, \mathbb{E}\mathbb{E} \\
 (5) \quad +^{\text{a}}\circ\mathbb{E}, \mathbb{E}\mathbb{E} &
 \end{array}$$

$$[\pm \epsilon] \text{ ȳ } \{\epsilon^{1/2}\}$$

- [illegible]

(ENGLISH)

[TIME ALLOWED—3 HOURS]

(MARKS—100)

**BASIC POWER GENERATION, TRANSMISSION AND DISTRIBUTION
(THEORY-III)**

1. (a) Fill in the blanks :— **Marks**
- (i) As per I.E. rules no conductor of overhead line including service line be erected across a street shall at any part the no of be at a height less than meters for low and medium voltage line. 5
- (a) 4 (b) 5.486 (c) 4.5.
- (ii) A transformer is used for changing value of
- (a) Voltage (b) power (c) frequency.
- (iii) As per I.E. rules no service line should be tapped at the
- (a) Mid span (b) Termination (c) An insulator.
- (iv) In circuit breakers the device used for tripping the line in the event of short circuit is of types.
- (a) Magnetic (b) Thermal (c) Low voltage.
- (v) In the breather of transformer silica jelly issued to stop the to reach up to the insulation oil.
- (a) Rain water (b) Moisture (c) Steam.
- (b) Match the pairs :— 5
- | ‘ A ’ Group | ‘ B ’ Group |
|------------------------|---------------------------------------|
| (i) Stay insulator | (a) Supporting the poles against pull |
| (ii) Copper loss | (b) 40-50 meters |
| (iii) Wooden pole | (c) Holding straight conductor |
| (iv) Pin insulator | (d) 50-80 meters |
| (v) Steel tubular pole | (e) Open circuit test |
| | (f) Short circuit test. |
- (c) State whether *true* or *false* :— 5
- (i) A miniature circuit breaker can be used to break a short circuit current of 100A to 500A.
- (ii) Current transformer are used to measure the high current.
- (iii) The grid-station transmits electric power at 33 kv.
- (iv) 3 PDT relay means 3 pole double throw relay.
- (v) Copper loss in a transformer is that loss caused by winding resistance.
- (d) State the long form :— 5
- (i) VIR (ii) ICTP (iii) PLIC
- (iv) ELCB (v) OCB.

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2. Answer the following (any *two*) :— 16
- (a) Explain pin insulator with figure
 - (b) State important material required overhead line.
 - (c) Explain types of substation.
 - (d) Explain difference between over head and underground line.
3. Answer the following (any *two*) :— 16
- (a) Write note on Buchholz relay with figure.
 - (b) Explain Shackle insulator with figure.
 - (c) Write parameter of good line insulator.
 - (d) Explain types of line conductor.
4. Answer the following (any *two*) :— 16
- (a) Explain types of transformer efficiency.
 - (b) Explain losses in transformer and which test to find it.
 - (c) Explain cable laying method.
 - (d) Write effect of load power factor on regulation and efficiency.
5. Answer the following (any *four*) :— 16
- (a) Explain ring distribution method.
 - (b) Write note on insulator.
 - (c) Write note on cement concrete pole.
 - (d) What is sag ?
 - (e) What are fuels ? and it's types.
6. Answer in brief (any *two*) :— 16
- (a) State detail of hydro electric power station.
 - (b) Explain stay insulator with figure.
 - (c) Write note on air circuit breaker.
 - (d) What is difference between fuse and circuit breaker ?
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