

ಸಂಕೇತ ಸಂಖ್ಯೆ : 71

CCE RR

Code No. : 71

ವಿಷಯ : ಎಲಿಮೆಂಟ್ಸ್ ಆಫ್ ಇಂಜಿನಿಯರಿಂಗ್

Subject : ELEMENTS OF ENGINEERING

(ಹೊಸ ಪಠ್ಯಕ್ರಮ / New Syllabus)

(ಪುನರಾವರ್ತಿತ ಶಾಲಾ ಅಭ್ಯರ್ಥಿ / Regular Repeater)

General Instructions :

- i) The Question-cum-Answer Booklet consists of 7 objective and subjective types of questions.
- ii) Space has been provided against each objective type question. You have to choose the correct choice and write the complete answer in the space provided.
- iii) For subjective type questions enough space for each question has been provided. You have to answer the questions in the space.
- iv) Follow the instructions given against both the objective and subjective types of questions.
- v) Candidate should not write the answer with pencil. Answers written in pencil will not be evaluated (Except Graphs, Diagrams & Maps).
- vi) In case of Multiple Choice, Fill in the blanks and Matching questions, scratching / rewriting / marking is not permitted, thereby rendering to disqualification for evaluation.
- vii) For reading the questions 15 minutes of extra time has been provided.
- viii) Do not write anything in the space provided in the right side margin.

Note : Answer questions from Sections **A** & **B** as per the instructions given under them.

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SECTION - A

Instruction : Answer Question **No. 1** and any *two* full questions of the remaining.

1. Fill in the blanks with the appropriate word(s) selecting from the choices given in the brackets : 10 × 1 = 10
- a) In internal combustion engines the inlet and outlet valves are operated by
(*connecting rod, cam, crank*)
- b) Compression ratio of diesel engine may have a range of
(*8 to 10, 13 to 22, 6 to 8*)
- c) A device used to save the boiler against overheating caused due to low water level is
(*stop valve, safety valve, fusible plug*)
- d) A turbine uses action of fluid.
(*dynamic, static, both dynamic and static*)
- e) An economizer the steam raising capacity of a boiler.
(*has no effect on, increases, decreases*)
- f) The field poles of an alternator is excited by
(*ac, dc, ac & dc*)
- g) Electric power can be measured by using
(*ammeter, voltmeter, wattmeter*)
- h) The direction of induced *emf* is determined by
(*Fleming's right hand rule, Fleming's left hand rule, Ampere rule*)
- i) An output rating of lamp is
(*kVA, kW, watt*)
- j) The hydraulic power first generated in Karnataka state is
(*Supa, Shivanasamudra, Jog*)

2. a) Compare water tube and fire tube boilers. 2
b) List different boiler accessories. 2
c) Explain with a neat sketch the working of a Cochran boiler. 6
3. a) How are the pumps classified ? 2
b) What is the difference between reciprocating pump and centrifugal pump ? 2
c) Describe with a line diagram the working of a centrifugal pump. 6
4. a) Classify internal combustion engine. 2
b) Distinguish between Petrol and Diesel engines. 2
c) Explain with a neat sketch the working of a two-stroke petrol engine. 6

SECTION – B

Instruction : Answer any *two* full questions of the following.

5. a) Define *dc* motor. 2
b) With a neat sketch explain the working principle of *dc* motor. 4
c) How are the *dc* generators classified ? 4
6. a) What are stator and rotor of squirrel cage induction motor ? 2
b) Describe step-up and step-down transformers. 4
c) Draw a sine wave of alternating current and mark the amplitude, cycle and time period. 4
7. a) List the various types of insulators used in power transmission and distribution lines. 2
b) Draw a neat sketch of electric stove and explain briefly. 4
c) Mention the uses of the following : 4
(i) Arc lamp (ii) Sodium vapour lamp
(iii) Metal conduit wiring (iv) Energy meter.