SIDDHARTH GROUP OF INSTITUTIONS :: PUTTUR

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QUESTION BANK (DESCRIPTIVE)

Subject with Code : T&AE (16ME345)	**Course & Branch**: B.Tech-AE
Year & Sem: II-B.Tech & II-Sem	**Regulation:** R16

UNIT I

1. Briefly discuss about Farm Mechanization?	**12M**
2. Briefly explain about the various components of a tractor?	**12M**
3. Explain the following:	
(a) Clutch	**3M**
(b) Gearbox	**3M**
(c) Differential	**2M**
(d) Power takeoff unit	**2M**
(e) Brakes	**2M**
4. Explain the following:	
(a) Thermodynamic system and its classification with an example.	**6M**
(b) Various Laws of thermodynamics	**6M**
5. Explain the following:	
(a) System	**3M**
(b) State	**3M**
(c) Property	**2M**
(d) Process	**2M**
(e) Cycle	**2M**
6. Explain various classification of an I.C.Engines.	**12M**
7. Explain about the various parts of an I.C. Engine with neat sketch.	**12M**
8. Explain the following:	
(a) Cylinder	**2M**
(b) Cylinder Liner	**3M**
(c) Cylinder Head	**3M**
(d) Piston	**2M**
(e) Piston Rings	**2M**

9. Explain the following:

   (a) Connecting Rod   **2M**

   (b) Cam Shaft   **3M**

   (c) Valves   **2M**

   (d) Crank Shaft   **3M**

   (e) Gudgeon Pin   **2M**

10. What are the factors considered in selection of a tractor and also explain the various classifications of tractors?   **12M**

UNIT II

1. Explain the working of a 2 stroke petrol engine with neat sketch.   **12M**

2. Brief about the working of a 2 stroke diesel engine with neat sketch?   **12M**

3. Discuss about the working of a 4 stroke petrol engine with neat sketch?   **12M**

4. Explain the working of a 4 stroke diesel engine with neat sketch.   **12M**

5. Brief about the differences between theoretical and actual Valve timing diagram of I.C.Engines? **12M**

6. Explain about the differences between theoretical and actual Port timing diagram of I.C.Engines. **12M**

7. Explain the various processes involved in Otto cycle with P-V & T-S diagrams.   **12M**

8. What are the various processes involved in Diesel cycle? Explain it with P-V & T-S diagrams.   **12M**

9. Explain the various processes involved in Carnot cycle with P-V & T-S diagrams.   **12M**

10. Write about the various processes involved in Dual cycle with P-V & T-S diagrams?   **12M**

UNIT III

1. Define Carburetion and explain the construction and working of a simple carburetor with neat sketch.   **12M**

2. Explain the construction and working of a Solex Carburetor with neat sketch?   **12M**

3. What is the use of fuel pump? Brief about the construction and working of Mechanical fuel pump with neat sketch?   **12M**

4. Explain the construction and working of Electrical fuel pump with neat sketch.   **12M**

5. What is the use of cooling system in automobiles, Explain the construction and working of Thermosyphon cooling system with neat sketch?   **12M**

6. Explain the construction and working of Forced Cooling system with neat sketch.

7. What is the use of Lubrication system in automobiles? Explain various types of lubrication systems with neat sketch.   **12M**

8. Explain the working of Battery coil ignition systems with neat sketch?   **12M**

9. Brief about the construction and working of Magneto coil ignition system with neat sketch?   **12M**

10. Discuss about Spark Advance and Retard Mechanisms?   **12M**

UNIT-IV

1. Explain about the various factors influencing flame speed.   **12M**

2. Brief about the following:

   (a) Normal Combustion   **4M**

   (b) Abnormal combustion   **4M**

   (c) Pre-ignition   **4M**

3. Explain about the various types of combustion chambers of S.I Engine with neat sketch.   **12M**

4. Explain the various stages of combustion in a S.I engine with suitable diagrams.   **12M**

5. Brief about the various stages of combustion in a C.I engine with suitable diagrams?   **12M**

6. Explain direct injection chambers of C.I engine with neat sketch.   **12M**

7. Briefly write about the indirect injection chambers of a C.I Engine with neat sketch?   **12M**

8. Explain the factors affecting Delay period in C.I Engine.   **12M**

9. Discuss about the phenomena of Knock in S.I & C.I Engines?   **12M**

10. Compare the Knock in SI & CI Engines with suitable graphs?   **12M**

UNIT-V

1. Explain the various apparatus used for measuring Fuel Consumption with neat sketch.   **12M**

2. Brief about the various apparatus used for measuring Brake power with neat sketch?   **12M**

3. Explain the Various instruments used to measure Exhaust gas composition with appropriate sketch.

                                                                           12M

4. A four stroke four cylinder diesel engine running at 300 rpm produces 250 kW of brake power. The cylinder dimensions are 30 cm bore and 25 cm stroke. Fuel consumption rate is 1 kg/min while air fuel ratio is 10. The average indicated mean effective pressure is 0.8 MPa. Determine indicated power, mechanical efficiency, brake thermal efficiency of engine. The calorific value of fuel is 43 MJ/kg. The ambient conditions are 1.013 bar, 27ºC.   **12M**

5. A test on a Single cylinder 4 Stroke Otto cycle engine yields the following data: 950Nm, 7.6 bar Mean effective pressure,280mm Boe,306Mm Stroke,300rpm,0.003kg/s fuel consumption with a heating value of 42000 KJ/Kg. Determine (i) Indicated thermal efficiency (ii) Brake thermal efficiency.   **12M**

6. A Single cylinder engine working on 4 stroke cycle has a bore of 120mm and stroke of 136Mm and runs at 650 rpm. The mean effective pressure is 6.5 bar. It consumes 10cc of fuel in 30 seconds. The diesel oil used is having a CV of 42000KJ/Kg and Specific gravity of 0.85.The brake wheel diameter is 900mm and rope diameter is 20mm.The net load on the brake is 0.11KN.Calculate

(i) I.P (ii) B.P (iii) Mechanical Efficiency (iv) Indicated thermal efficiency (v) Brake thermal efficiency. **12M**

7. A 4-cylinder, 4-stroke cycle engine having cylinder diameter 100 mm and stroke 120 mm was tested at 1600 rpm and the following readings were obtained. Fuel consumption = 0.27 liters/minute, Specific gravity fuel = 0.74, B.P. = 31.4 kW Mechanical efficiency = 80%, Calorific value of fuel = 44000 kJ/kg. Determine:

    (i) BSFC,

    (ii) IMEP, and

    (iii) Brake thermal efficiency. **12M**

8. During a test on single cylinder oil engine working on a four stroke cycle and fitted with a rope brake the following readings are taken:

Effective diameter of brake wheel= 630mm

Effective brake load   = 450rpm

Engine Speed   = 170N

Area of Indicator Diagram   = 420mm^2

Length of the indicator diagram   = 60mm

Spring Constant   = 1.14 bar/mm

Diameter of cylinder   = 100mm

Stroke   = 150mm

Quantity of oil used   = 0.815 KJ/Kg

Calorific Value   = 42000 KJ/Kg

Calculate (i) IP (ii) BP (iii) Mechanical efficiency (iv) Brake thermal efficiency (v) Brake Specific Fuel Consumption. **12M**

9. Explain the following: (i) Mechanical Efficiency   **3M**

                             (ii) Indicated thermal efficiency   **3M**

                             (iii) Brake thermal efficiency   **2M**

                             (iv) Brake specific fuel consumption   **2M**

                             (v) Indicated specific fuel consumption.   **2M**

10. Explain Volumetric type flow meter and Gravimetric fuel flow measurement with neat sketch. **12M**