

<p align="center"><b>Benha University</b> <b>Faculty of Science</b> <b>Chemistry Department</b></p>		<p align="center"><b>Date :11/ 1 / 2017</b> <b>1<sup>st</sup> Term</b> <b>time : 2 hr.</b></p>
<p align="center">Final Exam. Of Petroleum Additives (413CH) for All groups Students 4<sup>th</sup> level.</p>		

**- Select the more correct answer from the following: ( 1x80 = 80 Marks):**

- 1- Gasoline additives may be
  - A. **Soluble organic compounds**
  - B. Inorganic salts
  - C. Insoluble organic compounds
  - D. All of these
- 2- Antioxidant must be added to gasoline to.....
  - A. Prevent gum formation
  - B. Prevent gasoline components from reacting with oxygen in the air.
  - C. Prevent the emulsion formation
  - D. **( A&B Together )**
- 3- Antioxidant of gasoline may be .....
  - A. Aromatic amine
  - B. Phenols
  - C. **( A&B Together )**
  - D. None of these
- 4- Which of the following substances is used as Cold flow improver in diesel oil?
  - A. TN
  - B. **EVA**
  - C. EGMME
  - D. MTBE
- 5- Which of the following is sulphur compound.
  - A. **Isopropyl mercaptan**
  - B. Napthenic acid
  - C. Pyridine
  - D. Cumene
- 6- Which of the following is nitrogen compound?
  - A. **Quinolin**
  - B. Napthenic acid
  - C. Ethyl mercaptans
  - D. Tetra ethyl lead
- 7- Naphthenes are
  - A. Unsaturated cyclic compounds
  - B. **Saturated cyclic compound**
  - C. Straight chain saturated compound
  - D. paraffins have the same general formula  $C_nH_{2n+2}$
- 8- Which of the following hydrocarbon series are almost absent in crude petroleum?
  - A. Paraffins
  - B. Aromatic
  - C. Naphthenes
  - D. **Olefins**
- 9- Which of the hydrocarbon are the most undesirable in diesel oil?
  - A. Paraffins
  - B. **Aromatic**
  - C. isoparaffins
  - D. Cyclo-alkane
- 10- Which of the following petroleum products has minimum flash point?
  - A. **Gasoline**
  - B. Diesel oil
  - C. Biodiesel
  - D. All the same
- 11- Which of the following additives has a minimum effect on octane number in gasoline composition
  - A. n- paraffin
  - B. Aromatic
  - C. Iso-paraffin
  - D. **none of these**
- 12- The most popular antiknocking agent but not environmental eco-friendly is
  - A. MTBE
  - B.  $Pb(C_2H_5)_4$
  - C. TEL
  - D. **(B&C)**
- 13- Which of the following hydrocarbon are most desirable in gasoline?
  - A. Paraffins
  - B. Naphthenes
  - C. **Isoparaffins**
  - D. Aromatic
- 14- Cetane no of  $\alpha$ -methyl naphthalene is
  - A. 15
  - C. 100

B. **zero**

D. 17

15- The chemical structure of DEGMME is

A. Me-OCH<sub>2</sub>-CH<sub>2</sub>-OH

B. HO-CH<sub>2</sub>-CH<sub>2</sub>-O-CH<sub>2</sub>CH<sub>2</sub>-OH

C. H-OCH<sub>2</sub>-CH<sub>2</sub>-O-CH<sub>3</sub>

**D. All False**

16- Ethylene glycol added to gasoilne where, it acts as an.....agent.

A. Anti-knocking

B. Anti-gum forming

**C. Anti-icing**

D. Dewaxing

17- PIBSI is the diesel additive which used as .....

A. Anti-gum

**B. Deposit Control additives**

C. Anti-Icing

D. Cold flow improver

18- (FM) is the fraction modifiers used in fuel are intended to reduce power loss from friction in internal combustion engines, ..... is the most powerful additive to reduced the frictions:

A. Glycine dioleate

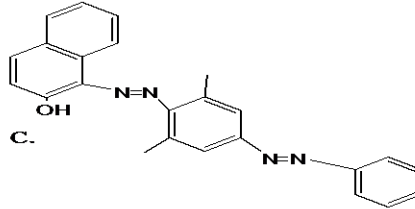
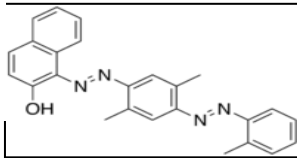
**B. Glycerol mono-oleate**

C. Glycerol dioleate

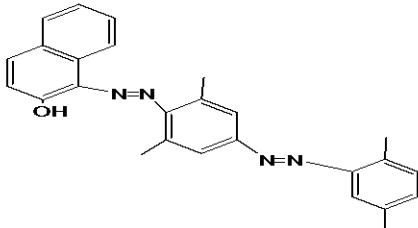
D. Glycine mono-oleate

19- The chemical structure of Solvent red 26 is

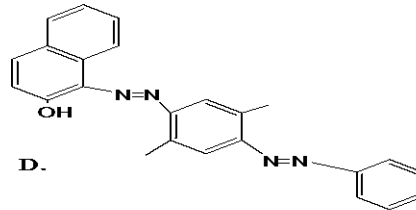
A.



B.

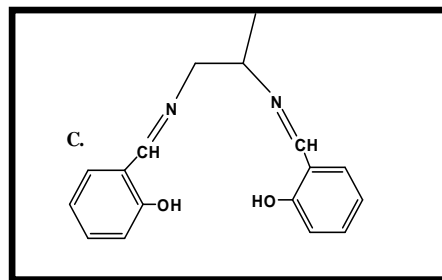
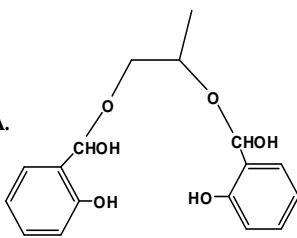


D.

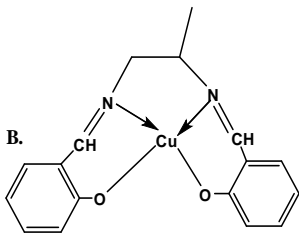


20- Metal deactivator which prevent the reduced the oxidation stability of gasoline, the most one used

A.

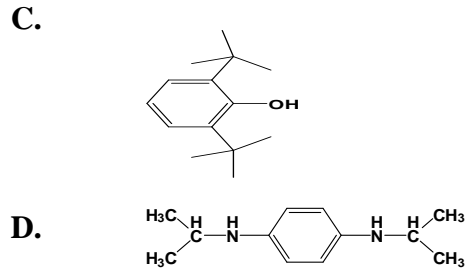
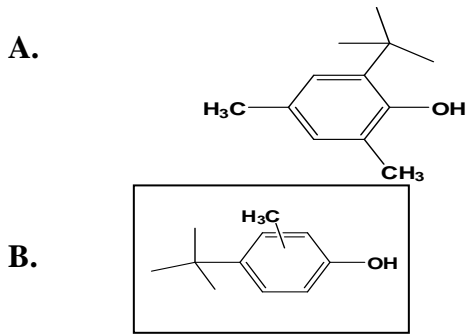


B.



D. B&C

21- The structure formula for BHT is :



22- We can improved the cetane number quality of diesel and kerosene fuel by adding:

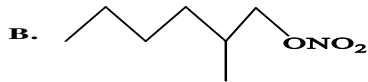
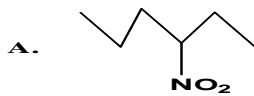
A. Ethyl nitrate

B. 2-Ethylhexyl nitrate

C. MMT

D. (A&B).

23- The chemical structure of Cetane number improver for diesel fuel is



D. None of these

24-..... consist typically of a polar head to enable adhesion to the metal surfaces to be protected and a hydrocarbon tail to ensure fuel solubility.

A. Demulsifier

B. Oxidation Inhibitor

C. Corrosion inhibitor

D. All of these

25-Effective corrosion inhibitors include .....

A. Carboxylic acid

B. Amine, Amine salts of carboxylic acids

C. Carboxylic anhydride

D. All of these

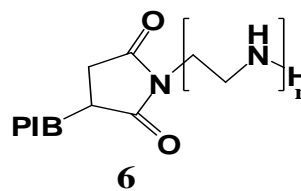
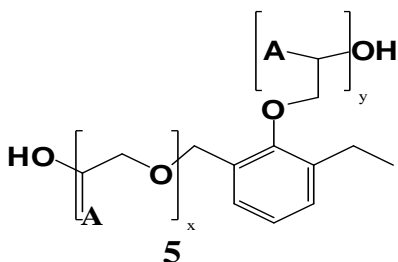
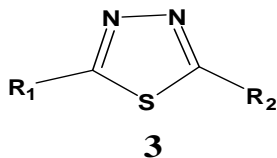
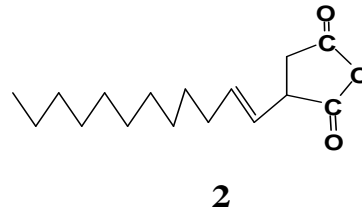
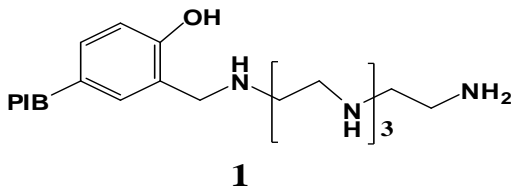
26- Gasoline deposited control additive may be

A. Polybutenesuccimide

B. Polyisobutylene Phenol Mannich Amine

C. PIB Amine

D. All are true



Using the above structure to answer the following questions from 27 to 32 :

27- Copper/ Silver Corrosion initiator may be compound number

- A. 2 **C. 3**  
 B. 5 D. 6

28-Demulsifier additives for gasoline fuel is.....

- A. 4 C. 1  
 B. **5** D. 3

29- Corrosion inhibitor is.....

- A. 1 **C. 2**  
 B. 4 D. 3

30- Friction modifier is.....

- A. 1 C. 3  
**B. 2** **D. 4**

31-Gasoline D.C.Additives is.....

- A. 5 **C. 1**  
 B. 4 D. 6

32-Deisel D.C.Additives is.....

- A. 3 C. 1  
 B. 4 **D. 6**

33-Number of carbon atoms in gasoline fraction is.....

- A. C<sub>1</sub> : C<sub>5</sub>  
 B. C<sub>20</sub> : C<sub>25</sub>  
 C. **C<sub>5</sub> : C<sub>10</sub>**  
 D. all uncorrect

34-LPG is

- A. C<sub>3</sub> : C<sub>4</sub>  
 B. **C<sub>1</sub> : C<sub>5</sub>**  
 C. C<sub>5</sub> : C<sub>10</sub>  
 D. all uncorrect

35- The major compound in natural gas is.....

- A. **Methane**  
 B. Propane  
 C. Ethane  
 D. all uncorrect

36- We can remove the precipitation of lead in internal engine by adding.....

- A. 1,2-dichloroethylene  
 B. 1,3-chloropropylene  
 C. 1,2-dibromoethylene.  
 D. **(A&C).**

37- The freezing point of bio-diesel is

- A. -8,1 °C  
 B. **6 °C**  
 C. zero.  
 D. None of these

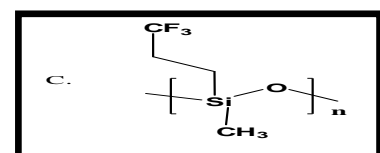
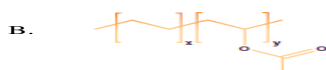
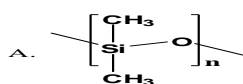
38- The chemical structure of Bio-diesel is.....

- A. Mixed hydrocarbons from C<sub>12</sub>: C<sub>18</sub>  
 B. Mixed hydrocarbons from C<sub>18</sub>: C<sub>22</sub>  
 C. Mixed fatty **methyl esters of oil**  
 D. None of these

39-Cyclohexyl amine is used as

- A. Antioxidant for gasoline  
 B. **Stability improver for diesel**  
 C. Antiwear  
 D. None of these

40- The mode action of anti-foam in diesel fuel the reduced surface tension of the air bubble walls which constitute the foam leading to the rapid collapse. The chemical structure for the most effective antifoam used in diesel fuel is.....



D. None of these

استاذ المادة : أ د / وجدى إبراهيم أحمد الدجدج نصف ورقة ١-٤٠  
مشارك مع

د / أحمد طنطاوى (٤١-٨٠)