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C09-EE-406

# 3478

## BOARD DIPLOMA EXAMINATION, (C-09)
## OCTOBER/NOVEMBER-2018
## DEEE-FOURTH SEMESTER EXAMINATION

GENERAL MECHANICAL ENGG.

*Time :* 3 Hours ] [ Total Marks: 80

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**PART-A**

3X10=30

***Instructions :***
1. Answer **All** questions.
2. Each question carries **Three** marks.
3. Answer should be brief and straight to the point and shall not exceed five simple sentences.

1. Define (a) Ultimate strength (b) Factor of safety.
2. Define tensile stress and shear stress
3. Define (a) Torsional rigidity (b) Torsional stiffness.
4. Find the diameter of the solid shaft to transmit 90 KW power at 300 rpm, if the maximum torque is 30% greater than the mean torque and the allowable shear stress is 65N/mm$^2$.
5. State the functions of boiler mountings?
6. State the working principle of reaction steam turbine?
7. Distinguish between Pelton wheel and Kaplan turbine.
8. State the function of (a) carburettor (b) governor.
9. What are the applications of a lubricant?
10. What is difference between single stage and multi stage pumps.

## PART-B

10X5=50

***Instructions :***

1. Answer any **Five** questions
2. Each question carries **ten** marks.
3. Answer should be comprehensive and the criterion for valuation is the content but not the length of the answer.

11. A bar of 30mm diameter is subjected to a pull of 60KN. The measured extension over a gauge length of 200mm is 0.09mm and the change is diameter is 0.0039mm. find the values of three elastic moduli.
12. A steel bar 50mm wide 10mm thick and 300mm long is subjected to an axial pull of 84KN. Find the change in length and width. Take $E=2x10^5$ N/mm$^2$ and 1/m=0.32.
13. A solid steel shaft 100mm diameter transmits power at 150 rpm. If the maximum shear stress induced in it is 25 N/mm$^2$. Calculate
    i. The power transmitted in KW
    ii. The value of shear stress at a radial distance of 30mm from its centre
14. (a) How does the mixture of air and fuel in the combustion chamber of C.I engine differ from that of a S.I engine?

    (b) Distinguish between the S.I and C.I engine.
15. Describe the working of a Lamont boiler with neat sketch.
16. Draw a sketch of I.C engine showing its construction details and state the material of each component is made.
17. Write a short notes on (a) Gas turbine (b) Four stroke S.I engine.
18. Explain the constructional details and working principle of centrifugal pump with a neat sketch.

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